LOWER PENITENCIA CREEK

LEVEE

(Coyote Creek To Montague Expressway)

consisting of

ENGINEER'S REPORT

and

NEGATIVE DECLARATION

NOVEMBER 1982

Santa Clara Valley Water District

SANTA CLARA VALLEY WATER DISTRICT

LOWER PENITENCIA CREEK PLANNING STUDY

CONFLUENCE WITH COYOTE CREEK TO MONTAGUE EXPRESSWAY

Engineer's Report Prepared by Predesign Division

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November 1982

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PREFACE

This report presents the results of an investigation of the flood, erosion and sedimentation problems on Lower Penitencia Creek. The study area consists of approximately 4.1 miles of earth channel extending from Montague Expressway to the confluence with Coyote Creek near the intersection of Highway 17 and Dixon Landing Road (See Figure 1).

The purpose of this report is to define the extent of these problems, evaluate alternative solutions and recommend a project that will protect the community from the one percent flood and solve the erosion and sedimentation problems.

Eight sections are presented in this report: 1) Preface, 2) Summary, 3) Background, 4) Problem Definition, 5) Alternative Formulation, 6) Proposed Project, 7) Conclusions and Recommendations and 8) Appendices.

The summary that follows offers a concise overview and description of the problems and proposed solutions. Those interested in more detailed information should read the remainder of the report and the accompanying appendices.

An evaluation of the environmental impacts resulting from the proposed measures is found in Appendix A. A list of the technical terms used in this report is found in Appendix E. Appendix G lists people to contact at the District for additional information regarding this study.

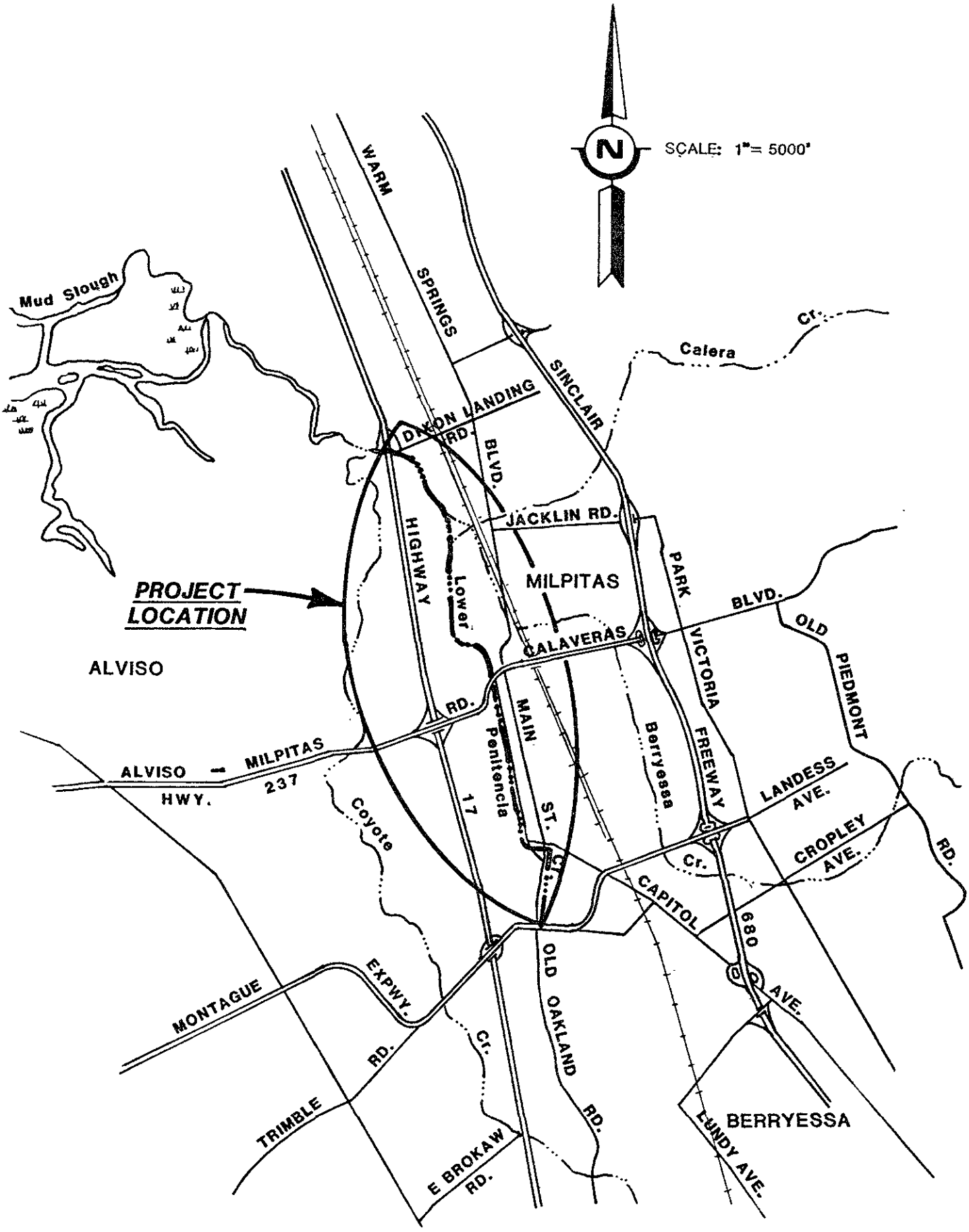

FIGURE 1

PROJECT LOCATION MAP

SUMMARY

Flooding, erosion, sedimentation and channel maintenance problems requiring solutions have been identified in this study of Lower Penitencia Creek between Coyote Creek and Montague Expressway.

Areas of the City of Milpitas have flooded periodically from Lower Penitencia Creek; most recently in March 1982. During the one percent flood the area bounded by Highway 17, Lower Penitencia Creek and Calaveras Boulevard would be flooded to depths of up to three feet. Areas west of the creek, north of Berryessa Creek and south of Redwood Avenue would also receive floodwaters.

Lower Penitencia Creek would flood approximately 380 acres and 700 structures, nearly all residential, during the one percent event causing $14.0 million in damages.

Alternative solutions to the flooding problems were investigated. These included: 1) channel modifications, 2) flood forecasting system, 3) floodproofing, 4) flood insurance and 5) no project. The costs, advantages, and disadvantages of these alternatives were examined. The recommended alternative consists of constructing channel modifications.

The proposed project consists of various channel modifications to the creek to increase its capacity. In the reaches downstream of the confluence with Berryessa Creek, it is proposed that the existing channel be widened and levees be constructed to provide adequate capacity and freeboard. It is also proposed that portions of the channel be concrete lined. Adjacent property owners would be required to construct these measures as conditions of development. Only the concrete lined section through Highway 17 would be constructed by the District in these reaches.

Upstream of Berryessa Creek, flood control measures are proposed to extend to the entrance of Elmwood Rehabilitation Center. These measures consist of a combination of earth levees, floodwalls, culvert enlargement and concrete lining. The existing channel upstream of the entrance to Elmwood Center is adequate to convey the

one percent flows from Lower Penitencia Creek, except for an 84-inch culvert immediately downstream of Montague Expressway which must be enlarged.

The proposed project is estimated to cost $5.4 million in 1982 dollars. This estimate includes all costs for engineering, construction, inspection, administration and overhead. District costs for constructing the section through Highway 17 and the measures upstream of Berryessa Creek are estimated to be $3.6 million. The routine maintenance of the creek is projected at $43,000 per year.

Table 1 summarizes the proposed measures and the estimated costs.

Sources for funding the project include developers and the District's East Zone ad valorem tax and benefit assessment. The District's share of the proposed channel modifications could be constructed by 1985.

TABLE 1
LOWER PENITENCIA CREEK
SUMMARY OF PROJECT COSTS

Reach	Limits	Proposed Measures	Estimated Costs, September 1982 Construction Cost	Estimated Costs, September 1982 Total First Cost 1/
1	Coyote Creek to Hwy 17	Earth Levees	160,000	190,000
1	Highway 17	Concrete Channel	160,000	190,000
1	700 foot Section U/S Hwy 17	Concrete Channel	314,000	370,000
1,2	700 feet U/S Hwy 17 to 800 feet D/S Berryessa Cr	Earth Levees	576,000	680,000
2	800-foot Section D/S Berryessa Cr	Concrete Channel	537,000	634,000
3	Berryessa Cr to Redwood Av	Earth Levees	384,000	453,000
4	Redwood Avenue to Marylinn Drive	Depressed Access with Floodwalls	785,000	925,000
5	Marylinn Drive to Calaveras Blvd	Depressed Access with Floodwalls	769,000	907,000
6	Calaveras Blvd to Serra Way	Depressed Access with Floodwalls	282,000	333,000
7	Serra Way to Sylvia Avenue	Concrete Channel with Floodwalls	393,000	464,000
8	Sylvia Avenue to Curtis Avenue	Floodwalls and Modified Floodplain	228,000	270,000
9	Curtis Avenue to Abel Street and Capitol Ave Intersection	No Measures Proposed	0	0
10	Abel Street and Capitol Av Intersection to SPTC R/W	No Measures Proposed	0	0
11	SPTC R/W to East Penitencia Channel	No Measures Proposed	0	0
12	East Penitencia Channel to Montague Expwy	RCP at SPRR Spur Crossing	27,000	30,000
		PROJECT TOTAL	4,615,000	5,446,000

1/ Includes engineering, construction, administration, inspection and overhead and will be funded from all sources.

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BACKGROUND

This section of the report describes the study area, previous studies, and measures already constructed along the creek.

The Study Area

Lower Penitencia Creek is located in the northeasterly sector of Santa Clara County and is bounded by Berryessa Creek to its east and Coyote Creek to its west. It flows northerly from Montague Expressway to its confluence with Coyote Creek near the intersection of Highway 17 and Dixon Landing Road.

Its natural watershed lies in the unincorporated area of the county and in the Cities of Milpitas and San Jose. The total watershed area is about 28 square miles with about 16 square miles lying on the valley floor and the remainder in the hills of the Diablo Range (See Figure 2).

Major tributaries to Lower Penitencia Creek are Berryessa Creek and the East Penitencia Channel. Berryessa Creek is the major drainage channel for the mountainous portion of the Lower Penitencia Creek Watershed.

In 1875, Upper Penitencia Creek was diverted along Berryessa Road into Coyote Creek, divorcing the upper channel from the lower channel.

Previous Studies and Measures Already Constructed

Lower Penitencia Creek is a trapezoidal earth channel which has become revegetated naturally during intervening maintenance operations. Construction of the channel to its present condition occurred over a period of 20 years.

In 1955, the District designed and constructed the portion of Lower Penitencia Creek from the confluence with Coyote Creek to Spence Avenue. This channel was designed to convey 1,100 cubic feet per second (cfs) and has a bottom width varying from 25 feet to 50 feet with side slopes of 1.5 horizontal to 1 vertical. A farm bridge was built about 1,000 feet upstream of Berryessa Creek confluence in the same year.

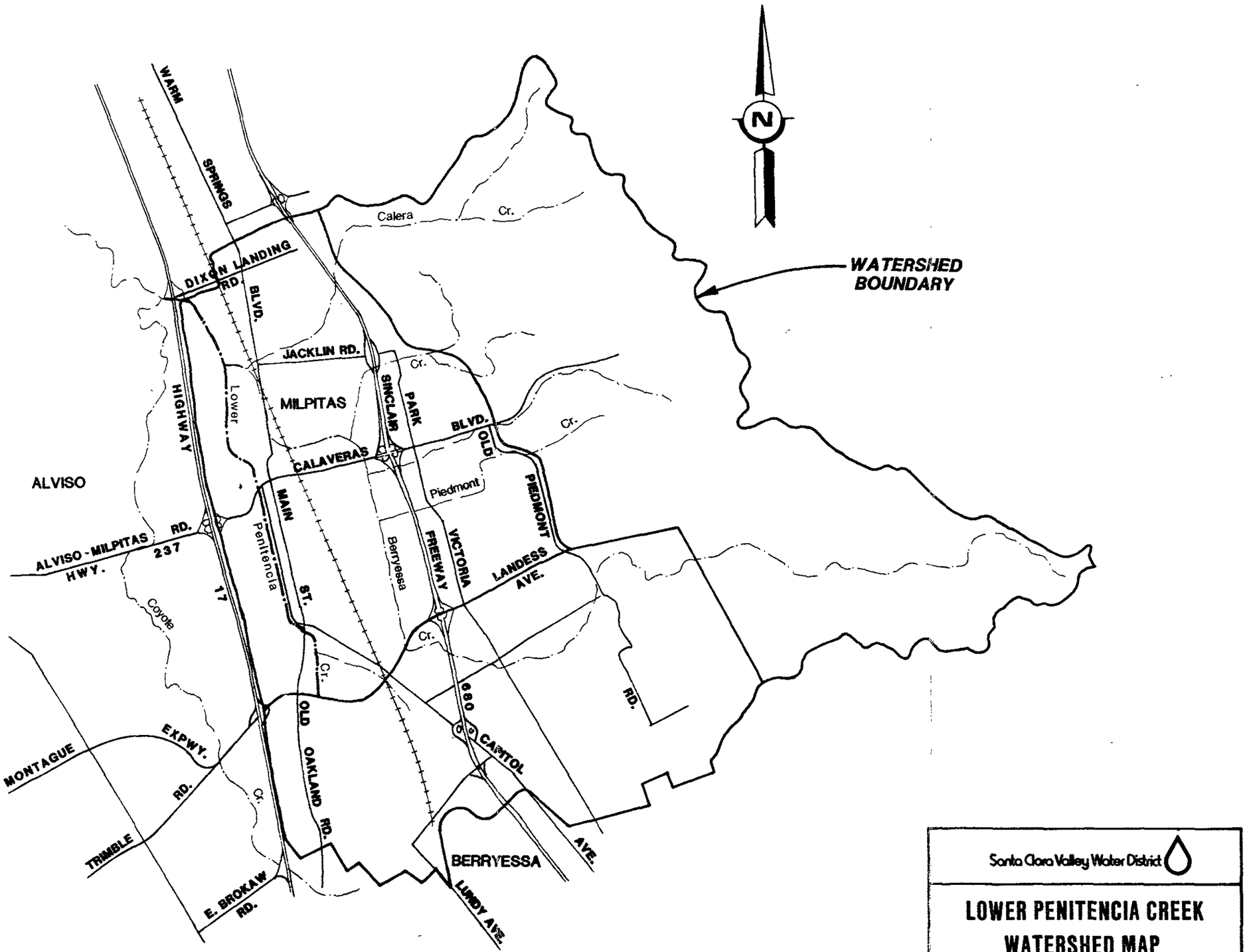

N
WATERSHED BOUNDARY
WARM SPRINGS BLVD.
DIXON LANDING RD.
JACKLIN RD.
MILPITAS
HIGHWAY 17
Lower Penitencia Cr.
SINCLAIR PARK
CALAVERAS BLVD.
OLD PIEDMONT
Piedmont Cr.
MAIN ST.
Berryessa Cr.
FREEWAY 680
VICTORIA
LANDESS AVE.
CAPITOL AVE.
ALVISO
ALVISO-MILPITAS HWY. 237
Coyote Cr.
OLD OAKLAND RD.
MONTAGUE EXPWY.
TRIMBLE RD.
E. BROKAW RD.
BERRYESSA
LUNDY AVE.
Santa Clara Valley Water District
LOWER PENITENCIA CREEK
WATERSHED MAP

FIGURE 2

This bridge is currently used as a pedestrian and park crossing for Curtner Park. Marylinn Drive bridge was designed by Ruth and Going, Inc., and built by the Valley Development Company in 1960.

The earth channel between Spence Avenue and Sylvia Avenue was constructed by the District in 1962. The bottom width of this channel ranged from 18 feet to 24 feet with side slopes of 1:1. Channel modifications included construction of a double 12x9 reinforced concrete box (RCB) at Alviso-Milpitas Road and double 10x7 RCBs under Junipero Drive, under Corning Avenue and under Sylvia Avenue.

In 1965, the District constructed the channel from Sylvia Avenue to Old Oakland Highway. This channel varied in bottom width from 10 feet to 18 feet and had side slopes of 1.5:1. Modifications included a triple 10 x 4 RCB for the PG&E crossing, a double 9x7 RCB at the entrance to Elmwood Rehabilitation Center, and a 12x8 RCB under the intersection of Abel Street and Capitol Avenue.

Prior to 1965, Lower Penitencia Creek extended about 3,000 feet south of Montague Expressway. In March of 1965, the Board of Directors approved a new flood control facility known as East Penitencia Channel. It was to be constructed in lieu of that portion of Lower Penitencia Creek south of Montague Expressway.

The double 12x9 RCB at Spence Avenue was extended as part of the Calaveras Boulevard extension. It was designed by the City of Milpitas and built by the County of Santa Clara in 1968. The portion of Alviso-Milpitas Road from Calaveras Boulevard to South Main Street was later renamed Serra Way , and Spence Avenue terminated at Lower Penitencia Creek.

The 12x8 RCB under Main Street was built by the State of California in 1968. Later that year the District designed and built the twin 96-inch CMP under the Southern Pacific Transportation Company railroad tracks.

The private bridge 620 feet east of Highway 17 was built by Equity Investment Corporation in 1972. The District has a permit to use this bridge to gain access to the creek in the reaches between Highway 17 and Berryessa Creek.

In 1973, the East Flood Control Zone Planning Study was prepared. Lower Penitencia Creek was one of 18 streams studied. That report, although not formally adopted by the Board, proposed flood control works needed for Lower Penitencia Creek and East Penitencia Channel.

The East Penitencia Channel and the portion of Lower Penitencia Creek from Capitol Avenue to Montague Expressway were built by the County as part of the Montague Expressway project in 1973.

The East Zone Interim Erosion and Flood Study was prepared in January 1981. The report described the erosion and overbanking problems which occurred during the storm of February 1980. One of the recommendations in the report was preparation of an engineer's report for Lower Penitencia Creek.

In the East Flood Control Zone, Lower Penitencia Creek has been assigned one of the highest priorities according to criteria developed by the Zone Advisory Committee and District staff and ultimately adopted by the Board. This high priority associated with flood damage potential and the immediate importance of this project to the community are the bases for preparation of this planning study.

Berryessa Creek and Lower Silver Creek, which have higher priorities, are being addressed as federal projects.

PROBLEM DEFINITION

This section describes the problems associated with Lower Penitencia Creek. Historic flooding, one percent flood problems, and maintenance problems are discussed.

Historic Flooding

Flood conditions have been experienced in portions of Santa Clara County in the past. Flooding occurred in 1889, 1911, 1931, 1937, 1940, 1941, 1950, 1952, 1955, 1958, 1962, 1963, 1968, 1973, 1980, and 1982. However, the flood conditions which existed in the years since 1955 produced the only appreciable flooding in areas of Milpitas in the vicinity of Lower Penitencia Creek. Newspaper accounts of this flooding are:

According to the "Milpitas Post" of October 17, 1962

> "A temporary lake was formed at Whittier and Spence in Milpitas Manor - - - - . The low lying spot was about the wettest in Milpitas during the nearly 4-inch downpour on the weekend, but caused no home flooding or other damage other than some wet brake linings to cars which plowed through - - - - ."

February 1969

> "Coyote Creek flooded and the waters extended west of Lower Penitencia from Redwood Avenue to Dixon Landing."

January 1973, February 1980 and April 1982 records show the flooding to be caused by Lower Penitencia Creek.

The January 24, 1973, edition of the "Milpitas Post" read:

> "Last week's storm dropped a lot of water on Milpitas - - - Main Street and some of the Curtner-Manor area suffered the most - - - Main Street at Weller was about the deepest area of flooding".

The above description in the paper included a statement from the City of Milpitas Public Works Director, Charlie McDonald, who said that most of the water came from

Berryessa and Penitencia Creek channels and that the storm problem was compounded by unusually high tides in the Bay, backing water up in the creeks.

A comprehensive account of Lower Penitencia Creek flooding, which occurred in February, 1980, has been documented in a District report titled "East Zone Interim Erosion and Flood Study", (January 1981).

" - - - Overbanking of the west levee at the confluence with Berryessa Creek resulted in flooding of Dixon Landing Golf Course. Overbanking began just downstream of the Abbott Street-San Andreas bridge and extended 400 feet downstream; depth was .5 to 1.0 feet. Water ponded in the golf course and was pumped out near Dixon Landing maintenance yard to Lower Penitencia. On Abbott Street, water came up to the fence line of the apartments which have patios facing the golf course. Some landscaped areas and a volleyball court were flooded."

" - - - Overbanking occurred on the west levee at Redwood Avenue. The backyards of the first two houses upstream and the first house downstream were flooded, and water flowed through sideyards to the street. From interviews with nearby residents and height of sandbags, depth of overbanking is estimated at about .25 to .5 feet.

Storm sewers were unable to drain because of high water in the creek so the whole subdivision west of the creek flooded. The flooding upstream of Marylinn Drive, shown on the flood map, was caused by water backing up in the storm sewers and was not the result of creek overbanking. Water extended as far west as Heath, and as far south as Marylinn and Spangler School, up to a depth of three feet (to garage doors in driveways on Heath Street at the west end of Redwood Avenue). Some of the water from the golf course may have also drained into Heath Street.

On the east side of the creek, there was overbanking at one spot behind 733, 741, and 749 Penitencia Street. Depth of overbanking is estimated at about .25 to .5 feet. Water flooded backyards and, at 741 Penitencia Street, flowed out sideyards to the street. The family room floor of this house was water damaged. The resident said her property had not previously been affected by flooding in the 18 years she had lived there. (The frequency of flooding based on estimated channel capacity is 14 years.) Storm drains on Penitencia Street were also unable to drain because of high water in the creek.

On March 31, 1982, Lower Penitencia Creek overbanked in at least four locations. About 1,000 feet upstream of Redwood Avenue, an inch of water was reported inside a house located at 741 Penitencia Street. Flooding on Penitencia Street was about one foot deep. At Redwood Avenue, overtopping of the west bank contributed to street flooding up to a depth of about three feet from Redwood Avenue to Marylinn Drive and from the creek to Highway 17. Water was reported at doorsteps and into the garages of houses in this area. The area north of Redwood Avenue between the creek and Highway 17 flooded from overbanking at two locations downstream of the confluence with Berryessa Creek. It was reported by local homeowners that those floodwaters mingled with water flowing north from the Redwood Avenue area. Contributing to flooding in the downstream reaches of Lower Penitencia Creek were Coyote Creek floodwaters flowing east through culverts under Highway 17 near Dixon Landing Road.

The April 1, 1982 edition of the San Jose News reported:

"In Milpitas, Penitencia Creek began overflowing its banks about 9:00 a.m. near the intersection of Abbott and Redwood Avenues. By noon, it was three feet deep in many surrounding streets.

'I've lived here 21 years and this is the worst of all,' said Lynne Little, 72, as he stood in his garage watching the water creeping slowly up his driveway.

'This is a low spot with poor drainage. We had the same thing occur in the winter of 1979-80, only it wasn't quite as bad.' "

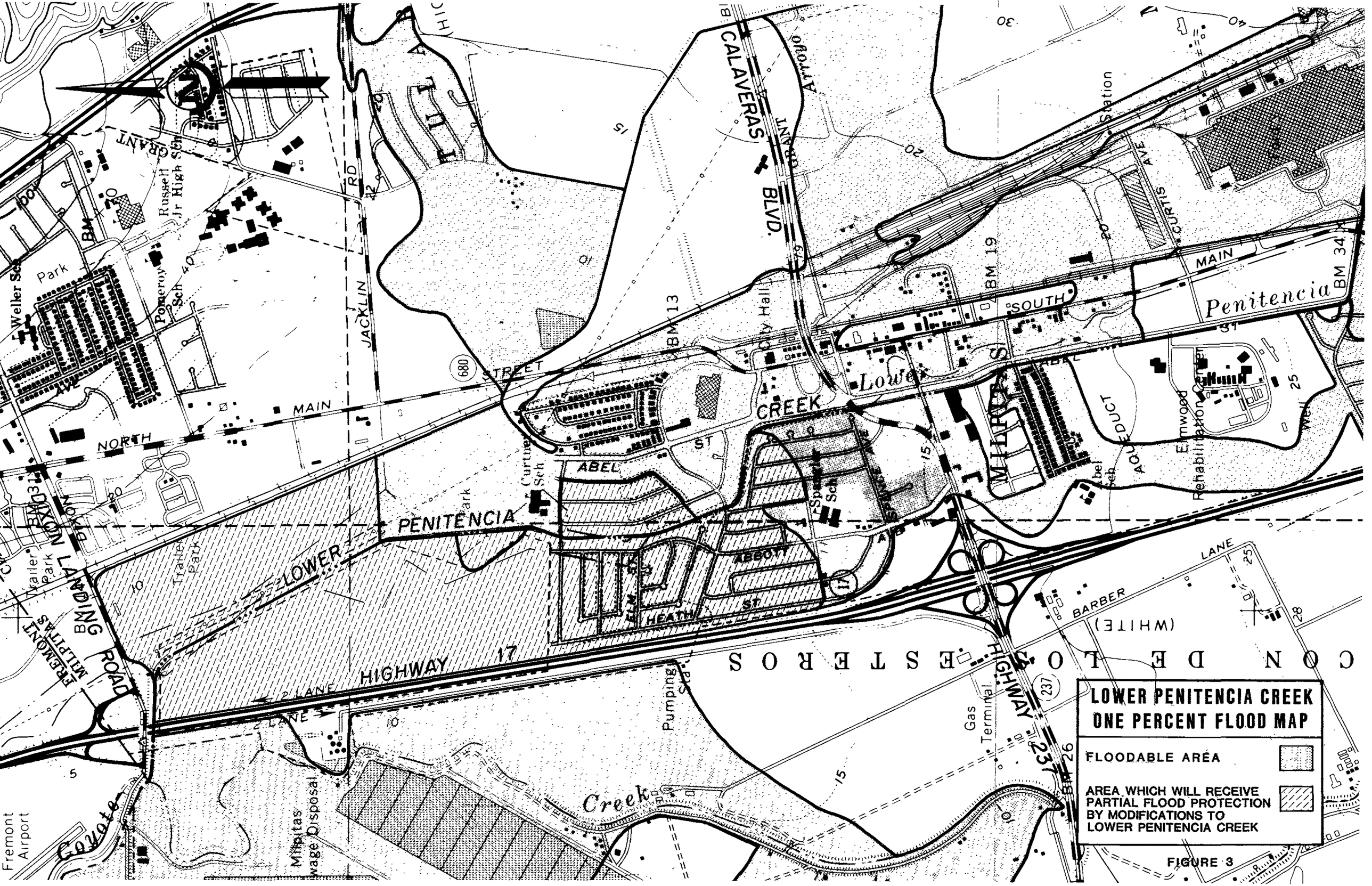
One Percent Flood Problems

The area which would be subject to flooding from the one percent event is shown in Figure 3. This map is based on studies prepared by the Federal Insurance Administration (FIA) in November, 1978. The area bounded by Highway 17, Lower Penitencia Creek and Calaveras Boulevard is subject to flooding from Coyote Creek, Upper Penitencia Creek, Lower Penitencia Creek and Berryessa Creek. Floodwaters in this area would subject over 900 homes to as much as three feet of water.

The most frequent flooding comes from Lower Penitencia Creek. Downstream of the confluence with Berryessa Creek the levees on Lower Penitencia Creek are only high enough to contain a 2-3 year flow. The capacity further upstream at Redwood Avenue is approximately 800 cfs, a 11-year event. Overbanking of the west levee occurred at these locations as recently as February 1980 and March 1982. The creek upstream of the entrance to Elmwood Rehabilitation Center is adequate.

Flooding from Lower Penitencia Creek occurs primarily in the low lying areas west of the creek. The area bounded by Highway 17, Lower Penitencia Creek and Calaveras Boulevard would be flooded to depths up to three feet. Over 250 acres would be inundated. East of the creek, about 70 acres located north of the confluence with Berryessa Creek, would receive floodwaters up to three feet deep. Another 30 acres of residences located south of Redwood Avenue on the east side of the creek would have three feet of flooding.

Lower Penitencia Creek would flood approximately 380 acres and over 700 structures, nearly all residential, during the one percent event causing $14.0 million in damages.



LOWER PENITENCIA CREEK ONE PERCENT FLOOD MAP

FLOODABLE AREA

AREA WHICH WILL RECEIVE PARTIAL FLOOD PROTECTION BY MODIFICATIONS TO LOWER PENITENCIA CREEK

FIGURE 3

Maintenance Problems

District forces maintain Lower Penitencia Creek. Major maintenance efforts are in weed abatement, tule removal, and silt and debris removal (see Appendix C). The few complaints that the District has received dealt primarily with the plant growth and mosquito problems.

The reaches downstream of Berryessa Creek have the worst tule growth and siltation problems and are subject to tidal influence.

The soil between Capitol Avenue and Calaveras Boulevard is subject to erosion.

Trash and debris problems are typical of any urban facility, that is, shopping carts, tires, and other household trash are dumped into and alongside the channel.

The maintenance involved with fencing and signs is less than on comparable channels in other areas because of the response by the City of Milpitas and their policing of unauthorized off-road traffic.

All of the maintenance roads are treated under the District's weed abatement program on a routine basis.

Maintenance equipment working along the creek channel between Capitol Avenue and Calaveras Boulevard has to work from the narrow strip between the curb on Abel Street and the top of bank. There is access to the creek channel in all other reaches, except for the 300± feet upstream from Highway 17.

ALTERNATIVE FORMULATION

Nearly all of the floodplain for Lower Penitencia Creek is common with areas flooded by Coyote, Berryessa and Upper Penitencia Creeks, but Lower Penitencia Creek is the source of the most frequent flooding. The alternatives investigated were designed primarily to address the floodwaters from only Lower Penitencia Creek. The areas that would benefit from protective works on Lower Penitencia Creek are shown in Figure 3 (see Page 14).

The Lower Penitencia Creek project is the first step towards an areawide solution to the flooding problem. Protective works are also scheduled for Berryessa Creek as a Corps of Engineers 205 Project. The Detailed Project Report for Berryessa Creek is expected to be completed by 1983-84. Complete protection of the area requires additional work on Upper Penitencia Creek and Coyote Creek.

There are generally many options available for reducing flood damages. The location and topography of Lower Penitencia Creek effectively eliminates some of the possibilities such as diversion or upstream storage.

Several alternatives were considered to mitigate the flood damages from Lower Penitencia Creek. The alternatives may be divided into those which will reduce or contain the floodwaters and those which will not.

The alternatives which will reduce or contain the floodwaters include constructing channel modifications consisting of levees, floodwalls, channel deepening, widening, and lining, or combinations of these.

The alternatives which will not reduce or contain the floodwaters include flood forecasting systems, floodproofing, flood insurance, and "no project".

A description of each alternative is given in the following paragraphs. Table 2 summarizes the costs, advantages, and disadvantages. Detailed cost estimates can be found in Appendix B.

TABLE 2

LOWER PENITENCIA CREEK

SUMMARY OF ALTERNATIVES CONSIDERED

I. ALTERNATIVES WHICH WILL CONTAIN FLOODWATERS [1/]

No.	Alternative	Description	Annual Cost	Advantages	Limitation/Disadvantage
1	a) Channel Modifications	Construction of levees, floodwalls, lined channels, and channel widening	574,000	1. Would provide protection from most frequent flooding without induced flooding downstream. 2. Would be first element toward a complete solution	Would not eliminate total flood problem or requirement to purchase flood insurance.

II. ALTERNATIVES WHICH WILL NOT CONTAIN THE FLOODWATERS [2/]

No.	Alternative	Description	Annual Cost	Advantages	Limitation/Disadvantage
2	Flood Forecasting System	Design and operate a flood forecasting system which provides limited property damage reduction.	8,000	Damages would be be reduced.	1. The flood problem would still exist. 2. Warning time would be limited. 3. Systems must be adequately operated and maintained at all times. 4. Residents must purchase flood insurance.

[1/] These alternatives will provide one percent flood protection from Lower Penitencia Creek and the annual cost consists of the amortized first cost of the project. Amortization is based on a 50 year life of the modifications and a ten percent discount rate. The annual cost for Alternative I does not include the cost for flood insurance nor maintenance costs which would be less than maintenance costs associated with Alternatives 2, 3, 4 and 5.

[2/] These alternatives will not eliminate flooding and damages will continue. The annual costs for Alternatives 2, 3 and 4 do not include the flood damages which would still occur, nor maintenance costs, which would be more than maintenance costs associated with Alternative 1.

TABLE 2
(continued)

II. ALTERNATIVES WHICH WILL NOT CONTAIN THE FLOODWATERS [2/]

No.	Alternative	Description	Annual Cost	Advantages	Limitation/Disadvantage
3	Floodproofing	Floodproof all structures which would be affected	636,000	1. Would provide protection from all flood sources 2. Damage to buildings and personal items would be reduced.	1. Flooding would still occur as well as certain inconveniences. 2. Would be costly and complicated due to high development already existing.
4	Flood Insurance	Residents purchase flood insurance. District provides minimum maintenance.	341,000	No expense to the District other than routine maintenance.	1. Flood problem is not eliminated. 2. Residents must purchase flood insurance. Many flood damages would still occur
5	No Project	No change in existing conditions.	400,000 [3/]	No investment in new facilities required.	1. Flood problem will continue to exist. 2. Residents must purchase flood insurance.

[2/] These alternatives will not eliminate flooding and damages will continue. The annual costs for Alternatives 2, 3 and 4 do not include the flood damages which would still occur, nor maintenance costs, which would be more than maintenenace costs associated with Alternative 1.

[3/] The annual cost for Alternative 5 does not include the annual cost for flood insurance, nor maintenance costs, which would be more than maintenance costs associated with Alternative I.

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1. Channel Modifications - The Lower Penitencia Creek floodplain is a low lying area where the 100-year flood depths are controlled by the water surface in Coyote Creek. Given this control, constructing levees or floodwalls is the only way to contain the flow in the channel downstream of Berryessa Creek. The right of way in the reach between Berryessa Creek and Elmwood Center is restricted by adjacent development. This reach could receive floodwalls, a concrete channel or raised levees. The water surface elevations are controlled by the elevation at the confluence with Berryessa Creek. The remaining reaches upstream of Elmwood Center are adequate for the one percent flow except for an 84-inch RCP immediately downstream of Montague Expressway which must be enlarged. Descriptions of specific measures proposed for each reach can be found under "Detailed Project Description". The total first cost of the channel modifications is estimated to be $5.4 million. Expressed as an annual cost, based on a 10 percent discount rate over 50 years, that sum is $574,000.

2. Flood Forecasting System - The concept of this alternative is to design and operate a flood forecasting system which provides limited property damage reduction and which may eliminate potential loss of life.

The flood forecasting system would consist of three components. These are a flood recognition system (forecasting), a mass notification system, and a preparedness subplan.

The flood recognition system would consist of a basin runoff model developed from historical streamflow and precipitation data, supplemented with regional data. The model would be linked to automatic, continuously monitored data collection equipment, including precipitation and streamflow gages. A central computer would provide analysis of the data and issue warnings when necessary.

The mass notification system would consist of a direct link to local law enforcement and emergency operations and procedures to be followed for evacuating residents.

The preparedness subplan includes the maintenance of all equipment, testing of equipment and a plan for emergency operations under a flood situation.

Due to the short response time of the watershed, the warning time of the system would be limited to approximately one hour. The Lower Penitencia Creek watershed upstream of the Berryessa confluence is primarily urban but some floodwaters are contributed by Berryessa, Upper Penitencia and Coyote Creeks. The watershed runoff model could not be totally reliable in the prediction of flooding.

The first cost of this alternative, excluding residual flood damages and annual operations and maintenance, is approximately $60,000 and represents the lowest cost of all alternatives considered. The annual cost including operations and maintenance is $8,000. Because the actual flooding is not eliminated and because most of the damages will still occur, this alternative was screened from further consideration.

3. Floodproofing - The objective of this alternative is to floodproof the structures which are subject to flooding. This would be accomplished by raising the floor level of the buildings above the one percent flood level and anchoring the buildings to resist the uplift and lateral forces imposed on them by the surrounding floodwaters. Constructing a low wall around individual structures would accomplish the same objective.

Because the floodplain is highly developed, the cost to implement such a program would be high. Based on average historical floodproofing costs, and only considering the area subject to flooding from Lower Penitencia Creek, the estimated cost of this alternative is $6.0 million. Expressed as an annual cost, based on a 10 percent discount rate over 30 years, the amount is $636,000 per year. This amount exceeds all the other alternatives and was eliminated from further consideration.

4. Flood Insurance - This is a federally subsidized program enabling property owners to buy flood insurance at a reasonable cost. People owning or buying property in the floodplains can insure against flood losses. Both the structure and the contents may be insured, with the exception of certain items designated by the Federal Insurance Administration (FIA).

Flood insurance is required when financing, through federally backed funds, property which is located in flood hazard areas designated by FIA. The amount of coverage required by law is equal to the amount financed, not to exceed a maximum of $70,000. Most of the structures in the floodplain which are required to have flood insurance are subject to shallow ponding between 1-3 feet. The insurance rate for these areas is $.40 (rate effective as of October 1981) per $100 of coverage for the first $35,000 ($140/year) and $.30 per $100 of coverage for the second $35,000 (approximately $105/year) for a total cost of $245/year.

Flood insurance with a minimum rate of $245/year (residential rate) would be required of over 700 owners upon sale of their property. The minimum annual cost of the flood insurance program for the property owners in the FIA designated flood hazard area is estimated to be $203,000. The present worth of the flood insurance premiums at a ten percent discount rate over 30 years is $1.9 million.

There are significant costs associated with a flood emergency which are not covered by the mandatory flood insurance including: costs of flood emergency operations, indirect flood damages such as business loss, damage to contents, damage to public facilities such as roads and bridges, and damage to accounts, bills, valuable papers or records, fences, retaining walls, swimming pools, landscaping, crops and livestock.

The cost of full structural and content insurance for the entire Lower Penitencia Creek floodplain (approximately 725 structures including areas with less than 1 foot flooding) would be $341,000 per year. The present worth of the annual premiums is $3.2 million.

5. No Project - If no project were implemented, flooding would be expected to occur, on average, once every 3 years. Potential inundation of approximately 380 acres during the one percent flood on Lower Penitencia Creek would continue. One percent flood damages would be nearly $14.0 million. The average annual damages are approximately $400,000 per year. This figure assumes no change in the existing condition

of the floodplain. This means no increase or decrease in the value of the property in the floodplain, no new developments susceptible to flood damages, no changes in the capacity of the channel and no change in the hydrology due to urbanization of the watershed.

FLOOD EMERGENCY OPERATIONS

The flooding from only Lower Penitencia Creek occurs first in the downstream reaches particularly below Berryessa Creek. This is also the area of deepest flooding. Three points where floodwaters overbanked in February 1980 and again in March 1982, were just downstream of the Berryessa confluence, at Redwood Avenue and on Penitencia Street approximately 1,000 feet upstream of Redwood Avenue. Flooding upstream of Marylinn Drive was caused by water backing up in the storm sewers, not creek overbanking. The areas of flooding are shown in Figure 4.

A flood emergency plan is one flood damage reduction measure that can be implemented immediately for this area. The hydrologic characteristics of Lower Penitencia Creek do not lend themselves to effective implementation of a flood forecasting system which can provide more than just an immediate warning. However, properly coordinated flood fighting efforts can result in a reduction in flood damages during more frequent events.

During a condition of emergency, water levels can be monitored at critical flood points, such as at Redwood Avenue and at the point where overbanking floods Penitencia Street. Erection of sandbag levees along these critical flood points can provide flood protection to property adjacent to the creek, but only to a limited degree.

Most flood emergency operations would be less effective during the one percent flood. This is due to widespread overbanking that would occur along the downstream reaches of Lower Penitencia Creek, and because the one percent floodplain comingles with overflow from Berryessa, Upper Penitencia, and Coyote Creeks.

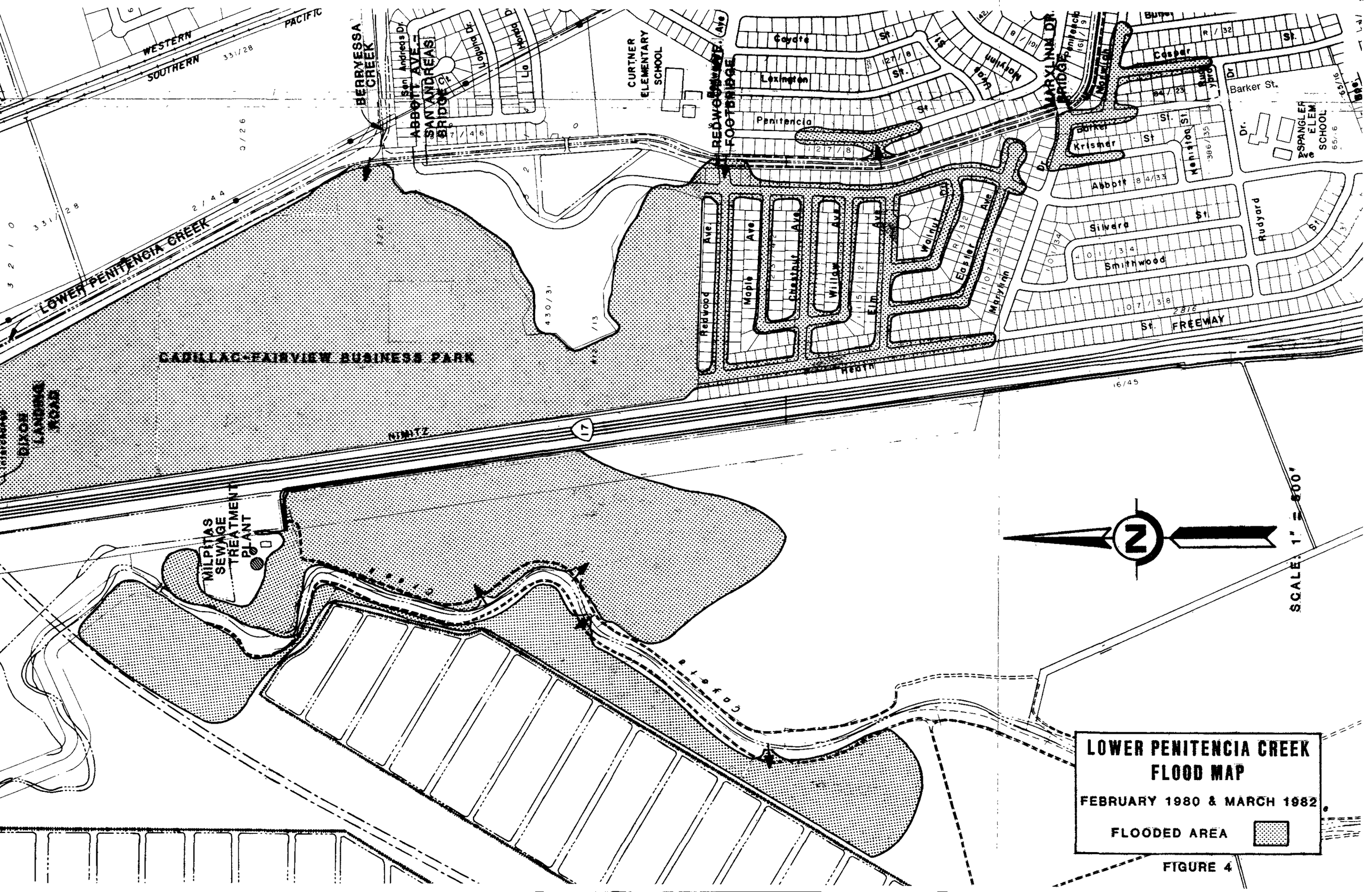

WESTERN PACIFIC
SOUTHERN
BERRYESSA CREEK
San Andreas Dr.
ABBOTT AVE.
SAN ANDREAS BRIDGE Ct.
Columbus Dr.
Hart Dr.
CURTNER ELEMENTARY SCHOOL
REDWOOD AVE. FOOTBRIDGE
Coyote St.
Lexington
Penitencia St.
Woolman Way
MARYLINN DR. BRIDGE
Penitencia Creek Rd.
Casper
Barker St.
Barker
Krismer St
Kehlet St
SPANGLER ELEM SCHOOL
Abbott St
Silvera St
Smithwood
Rudyard
Redwood Ave
Maple Ave
Chestnut Ave
Willow Ave
Elm Ave
Walnut Dr.
Easter Ave
Marylinn
Heath
LOWER PENITENCIA CREEK
CADILLAC-FAIRVIEW BUSINESS PARK
NIMITZ
17
DIXON LANDING ROAD
MILPITAS SEWAGE TREATMENT PLANT
SCALE: 1" = 600'
LOWER PENITENCIA CREEK
FLOOD MAP
FEBRUARY 1980 & MARCH 1982
FLOODED AREA

FIGURE 4

PROPOSED PROJECT

Engineering design criteria are first discussed, followed by a detailed reach-by-reach description of the project. Additional recommendations are given regarding future maintenance activities. Project costs, funding sources and construction staging are presented at the end of this section.

Engineering Criteria

The preliminary design for all the alternatives considered was based on generally accepted engineering criteria for flood control projects. In some cases, the criteria has been established through District policy statements or policy statements of the Federal Insurance Administration.

The standard policy of the District is that the channel be capable of conveying the one percent or one hundred year flood with freeboard. The design flow rates in cubic feet per second (cfs) are shown in Table 3. They are based on the June 1978 hydrology study by the District (See Figure 5).

Table 3
Design Flow Rates

Location	Peak Flow - cfs	
	10-Year	100-Year
D/S Montague Expressway	290	470
D/S East Penitencia Creek	570	810
@ Curtis Avenue	620	890
U/S Calaveras Boulevard	700	1,050
U/S Berryessa Creek	770	1,200
D/S Berryessa Creek	3,900	6,700
D/S Sunnyhills Outfall	4,000	7,000
U/S Coyote Creek	4,000	7,000

Channel roughness factors (Manning's "n") used are shown in Table 4. The high roughness factors were used to set freeboard requirements and the low factors to check for excessive velocity.

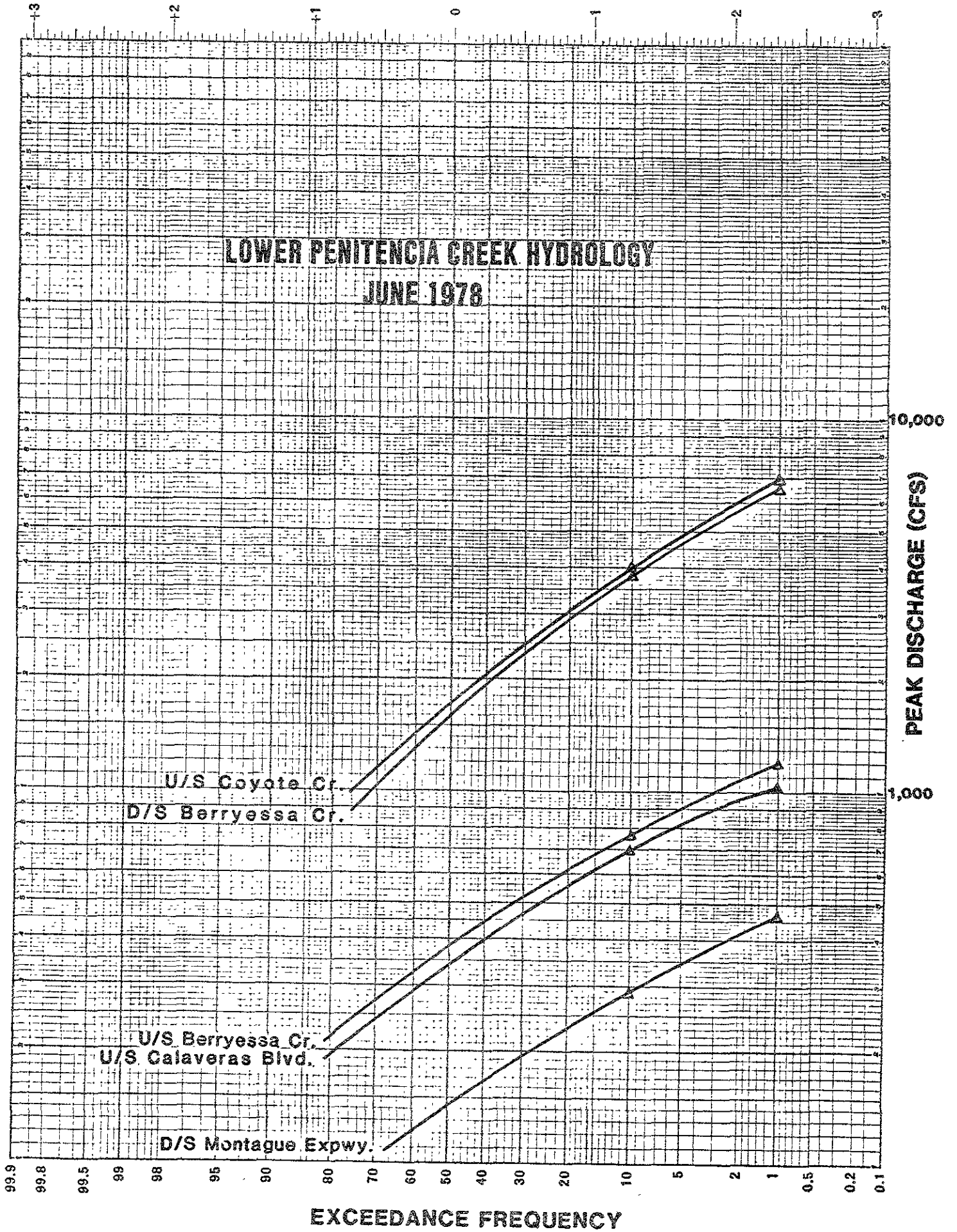

LOWER PENITENCIA CREEK HYDROLOGY
JUNE 1978
U/S Coyote Cr.
D/S Berryessa Cr.
U/S Berryessa Cr.
U/S Calaveras Blvd.
D/S Montague Expwy.
10,000
1,000
PEAK DISCHARGE (CFS)
99.9
99.8
99.5
99
98
95
90
80
70
60
50
40
30
20
10
5
2
1
0.5
0.2
0.1
EXCEEDANCE FREQUENCY

FIGURE 5

Table 4
Channel Roughness Factors

Channel Description		High "n" For Stage	Low "n" For Velocity
Excavated - grass lined, some weeds		0.040	0.025
grass lined, planted shrubs		0.045	0.030
allowed to grow natural		0.070	0.020*
Sacked riprap:	side slopes only	0.035	0.025
Rock-lined:	sides and bottom	0.035	0.030
Concrete-lined:	sides only	0.020	0.015
	sides and bottom	0.016	0.013

*At time of construction

Using the low roughness factors, the velocities are not to exceed 7 feet per second (fps) for existing channel conditions and 5 fps for unprotected excavated channels. When the velocity of flow exceeds the allowable velocity in the channel, some type of armor protection is provided. Such protection would be concrete lining, rock lining or sacked riprap. Where velocities of flow exceeded the allowable values and where the consequences of erosion would be significant, channel slope protection is included in the designs.

The following are minimum freeboard allowances:

1. Design water surface below adjacent ground - one foot.
2. Cross sections with floodwalls - two feet.
3. Under new bridges-freeboard below soffit must be equal to that value used for the channel upstream or downstream of the bridge, whichever is the larger.
4. With levees - three feet, with an additional foot within 100 feet either side of wherever the flow is constricted, such as at bridges. An additional half-foot above this minimum is also required at the upstream end.

5. Where an existing bridge or culvert will convey the design flow under pressure, it must be structurally sound and must be able to resist the resultant lateral and uplift forces. Freeboard must be equal to that value used for the channel upstream or downstream of the bridge or culvert.

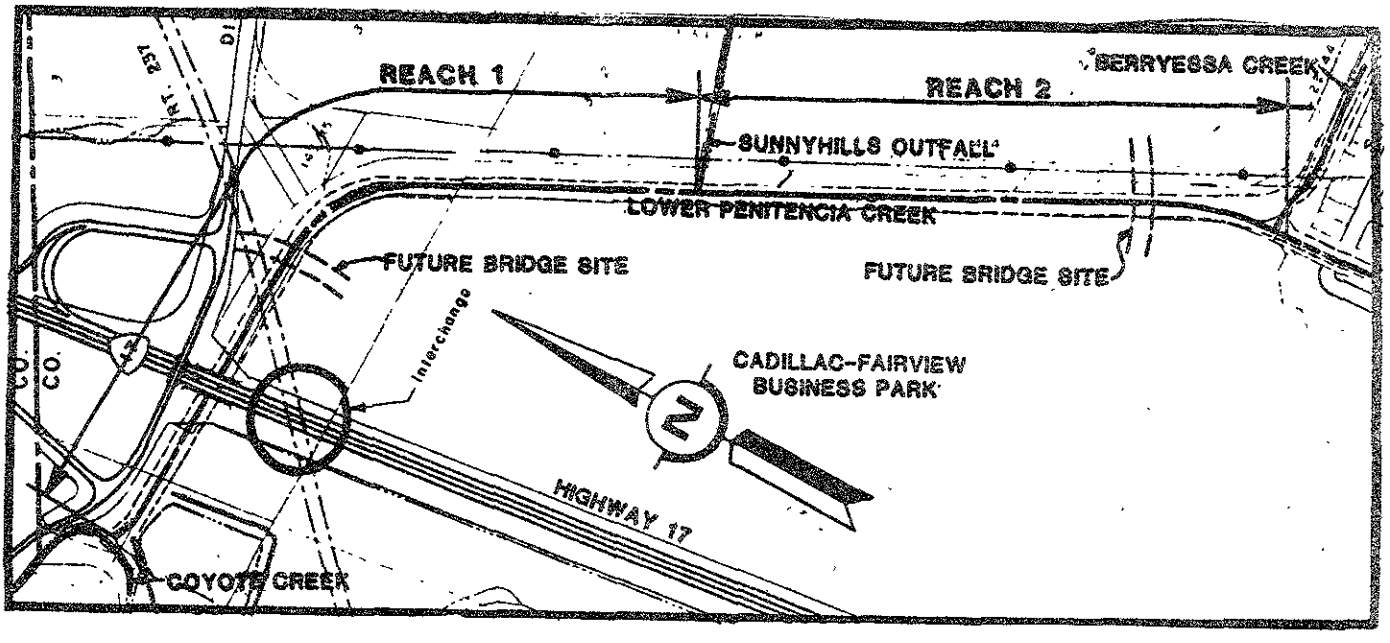
6. Minimum levee elevation is 13.0 feet NGVD (from Baylands Study).

Based on the Corps of Engineers design criteria, the design water surface is the maximum of the flood stages determined by: (a) Running a water surface profile for the one percent design discharge on Coyote Creek (14,500 cfs) starting at the mean higher high water (MHHW) in San Francisco Bay (6.3 feet, NGVD, at Alviso), or (b) Running a water surface profile for the 10% design discharge on Coyote Creek (8,300 cfs) starting at the highest estimated tide (HET) in San Francisco Bay (7.2 feet, NGVD, at Alviso). The starting water surface elevation at the confluence with Coyote Creek was determined to be elevation 10.0 feet NGVD.

Maintenance roads are 18 feet wide. In sections with restricted right of way, 15-foot-wide maintenance roads are provided. Maximum inclinations of earth levees are 1-1/2:1 on the outside of the channel and 2:1 on the inside of the channel.

Detailed Project Description

The proposed project has been divided into twelve reaches as shown in Plate 2. This section includes a description of the reach, the proposed flood protection measures, the cost of these measures and the alternatives considered for the reach. Detailed cost estimates for each reach can be found in Appendix B.



Reaches 1 and 2:

Reach 1 begins at the confluence with Coyote Creek and continues upstream to where Sunnyhills Outfall enters the channel. Reach 2 extends up to the confluence with Berryessa Creek. The existing channel in these reaches is earth with low levees and is subject to tidal influence.

The water surface elevation in these reaches is controlled by the starting elevation in Coyote Creek. The proposed flood control work consists of heightening the levees to provide capacity and widening the channel where necessary to produce acceptable velocities.

Design constraints in the traffic circulation plan for this area necessitate minimizing the channel width at the two future bridge sites shown in the above location map. To accommodate these needs the 700-foot section immediately upstream of Highway 17 and the 800-foot section immediately downstream of Berryessa Creek are proposed to be concrete-lined. Between these sections a secondary channel is proposed adjacent to the existing channel. The foundations of the PG&E towers along the east bank will be strengthened prior to construction of the east levee. The right of way required will vary from 150 feet to 240 feet. The existing right of way is 120 feet.

The total cost for these reaches is approximately $2.0 million. The developer of Cadillac-Fairview Business Park is required to protect their property from flooding and would construct a portion of the channel modifications from Highway 17 to Berryessa Creek. The District would construct the channel through Highway 17. It is proposed that the other properties adjacent to the creek in these reaches be required to construct the remainder of the channel work as conditions of development.

Concrete-lining the channel from Highway 17 to Berryessa Creek was considered. This proposal would cost $0.6 million more than the recommended measures. Because there were no hydraulic or cost advantages and because additional mitigation measures would have been necessary, this alternative was eliminated.

LOWER PENITENICA CREEK

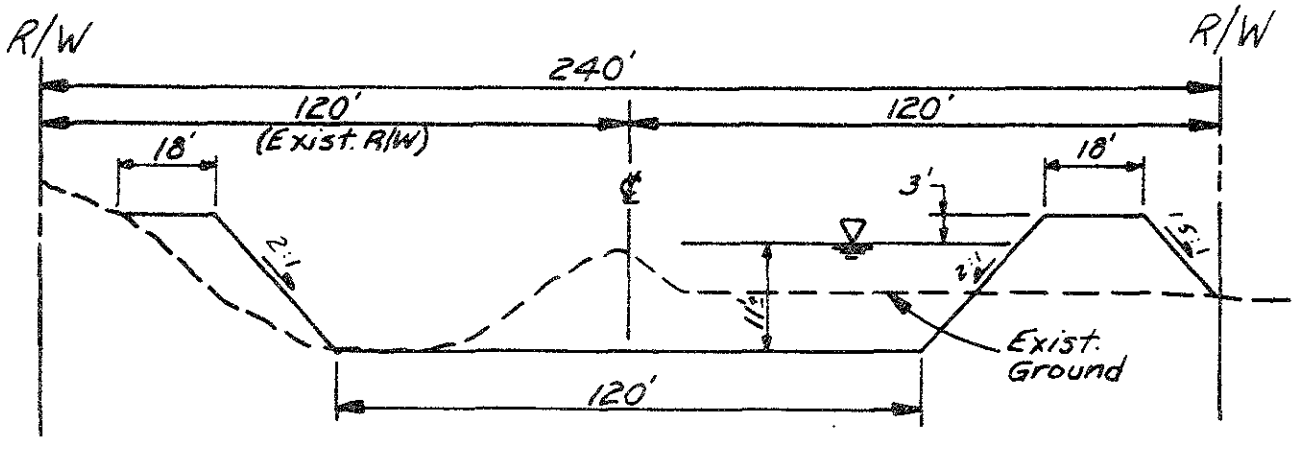
TYPICAL SECTION

COYOTE CREEK TO HIGHWAY 17

STATION 0+00 TO STATION 4+50

Reach 1

EARTH LEVEES



Q = 7,000 cfs; n = .07; s = .0006

LOWER PENITENICA CREEK

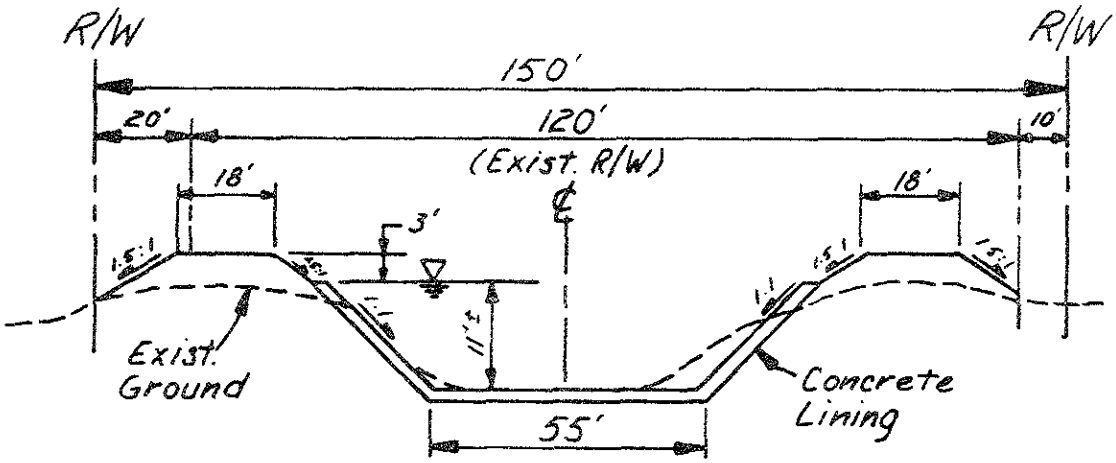
TYPICAL SECTION

UPSTREAM OF HIGHWAY 17

STATION 5+50 TO STATION 11+80

Reach 1

CONCRETE CHANNEL



Q = 7,000 cfs; n = .015; s = .0006

LOWER PENITENICA CREEK

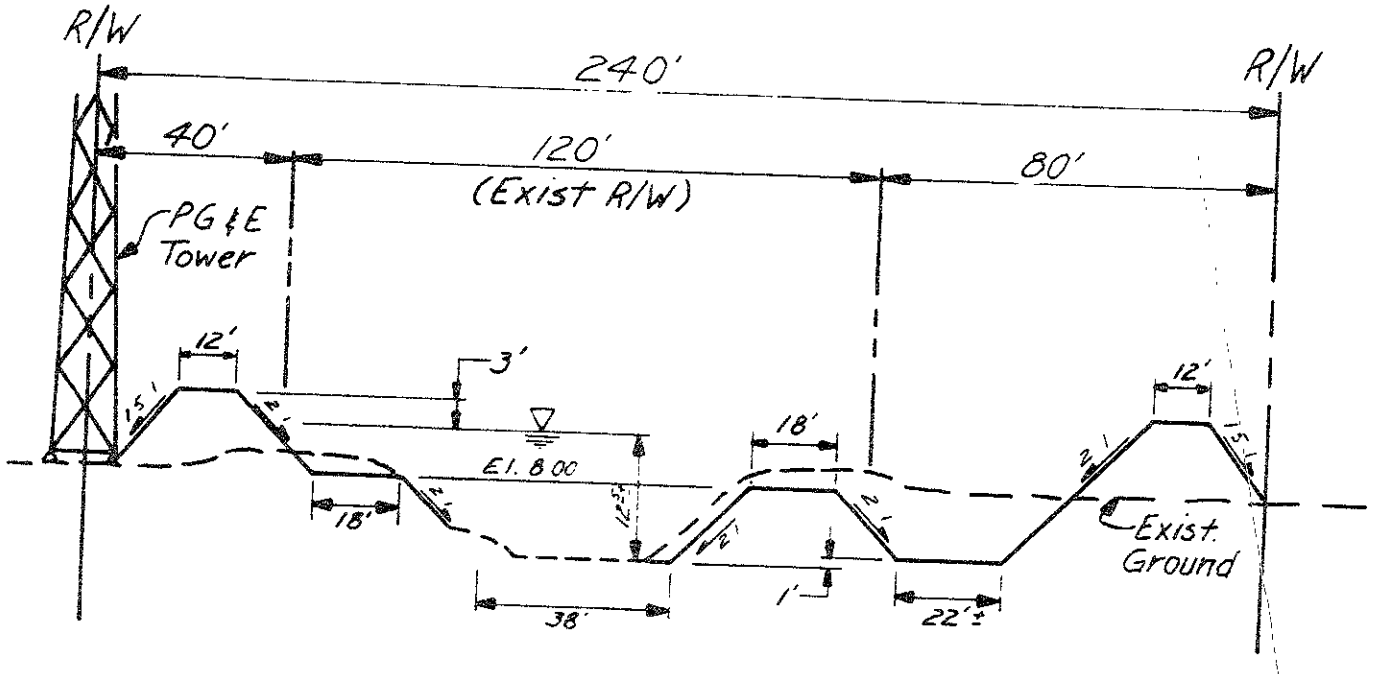
TYPICAL SECTION

700 FEET U/S OF HIGHWAY 17 TO 800 FEET D/S OF BERRYESSA CREEK

STATION 13+80 TO STATION 38+40

Reaches 1 and 2

EARTH LEVEES



Q = 7,000 cfs; n = .035; s = .0006

LOWER PENITENCIA CREEK

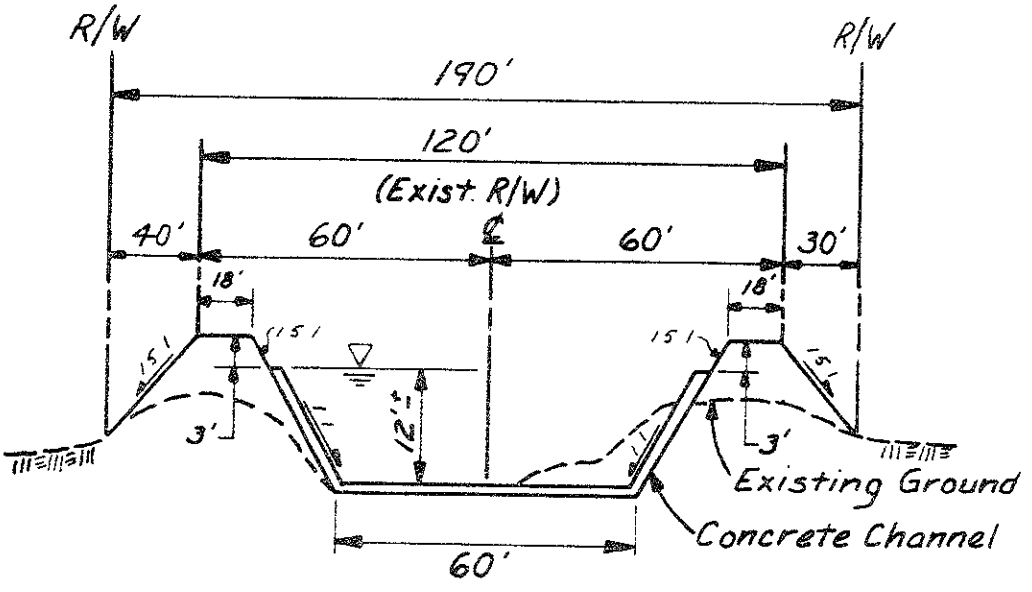
TYPICAL SECTION

DOWNSTREAM OF BERRYESSA CREEK

STATION 40+40 TO STATION 46+80

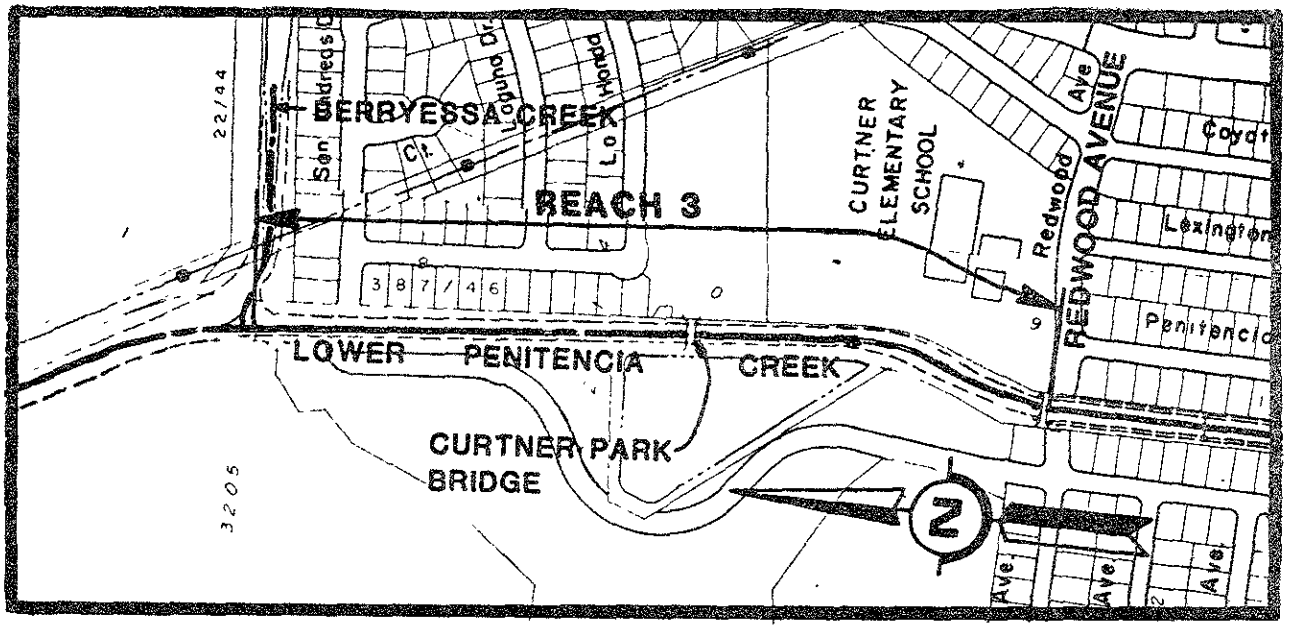
Reach 2

CONCRETE CHANNEL



Q = 6,700 cfs; n = .015; s = .0006

66R1116



Reach 3:

Reach 3 extends from the confluence with Berryessa Creek to the pedestrian crossing at Redwood Avenue. The existing channel is an excavated earth section.

The starting water surface is controlled by the elevation at the confluence with Berryessa Creek. The existing right of way varies in width from 110 feet to 129 feet and is restricted by houses, a school, and lagoons used for local drainage facilities.

The proposal for this reach is to heighten the levees and to provide a depressed maintenance road along the west bank within the existing right of way. The west levee between the Curtner Park bridge and the Redwood Avenue footbridge would be rock lined above the depressed maintenance road up to the design water surface. Rock lining would also be provided under these bridges. Use of steeper rock lined banks would preserve eight feet more channel bottom than would an earth bank laid on a 2:1 slope. Curtner Park bridge consists of two railroad flat cars supported by bridge abutments and a center bent. It is proposed that this structure be removed and replaced by a single span pedestrian bridge. Ramps to the adjacent ground would be provided. The total cost of this proposal is estimated to be $453,000.

If the City of Milpitas requires a larger bridge structure than the proposed pedestrian bridge at Curtner Park, the City and the District would enter into a cost sharing agreement for construction of the vehicle-pedestrian bridge.

Bottom width of the channel varies between 40 feet and 50 feet and would be reduced to about 15 feet in the narrowest sections. Maintenance costs for sediment and vegetation removal would be less because of the reduced bottom width.

A concrete channel with floodwalls was considered for this reach. This alternative would cost over $1.0 million. Because there were no hydraulic, or cost advantages and because the savings in cost to maintain a concrete channel did not offset the cost to construct it, this alternative was eliminated from further consideration.

LOWER PENITENCIA CREEK

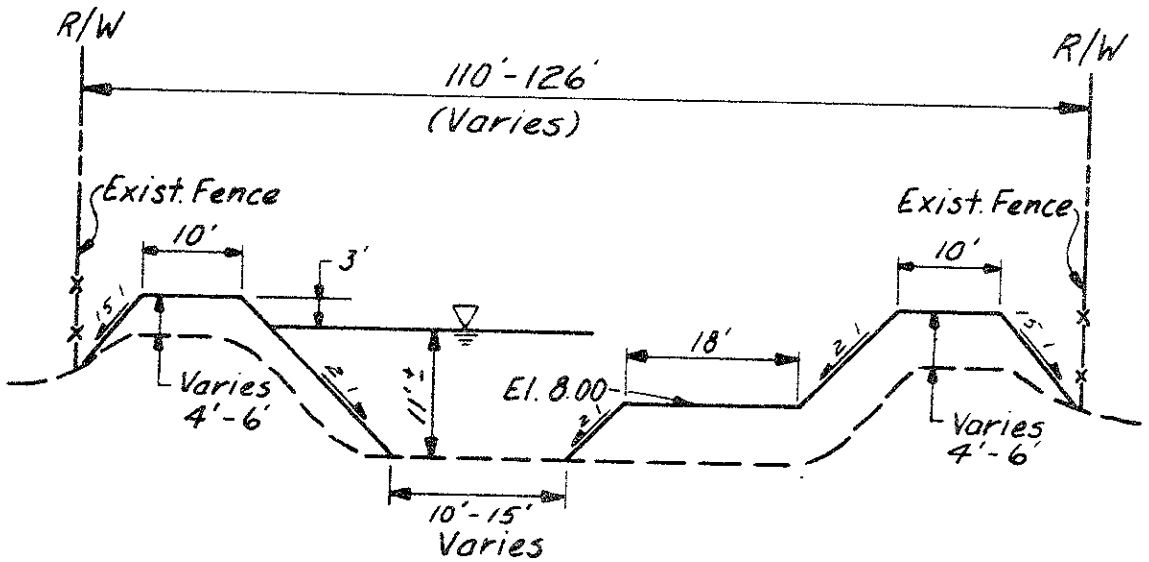
TYPICAL SECTION

BERRYESSA CONFLUENCE - CURTNER PARK BRIDGE

STATION 46+80 TO STATION 58+00

Reach 3

EARTH LEVEES



Q = 1,200 cfs; n = .03; s = .0003

66R1116

LOWER PENITENCIA CREEK

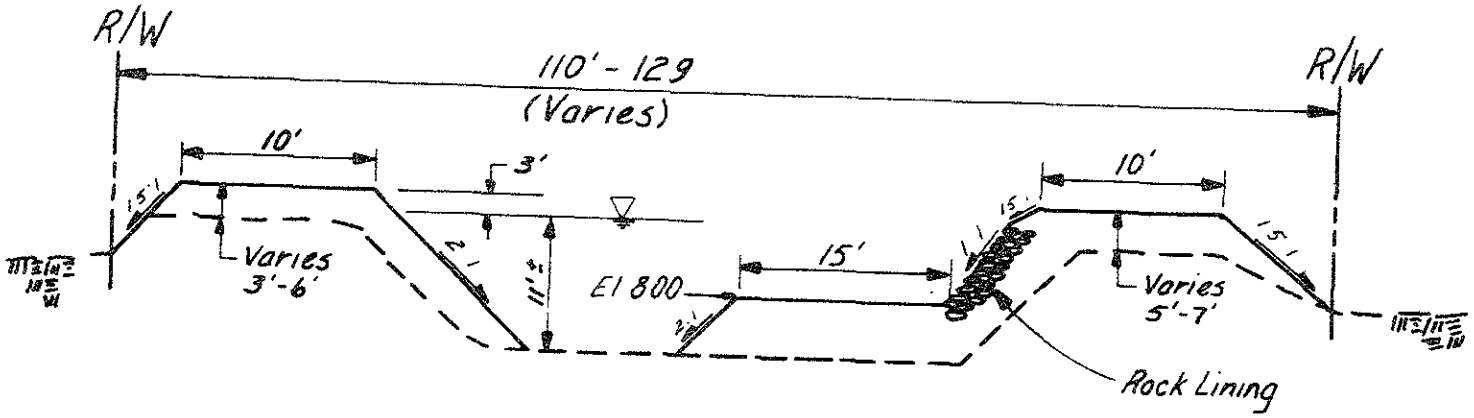
TYPICAL SECTION

CURTNER PARK BRIDGE - REDWOOD AVENUE

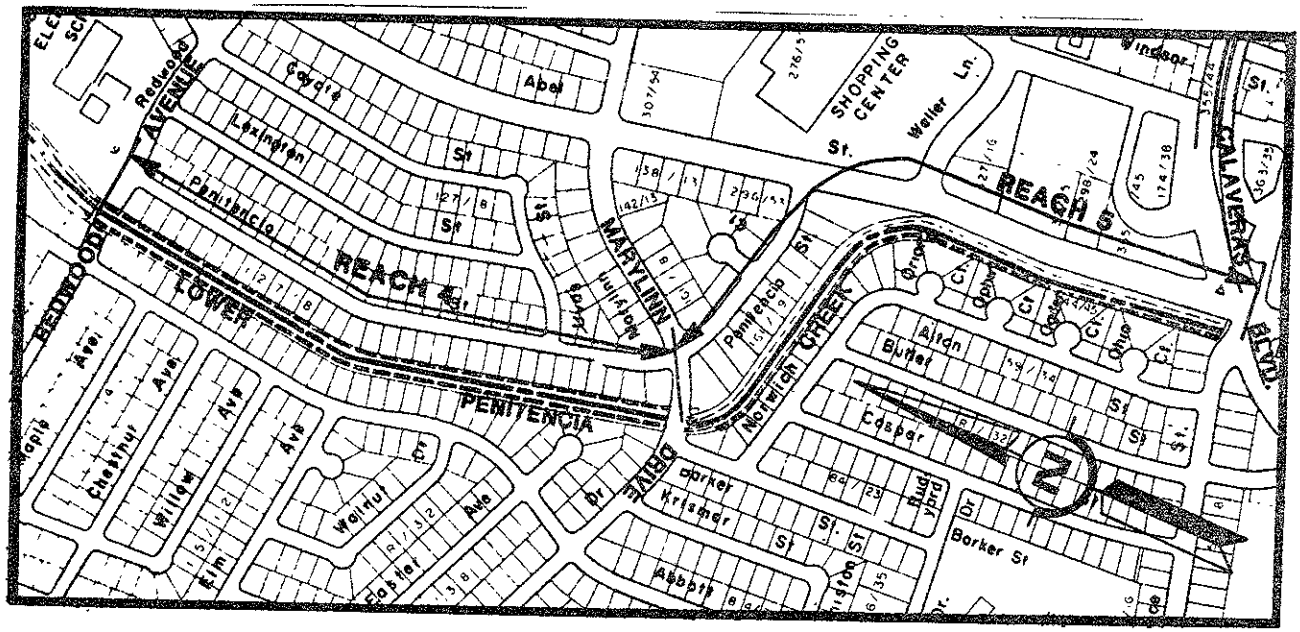
STATION 58+00 TO STATION 66+50

Reach 3

EARTH LEVEES



Q = 1,200 cfs; n = .03; s = .0003



Reaches 4 and 5:

Reach 4 begins at the pedestrian crossing at Redwood Avenue and continues up to the Marylinn Drive culvert. Reach 5 extends from Marylinn Drive to Calaveras Boulevard.

The existing channel is an excavated earth section. The right of way varies from 80 feet to 85 feet and is restricted by houses on each bank. In Reaches 4 and 5 there is a very flat channel gradient and the water surface is controlled by the elevation at the confluence with Berryessa Creek. Floodwalls and depressed maintenance roads are proposed. Some of the existing earth channel would be excavated to keep flow velocities within acceptable limits and to keep the water surface elevation at a minimum.

The Redwood Avenue footbridge would be removed or replaced. This cost will be borne by the City of Milpitas.

The cost for Reach 4 is approximately $925,000. Reach 5 cost is $907,000.

A concrete lined channel was also considered to solve the overbanking problem. Because the design flow velocities in these reaches are low, the design water surface profile would not be significantly lowered by any kind of lining. Construction of floodwalls to contain the floodwaters and provide freeboard would be required.

There are no cost or hydraulic advantages between a concrete channel and the proposed measures and their corresponding maintenance costs. The proposed measures are recommended because of their less significant environmental impacts.

LOWER PENITENCIA CREEK

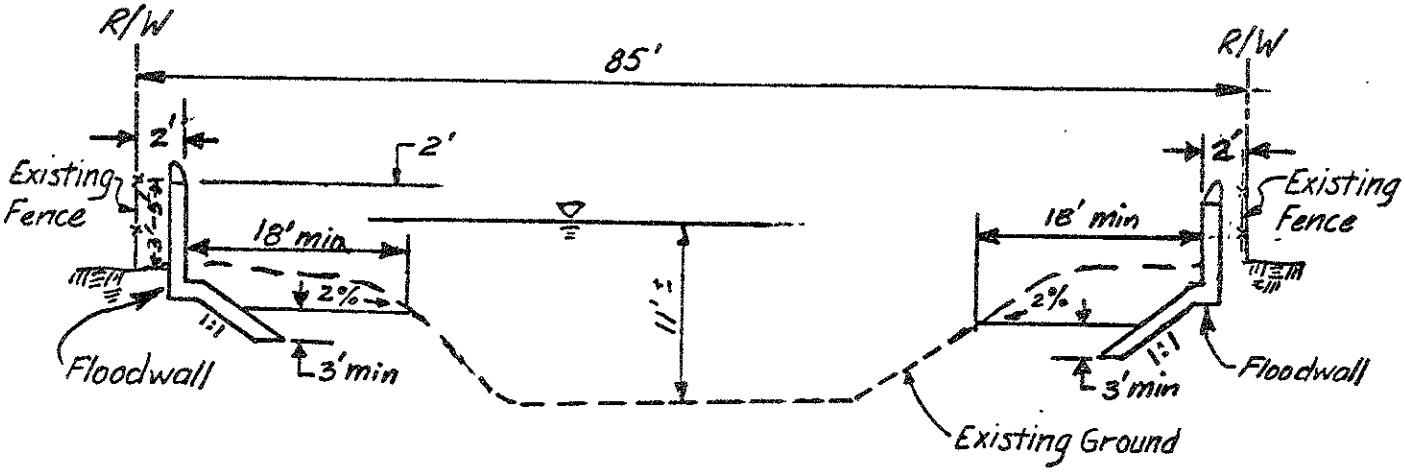
TYPICAL SECTION

REDWOOD AVENUE - MARYLINN DRIVE

STATION 66+50 TO STATION 88+80

Reach 4

DEPRESSED ACCESS WITH FLOODWALLS



Q = 1,200 cfs; n = .03; s = .0005

66R1116

LOWER PENITENCIA CREEK

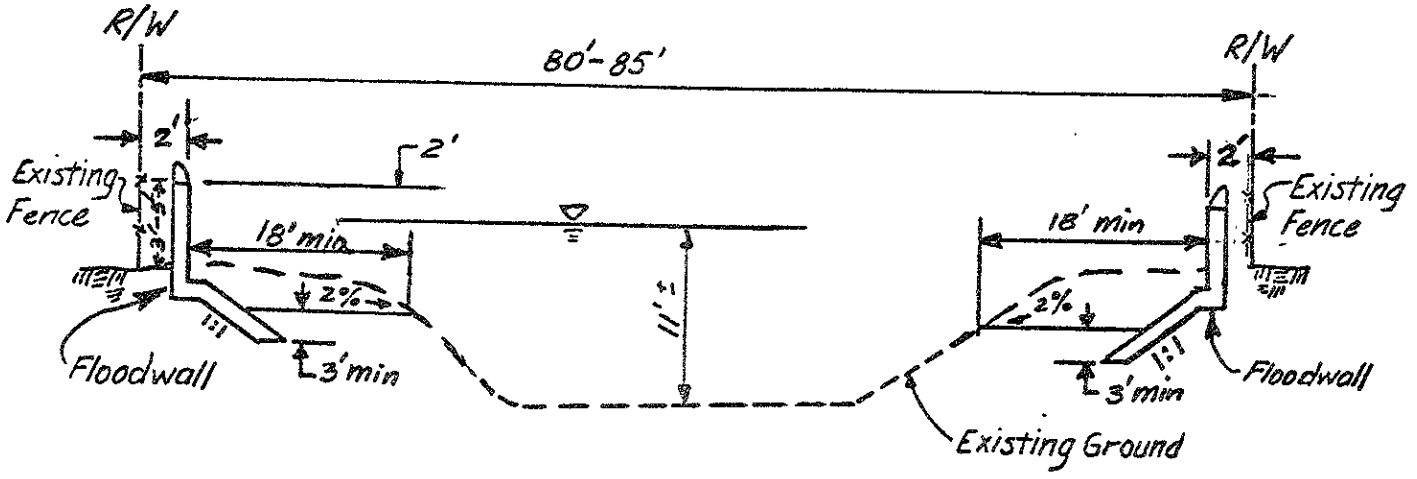
TYPICAL SECTION

MARYLINN DRIVE - CALAVERAS BOULEVARD

STATION 89+20 TO STATION 111+74

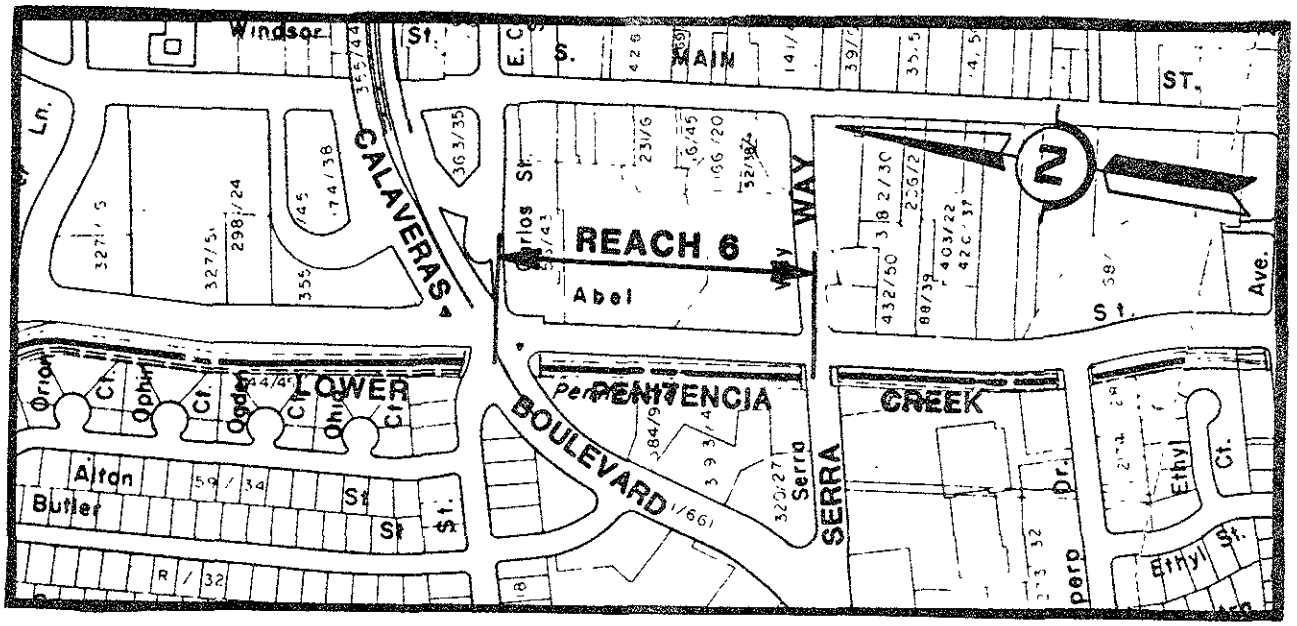
Reach 5

DEPRESSED ACCESS WITH FLOODWALLS



Q = 1,200 cfs; n = .03; s = .0002

66R1116



Reach 6

The short stretch between Calaveras Boulevard and Serra Way is Reach 6. The right of way in this reach is 65 feet wide and is restricted by Abel Street to the east and developed commercial property to the west. The existing earth channel was constructed in 1962.

The water surface elevation is one to three feet above the elevation of Abel Street. Three to six-foot high floodwalls are proposed along both banks. The 30-foot channel bottom would be reduced in width by approximately 10 feet.

Maintenance equipment normally operates from the narrow strip between the curb along Abel Street and the top of bank. However, equipment cannot clear obstructions greater than 42 inches in height. To provide access for this reach, a depressed maintenance road would be constructed along the westerly bank.

The cost for this reach is estimated to be $333,000.

The floodwall along Abel Street would be of colored concrete and/or a decorative facing to mitigate the visual impact. The design of the mitigation measures should be coordinated with the City of Milpitas.

Alternative solutions considered for this reach included construction of floodwalls only, no channel excavation and concrete lined channel with floodwalls.

These alternatives would provide protection from the one percent flood, but implementation of a maintenance program for this reach would be difficult. There are no cost or hydraulic advantages.

LOWER PENITENCIA CREEK

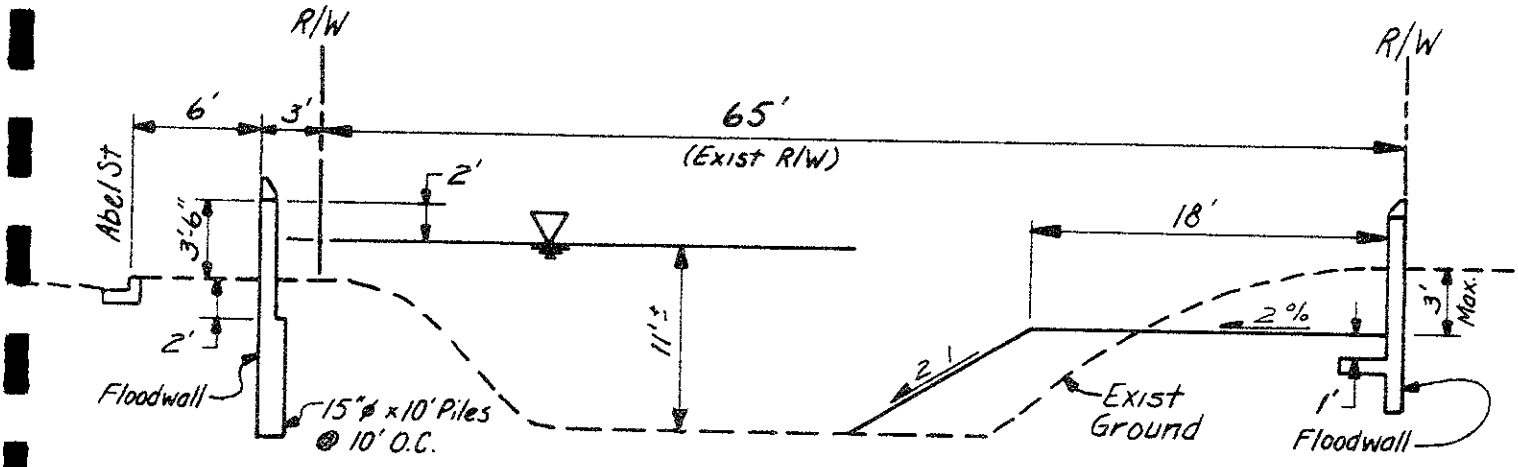
TYPICAL SECTION

CALAVERAS BOULEVARD - SERRA WAY

STATION 113+20 TO STATION 120+38

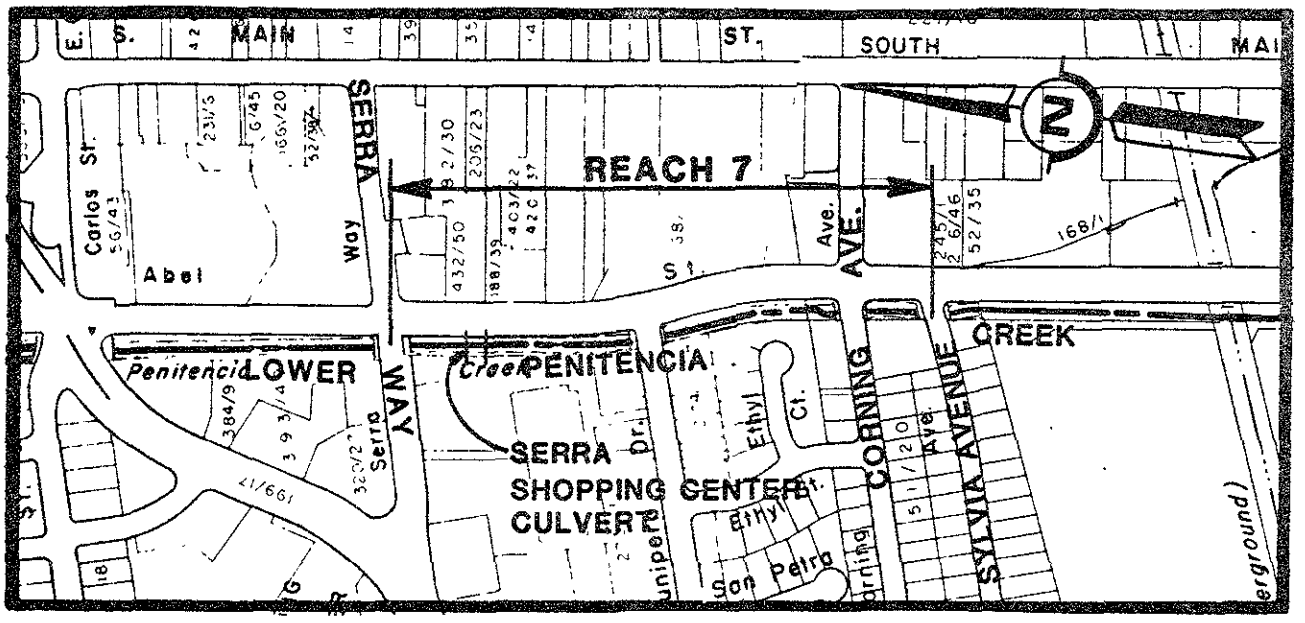
Reach 6

DEPRESSED ACCESS WITH FLOODWALLS



Q = 1,050 cfs; n = .03; s = .00067

66R1116



Reach 7:

Reach 7 extends from Serra Way to Sylvia Avenue. The existing channel is an excavated earth section. Right of way is 50 feet wide except for the section between Corning Avenue and Sylvia Avenue which is 45 feet wide. Abel Street is adjacent to the east and commercial and residential development is to the west.

Due to the limited right of way, floodwalls are proposed along both banks. Maintenance equipment operated from the right-hand traffic lane on Abel Street cannot reach the west bank. As a result, sediment deposition and plant growth have reduced the creek's flood-carrying capacity. To correct this problem, in addition to floodwalls, the channel would be concrete lined. This would allow sediment to be transported into Reach 6 for removal.

An eight-foot-wide by seven-foot-high barrel would be added to the double ten by seven RCB at Junipero Drive and at the entrance to the Serra Shopping Center. A six-foot-wide by seven-foot-high barrel would be added to the double ten by seven RCB at Sylvia Avenue. The barrel additions would lower the water surface sufficiently to maintain maximum floodwall height requirements of 42 inches along Abel Street.

Cost is estimated to be $464,000.

The visual impacts associated with the floodwalls would be mitigated.

LOWER PENITENCIA CREEK

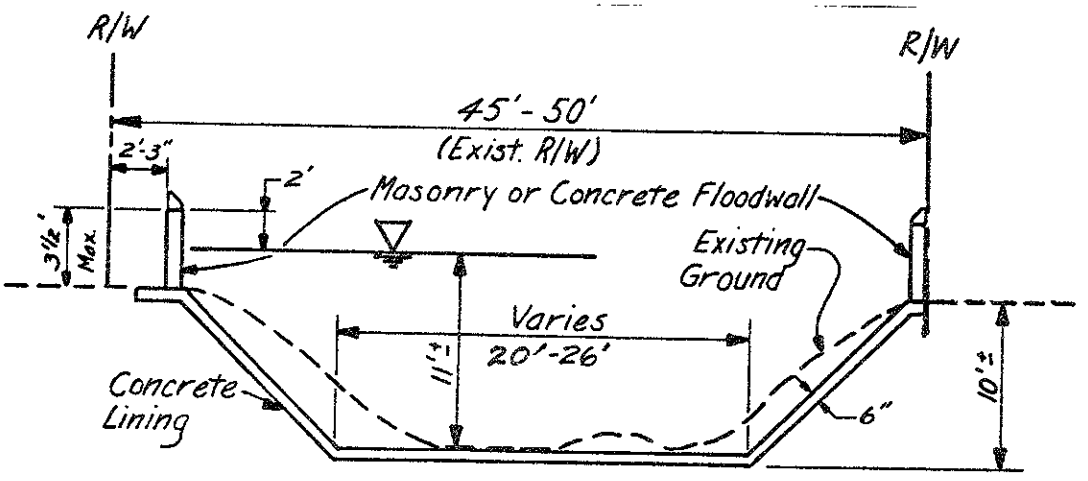
TYPICAL SECTION

SERRA WAY - SYLVIA AVENUE

STATION 120+38 TO STATION 134+45

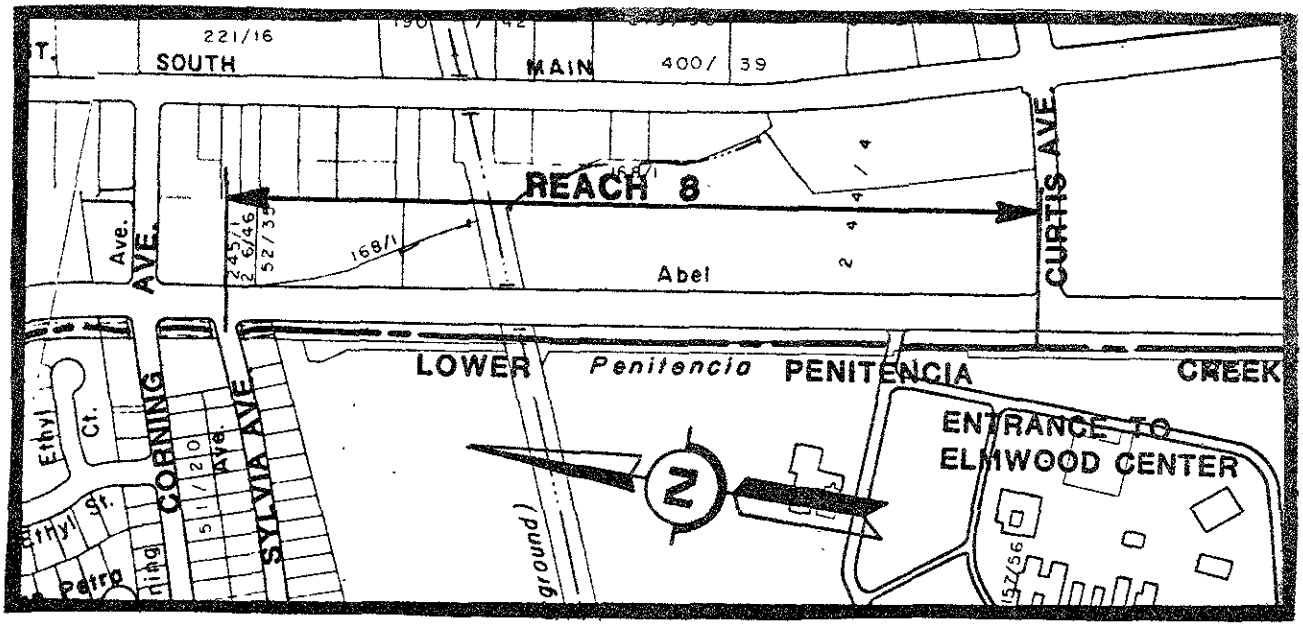
Reach 7

CONCRETE CHANNEL WITH FLOODWALLS



Q = 1,050 cfs; n = .015, s = .003 (average slope)

66R1116



Reach 8:

Reach 8 includes the portion of Lower Penitencia Creek from Sylvia Avenue to Curtis Avenue. The existing earth channel was constructed in 1965 and is bounded by Abel Street to the east and Elmwood Rehabilitation Center to the west. The existing right of way varies from 63 feet to 77 feet.

Overbanking from a one percent flood occurs between Sylvia Avenue and the double box culvert at the entrance to Elmwood Center. The channel upstream of the entrance to Elmwood is adequate to carry the one percent flood flows.

A three-foot-high floodwall is proposed along the easterly bank as a solution to overbanking problems. A modified floodplain is recommended for the westerly bank since the adjacent land is open. This proposal would preserve the row of trees lining the westerly bank.

The modified floodplain concept consists of construction of a levee embankment outside the row of trees. Maintenance equipment would be operated from Abel Street over the proposed floodwall, as is the current practice. The total right of way required would be 100 feet. The cost is estimated to be $270,000.

Construction of a floodwall along the west bank would cost $100,000 more. Because of the greater additional cost of floodwalls, the modified floodplain was chosen for the west bank.

LOWER PENITENCIA CREEK

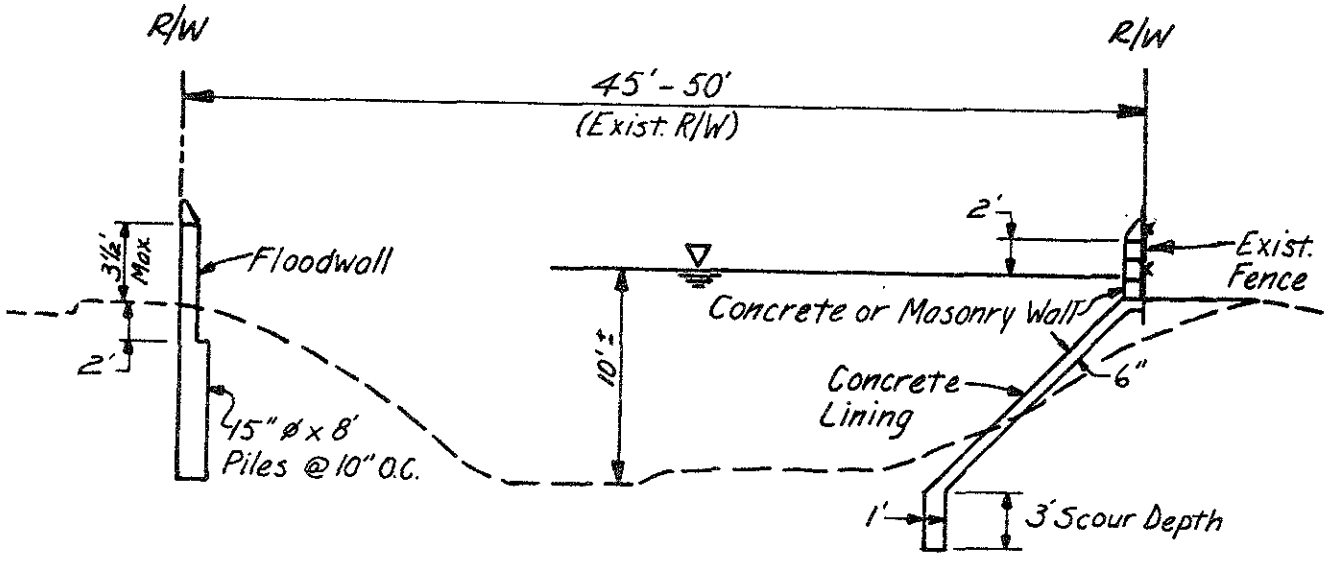
TYPICAL SECTION

UPSTREAM OF SYLVIA AVENUE

STATION 135+43 TO STATION 136+85

Reach 8

FLOODWALLS



Q = 1,050 cfs; n = .026; s = .0014

LOWER PENITENICA CREEK

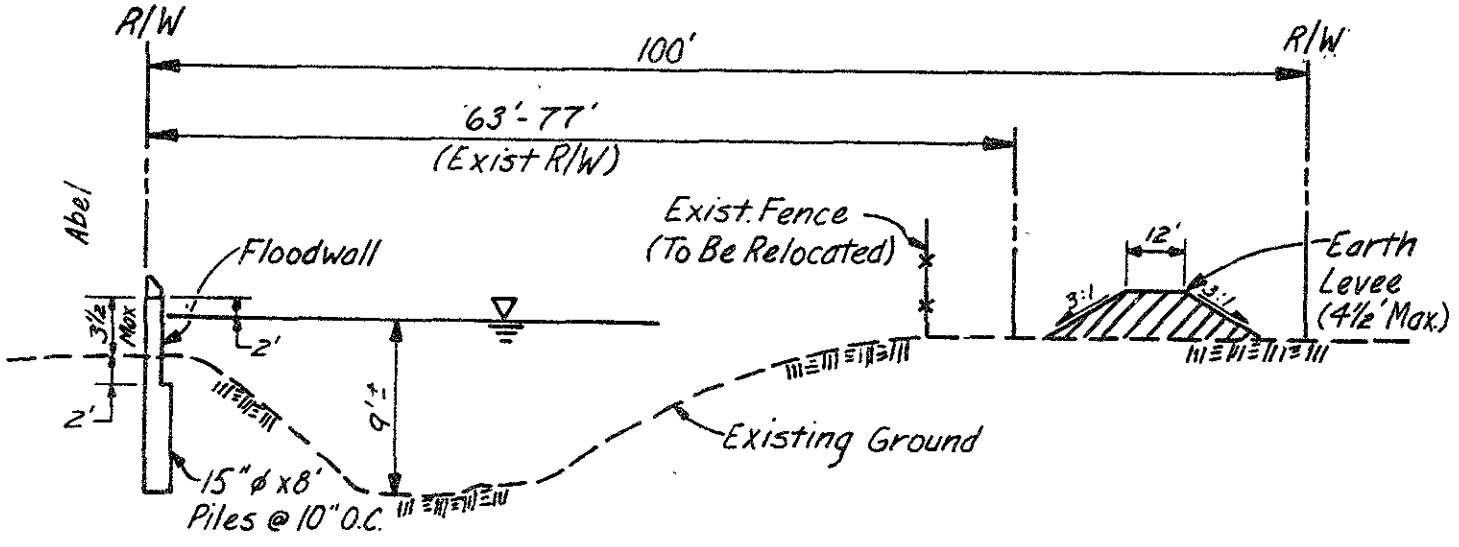
TYPICAL SECTION

ALONG ELMWOOD CENTER

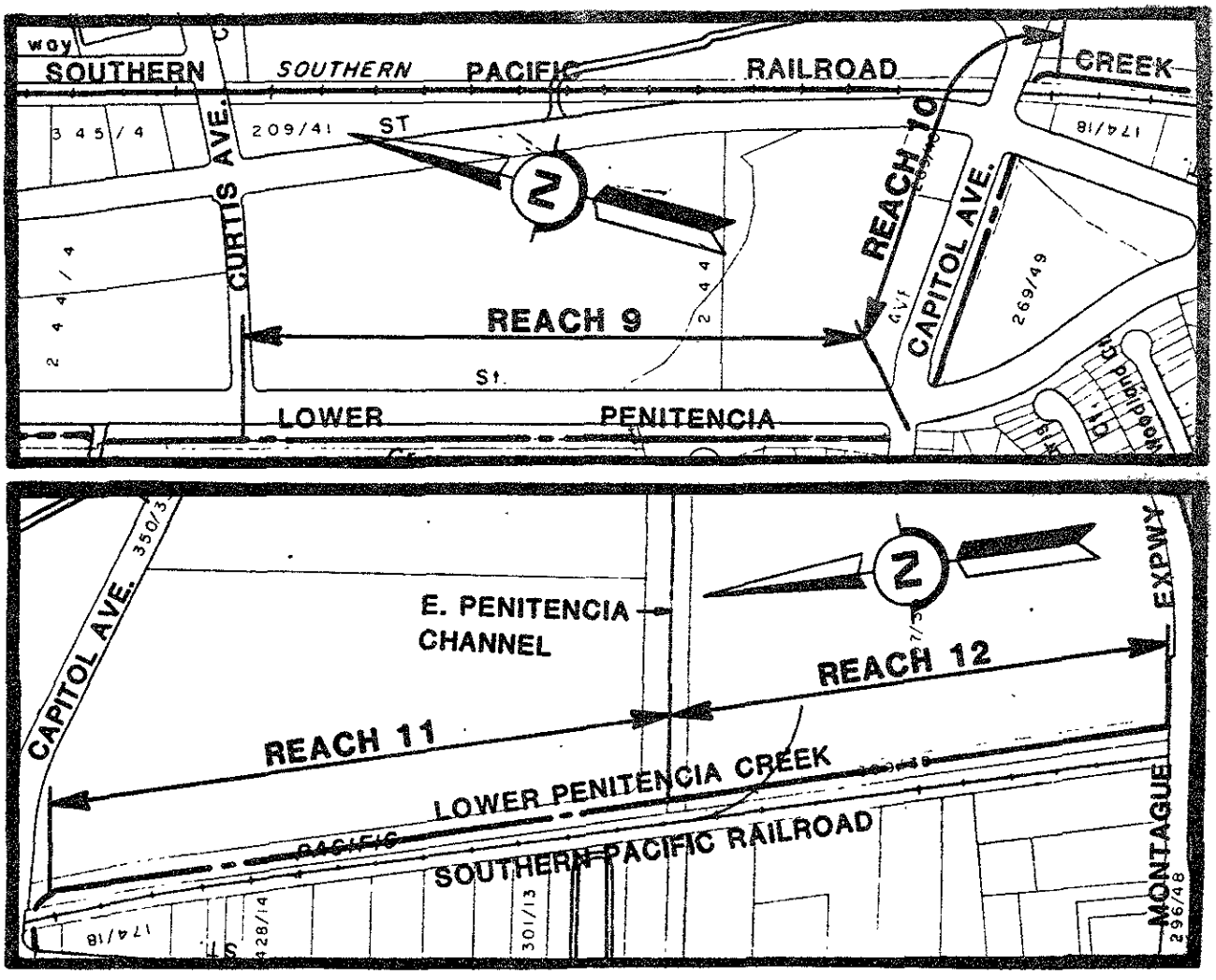
STATION 136+85 TO STATION 152+10

Reach 8

FLOODWALL AND MODIFIED FLOODPLAIN



Q = 1,050 cfs; n = .03; s = .0014



Reaches 9-12

Reach 9 begins at Curtis Avenue and continues upstream to the intersection of Abel Street and Capitol Avenue. Reach 10 stops at the S.P.T.C. railroad tracks. Reach 11 continues up to the confluence with the East Penitencia Channel. The farthest upstream reach of Lower Penitencia Creek is Reach 12. It extends from the confluence with the East Penitencia Channel to Montague Expressway at which point the creek terminates.

The existing channel in these reaches is an excavated earth section. In Reaches 9, 10 and 11 the channel is adequate to carry the one percent flood flows. In Reach 12 an 84-inch RCP is proposed to be added to the existing 84-inch RCP at the SPRR spurline crossing. The cost for the additional culvert is approximately $30,000.

MAINTENANCE PROGRAM GUIDELINES

To ensure the efficient operation of the proposed flood control measures and to continuously evaluate the need for erosion protection and sediment removal, a maintenance program is necessary.

The basic goals of the maintenance program include elimination of hazardous conditions, maintaining hydraulic capacity and, in some measure, preserving riparian habitat.

The general tasks to be performed during the annual maintenance operations would include fence repairs, posting signs, trash removal, elimination of hazardous conditions, etc. These tasks would be done on an "as needed" basis. Specific tasks to be performed are presented below.

Reaches 1 and 2

The top of levees would be maintained free and clear of any growth. The levee slopes facing away from the creek would be maintained as grassy areas. Whenever the average height of growth exceeds 18 inches, the grass and weeds would be mowed to a height of six inches.

Downstream of Highway 17, the levee slope facing the creek would be maintained free of any growth. The widened channel bottom would be undisturbed.

Sediment in the concrete lined section through and immediately upstream of Highway 17 would be removed when deposition reaches an average depth of one foot or greater.

The channel upstream of the concrete lined portion consists of a main channel and a secondary channel. Vegetative growth and sediment would be removed from each channel whenever the growth along the bottom exceeds an average height of six feet. These operations should be performed immediately preceeding the rainy season and would be limited to maintaining only one channel in any given year. The depressed maintenance roads would be maintained free and clear of any growth. Maintenance of the roadbeds, such as repair of potholes, would be performed on an "as needed" basis.

The concrete lined section downstream of the confluence with Berryessa Creek should be maintained in the same manner as the concrete lined section near Highway 17.

Reach 3

The top of levees and the depressed maintenance roads would be maintained free and clear of growth. Removal of vegetative growth from the levee slopes facing the creek and from the channel bottom would be done whenever the growth along the bottom exceeds an average height of six feet.

The levee slopes facing the adjacent residences would be mowed to a height of six inches whenever the growth exceeds an average height of 18 inches.

Reaches 4 and 5

The depressed maintenance roads would be maintained free and clear of growth. Maintenance of the area between the floodwall and adjacent residential yards would be performed on an "as needed" basis. Removal of vegetative growth from the banks and the channel bottom would be done whenever growth along the bottom exceeds an average height of six feet.

Reach 6

The depressed maintenance road would be maintained free and clear of growth Removal of vegetative growth and sediment deposition from channel banks and bottom would be performed whenever average depth of sediment exceeds one foot or average growth exceeds six feet.

The floodwalls would be inspected for damage and/or vandalism. Repair of floodwalls would be on an "as needed" basis.

Potential erosion of the banks is greatest downstream of the Serra Way culverts. Erosion control work would be done whenever erosion becomes serious enough to endanger the stability of the banks or the floodwalls.

Reach 7

The section between Serra Way and Sylvia Avenue is proposed to be concrete lined. When sediment reaches an average depth greater than one foot, it would be removed. When vegetative growth reaches an average height greater than four feet it would be removed. Access ramps are not proposed because of right of way width restrictions. This operation would be conducted over the east floodwall from the right hand lane on Abel Street.

The floodwalls would be inspected for damage and/or vandalism. Repair of floodwalls would be on an "as needed" basis.

Reach 8

The floodwall along the east bank would be inspected for damage and/or vandalism. Repair of floodwall would be on an "as needed" basis.

Vegetative growth would be removed from the channel banks and bottom whenever growth along the bottom exceeds an average height of six feet. This operation would be conducted over the floodwall from the right hand lane on Abel Street.

Erosion control work would be performed whenever erosion becomes serious enough to endanger the stability of the east bank and floodwalls.

The top of the levee would be maintained free and clear of growth. The levee slopes would be mowed to a height of six inches whenever the growth exceeds an average height of 18 inches.

Reaches 9 through 12

Vegetative growth would be removed from the channel banks and bottom whenever growth along the bottom exceeds an average height of four feet.

Erosion control work would be performed whenever erosion becomes serious enough to endanger the stability of the banks or adjacent property.

A 34-inch high pressure gas main crosses Lower Penitencia Creek 60 feet upstream of the confluence with the East Penitencia Channel. The top of the gas main is within one foot of the channel invert.

PROJECT COST, FINANCING, AND STAGING

The total first cost of the proposed project is $5.4 million. This estimate includes all costs for engineering, construction, inspection, administration and overhead. Table 5 summarizes the flood control measures proposed for Lower Penitencia Creek and the estimated cost of those measures.

The proposed flood control measures would be financed through three sources: 1) District East Zone ad valorem tax, 2) benefit assessment, and 3) private developers.

Benefit assessment supplements other available but limited revenues sufficiently to keep the existing flood protection system in a safe and effective condition, to perform maintenance and repair, to provide for needed new flood control construction and in general to provide all flood control services to the public.

The assessments are levied in proportion to benefits received, that is, on the basis of proportionate storm water runoff from each parcel. The assessment per average family residence is uniform countywide ($11.78 per year in 1982).

Current funding limitations prevent construction of all the recommended measures at one time. The highest priority has been given to construction of flood control measures through the more populous areas upstream of Berryessa Creek because of the magnitude and frequency of damage which could result from flooding.

Construction of the proposed flood control measures downstream of the confluence with Berryessa Creek would be required of adjacent property owners as a condition of development. Only the concrete lined section through Highway 17 would be constructed by the District in these reaches.

District costs for constructing the section through Highway 17 and the measures upstream of Berryessa Creek are estimated to be $3.6 million. Routine maintenance of the creek is projected at $43,000 per year.

Table 6 demonstrates that all design and construction of the District's share of the work could be completed by 1985.

TABLE 5

LOWER PENITENCIA CREEK

SUMMARY OF PROPOSED FLOOD CONTROL MEASURES AND ESTIMATED COSTS

REACH NO.	REACH LIMITS	PROPOSED MEASURES[1]	CONSTRUCTION COST	ESTIMATED COSTS (SEPTEMBER 1982) TOTAL FIRST COST[2]	AMORITIZED FIRST COST[3]	OPERATIONS AND MAINTENANCE	ANNUAL COST
1	Coyote Creek to Highway 17	Earth Levees	160,000	190,000	19,000	500	19,500
1	Highway 17	Concrete Channel	160,000	190,000	19,000	500	19,500
1	700-foot Section U/S Highway 17	Concrete Channel	314,000	370,000	37,000	500	37,500
1,2	700-foot U/S Hwy. 17 to 800-feet D/S Berryessa Cr.	Earth Levees	576,000	680,000	69,000	8,000	77,000
2	800-foot Section D/S Berryessa Creek	Concrete Channel	537,000	634,000	64,000	1,000	65,000
3	Berryessa Creek to Redwood Avenue	Earth Levees	384,000	453,000	46,000	5,000	51,000
4	Redwood Avenue to Marylinn Drive	Depressed Access with Floodwalls	785,000	925,000	93,000	6,000	99,000
5	Marylinn Drive to Calaveras Blvd	Depressed Access with Floodwalls	769,000	907,000	91,000	6,000	97,000
6	Calaveras Blvd to Serra Way	Depressed Access with Floodwalls	282,000	333,000	34,000	1,000	35,000

1/ Typical sections can be found under "Detailed Project Description".

2/ Includes engineering, construction, administration, inspection and overhead and will be funded from all sources.

3/ Uniform series factor based on 10 percent discount rate over 50 years.

TABLE 5 (CONTINUED)

REACH NO.	LIMITS	PROPOSED MEASURES	CONSTRUCTION COST	ESTIMATED COSTS (SEPTEMBER 1982) TOTAL FIRST COST	AMORTIZED FIRST COST	OPERATIONS AND MAINTENANCE	ANNUAL COST
7	Serra Way to Sylvia Avenue	Concrete Channel with Floodwalls	393,000	464,000	47,000	1,000	48,000
8	Sylvia Avenue to Curtis Avenue	Floodwalls and Modified Floodplain	228,000	270,000	27,000	3,000	30,000
9	Curtis Avenue to Abel Street and Capitol Avenue Intersection	No Measures Proposed	0	0	0	3,000	3,000
10	Abel Street/ Capitol Avenue Intersection to SPTC R/W	No Measures Proposed	0	0	0	1,000	1,000
11	SPTC R/W to East Penitencia Channel	No Measures Proposed	0	0	0	3,500	3,500
12	East Penitencia Channel to Montague Expressway	RCP at SPRR Spur Crossing	27,000	30,000	3,000	3,000	6,000
	PROJECT TOTAL		4,615,000	5,446,000	549,000	43,000	592,000

TABLE 6

CONSTRUCTION STAGING

Reach	Proposed Measures	Estimated 1982 Total First Cost[1/]	Construction Schedule (Started/Completed)[2/]
1,2	Earth Levees and Concrete Channel	1,874,000	Developer
3	Earth Levees	643,000 [3/]	82/83
4	Depressed Access With Floodwalls	925,000	82/83
5	Depressed Access With Floodwalls	907,000	83/84
6	Depressed Access With Floodwalls	333,000	83/84
7	Concrete Channel with Floodwalls	464,000	83/84
8	Floodwalls and Modified Floodplain	270,000	83/84
9-12	Miscellaneous	30,000	83/84

1/ Includes construction, engineering, administration, inspection and overhead and would be funded from all sources.

2/ Assumes a 1982-83 benefit assessment zone revenue of $1,491,461.

The Benefit Assessment basic unit rate begins at $11.78 in 1982-83 and increases thereafter at 3.8% (includes 2% fixed rate and 1.8% for estimated conversion in land use).

3/ Includes cost of concrete channel through Highway 17.

CONCLUSIONS AND RECOMMENDATIONS

The area bounded by Highway 17, Lower Penitencia Creek and Calaveras Boulevard is subject to flooding from Coyote Creek, Upper Penitencia Creek, Lower Penitencia Creek and Berryessa Creek. Floodwaters would subject over 900 homes to as much as three feet of water.

The most frequent flooding comes from Lower Penitencia Creek. Downstream of the confluence with Berryessa Creek the existing flow carrying capacity is about 1,750 cfs. This capacity is considerably less than the one percent design flow of 6,700 cfs. Overbanking has occurred in these reaches and at points near Redwood Avenue as recently as February 1980 and March 1982. Lower Penitencia Creek could flood approximately 700 homes and cause almost $14.0 million damage during the one percent event.

Providing flood protection from Lower Penitencia Creek is the first step toward an areawide solution to the flooding problem. Protective works are also scheduled for Berryessa Creek as a Corps of Engineers 205 Project. Upper Penitencia Creek is the next highest priority in the East Zone and will be studied as soon as the Lower Penitencia Creek planning process is completed.

At a public meeting members of the community expressed the need for a program to provide flood protection. Weighing the potential for flooding, the desires of the public, the beneficial and adverse effects identified in this report, and the critical role that the Lower Penitencia Creek project has in providing an areawide solution to the flooding problem, it is concluded that flood protection should be provided to this area.

It is recommended that the measures proposed in this report beginning at Page 25 be approved and construction plans be prepared for implementation of the project.

Project Approval:

George Korbay

George Korbay, RCE No. 13462
Flood Control Manager

APPENDIX A

NEGATIVE DECLARATION

Project: Lower Penitencia Creek Flood Control Project, East Flood Control Zone.

Location: Confluence with Coyote Creek to Montague Expressway, City of Milpitas.

Purpose: The proposed project, in conjunction with future flood control measures on nearby creeks, would eventually protect the Lower Penitencia Creek floodplain from a 1% flood. Upon completion of this project, the surrounding community would be protected from the more frequent floods.

Description of Project: The flood control modifications consist of levee and floodwall construction, channel and culvert enlargement, and lining portions of the channel with concrete. The Planning Study Report describes these measures in detail.

Findings: Based on an Initial Study pursuant to Section 15080 of the State CEQA Guidelines, staff has determined that the proposed project would not have a substantial adverse (significant) effect on the environment; consequently, a Negative Declaration is appropriate.

Basis of Findings: Most of the adverse impacts would result from construction activities and are, therefore, temporary. These include generation of high noise levels, dust and exhaust emissions, short term increases in the rate of channel bank erosion, and minor traffic disruption.

Vegetation removed by the proposed project would reestablish rapidly except where the channel is lined with concrete. The maintenance program would continue to periodically remove vegetation and sediment to prevent reduction in the capacity of the channel, except downstream of Highway 17, where the enlarged earth channel would support a marsh plant community and compensate for the loss of vegetation in the concrete-lined sections. Wildlife dislocated during construction and subsequent channel clearing, would repopulate the channel commensurate with reestablishment of vegetation; however, the channel is limited in its ability to support wildlife due to frequent maintenance.

Mitigation measures included in the project are described in the Initial Study.

INITIAL STUDY

INTRODUCTION

Biotic field assessments of twelve reaches (approximately 4 miles) along Lower Penitencia Creek were conducted in July 1981 by the firm of Harvey & Stanley Associates, Ecological Consultants. The following evaluation of vegetation and wildlife values which have developed along this flood control channel are based on on-site identification and observations of plant and wildlife species during the month of July only. Maintenance clearing of vegetation and silt during the Fall of 1982 removed extensive amounts of vegetation within the channel. Most of the emergent vegetation and weedy species have reestablished as of the summer of 1982.

EXISTING BIOTIC CONDITIONS

Lower Penitencia Creek is a constructed flood control channel which has become revegetated naturally during intervening years. The present habitat is divided into three zones: water's edge, stream bank and the levee (includes top and outside slope). The most natural and generally native growth is found along the water's edge while weedy plants grow principally along the levee and upper stream bank.

The most verdant growth is present in Reaches 1 and 2, probably enhanced by the intertidal movement of brackish water with nutrients from the nearby salt marsh area. The greatest plant diversity is found in the Reaches 4 through 7 owing to the higher introduction of weedy and horticultural species available from adjoining residential and commercial areas. Reach 10 exhibits the least diversity. Seedling trees can be found throughout the waterway, but very infrequently. The most notable are a California valley oak (Quercus lobata) in Reach 4, a few Fremont's cottonwoods (Populus fremontii) in Reaches 2, 4, 5 and 9, and an occasional willow (Salix sp.) in Reaches 2, 7 and 12.

Streamside vegetation along Lower Penitencia Creek is extremely important for wildife as escape or protective cover, perch or roost sites, denning or nesting areas, and for food. Dense groundcover offers cool, moist shelter for amphibians such as the California slender salamander. Audubon cottontails find escape or protective cover in

the thickets bordering the creek. The ornate shrew, mice, beechey ground squirrels, botta pocket gophers, and broad-handed moles are common and widespread amongst the creek's protective vegetation. Long-tailed weasels pursue these smaller animals as prey. Introduced murine rodents such as the house mouse, black rat, and Norway rat are usually found associated with human activity along those portions of the creek subjected to urbanization. The groundcover, streamside vegetation, aquatic and emergent plants offer a variety of spatial niches for many species of birds. Common nesting birds include mourning doves, American robins, and song sparrows. Red-winged blackbirds and common gallinules depend solely on this habitat for survival and rearing young. A few swallow species and black phoebes sometimes attach their mud nests to the structural supports of road overpasses. Cattails and rushes provide cover and nesting habitat for animals such as common garter snakes, western pond turtles, western harvest mice, muskrats, pied-billed grebes, green-herons, black-crowned night herons, long-billed marsh wrens, common snipes, common gallinules, soras, Virginia rails, and song sparrows. Riparian vegetation also serves to protect wildlife that come to the creek to drink water.

In addition to providing cover, perches and nesting or denning sites, some streamside plants provide food for many animals. Various birds and mammals are attracted to berry-producing plants. Insectivorous birds forage amongst willows and berry thickets by day while bats pursue flying insects overhead at night. Muskrats feed primarily on the shoots and bulbs of cattails and aquatic vegetation. Non-native fruit, nut and ornamental trees provide further support for various wildlife species.

Lower Penitencia Creek is an important region of biological significance in this urbanized area. The entire creek acts as a wildlife migration corridor, providing habitat for raccoons and opossum. Resident belted kingfishers and snowy egrets are closely associated with the creek as they forage for small fish along its course. The native California roach, introduced goldfish, carp, mosquito fish, and green sunfish are common aquatic inhabitants. Muskrats use the waterway for their life activities. In the spring, Pacific treefrogs and western toads leave their terrestrial habitats and return to the

quiet waters or pools for breeding. Competition with introduced bullfrogs may be limiting the native frogs population numbers. Common garter snakes pursue small fish, tadpoles, and mice for food along the creek. Birds, mammals, and other animals use regular watering areas along the creek. Waterfowl, marsh birds, and shorebirds are common on the wider portions of the creek. The most significant concentrations of animals can be found around those places where water persists for a long period of time.

BIOTIC SURVEY

Twelve reaches along Lower Penitencia Creek (Figure 2) were surveyed on a reach by reach basis. The surveys extended from the confluence of Coyote Creek on the north to Montague Expressway on the south.

Biotic resources, both flora and fauna, were assessed. The intent of this survey was to record the dominant plant and animal species present along each reach. In addition, wildlife species expected at other times of the year (e.g. winter waterfowl) are also included in the species list. No attempt has been made to determine the relative abundance of each species nor does this represent a complete record of all species which occur along each reach. Checklists of plant and animal species identified are included in the appendices of this report.*

Lower Penitencia Creek is relatively homogeneous with respect to plant and animal life. Diversity of species along this channelized waterway is not as great as would be found along a more natural stream course in the county. Due to this lack of diversity, many of the reaches may be described together.

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* Available for review at the District office

FLORA

Reaches 1 and 2

Reaches 1 and 2 are characterized by lush growth mainly cattails (Typha spp.) and California bulrushes (Scirpus californicus) at the stream's edge while banks and levees have a cover of saltgrass (Distichlis spicata var. stolonifera), alkali mallow (Sida leprosa var. hederacea) and introduced weeds such as giant reed (Arundo donax).

Reaches 3 and 4

Reaches 3 and 4 are for the most part in residential areas and a chain link fence restricts human intrusion. Bank and stream edge growth in general is lush and the levees are fairly well covered with weeds and escaped exotics such as English ivy (Hedera helix), ice plant (Mesembryanthemum sp.), cactus (Opuntia sp.) and euphorbia (Euphorbia sp.).

Reach 5

Along Reach 5 the waterway is open and a good cover of plants predominates at water's edge and bank. The invasive weed giant reed can be found in the northwest portion of this Reach. Further exotics of note on the levees are: almond seedlings (Prunus amydalus), century plant (Agave americana), eucalyptus seedlings (Eucalyptus sp.), iris (Iris sp.), English ivy, Himalaya berry (Rubus procerus) and firethorn (Pyracantha sp.).

Reach 6

Reach 6 is a short reach through a commercial section of Milpitas. Cattails are dominant along the water's edge; the banks are well covered with various species while English ivy covers much of the west levee area extending from adjoining landscaped projects.

Reach 7

Reach 7 is bounded on the west by commercial and residential areas; the east side is bounded by Abel Street. Little or no west levee exists in this area as the fence line is located at the top of the bank. From Junipero Drive to Sylvia Avenue no eastern levee exists, only banks and stream. Through the commercial area, the east banks of the stream are for the most part devoid of vegetation. The west bank is covered mainly by horticultural plants such as pampas grass (Cortaderia selloana). Streamside aquatic vegetation, California bulrushes and cattails prevail.

Reach 8

Along Reach 8, Abel Street parallels the east levee; the westside is adjacent to agricultural land. A few pine (Pinus sp.) trees have been planted on the west levee but are dead or dying due most likely to a lack of water. The channel in this Reach is more open with cattails and bulrushes mainly on the west edge of the stream. The east levee and high bank are quite bare. The west bank is well covered as is the lower east bank.

Reach 9

Abel Street parallels the east levee along Reach 9 while the west levee parallels the Elmwood Rehabilitation Center. The cattails are still abundant in this Reach, but shorter. The bulrushes are also fewer, this being the last reach in which they appear. Along the Elmwood Rehabilitation Center, the levee has been landscaped. Elm seedlings (Ulmus sp.) are growing on the west levee. The east levee and upper bank are barren of vegetation.

Reach 10

Capitol Avenue borders the north side of the creek while agricultural land parallels the south side in Reach 10. This is the shortest and driest stretch of the surveyed creek. Growth at the water's edge is much lower; many of the cattail clumps have no blossoms. There is good cover on the banks but it is dry and dead.

Reach 11

In Reach 11, agricultural land borders the east side of the creek, while the railroad and its right of way parallels the west. Compared with Reach 10, this Reach is quite lush. There is good cover both at the water's edge and on the banks with cattail and coyote brush (Baccaharis pilularis var. consanguinea) predominating. Only the levee areas are sparse to barren in plant cover. The alkali mallow (Sida leprosa var. hederacea) is again seen on the levees, having been missing in Reaches 9 and 10.

Reach 12

The east side of Reach 12 is bordered by a storage area, the Southern Pacific railroad borders the west side. Although this reach is more open than Reach 11 due to a decrease of the coyote brush, the northern half is overgrown with white sweet clover (Malilotus albus). In the southern half, cattail is again dominant. Good cover exists along the banks; the levees are a bit sparse. Saltgrass and alkali mallow are joined by the first appearance of poison oak (Toxicodendron diversiloba).

FAUNA

Most wildlife species present are found along the entire stream course surveyed and are not restricted to particular reaches of the creek. However, the creek may be divided into three somewhat distinct faunal regions.

Reaches 1 to 5

Reaches 1 through 5 are unique due to the predominance of emergent vegetation. Dense concentrations of rushes, cattails, and aquatic vegetation provide salient conditions for waterfowl, shorebirds and marsh birds. The common gallinule, red-winged blackbird, sora, black-crowned night heron, pied-billed grebe, long-billed marsh wren, and song sparrow are more common along these reaches where they nest and forage for food. Similarly, muskrat, pond turtle, and the long-tailed weasel prefer the dense vegetation. Greater numbers and diversity of native fishes are found from Reaches 1 to 5. Aquatic conditions are favorable enough for some fish to move up Lower Penitencia

Creek from its confluence with Coyote Creek. The golf course and adjacent fields along Reaches 1 and 2 provide foraging habitat for gophers, beechey ground squirrels, meadow mice, gopher snakes and black-tailed hares.

Reaches 6 to 10

Reaches 6 through 10 have been subjected to extreme habitat alteration from human activities, debris, litter, and water quality degradation. Only fish that are tolerant of low quality water such as mosquito fish, goldfish and carp are found upstream from Reach 6. Similarly birds and mammals that are tolerant of urbanization and limited or altered habitat utilize this portion of the creek. Wildlife found along Reaches 6-10 include the house mouse, black rat, Norway rat, feral domestic dog, feral house cat, Brewer's blackbird, house sparrow, American robin and rock dove.

Reaches 11 and 12

Reaches 11 through 12 are distinct from the other portions of the creek due partially to the adjacent fields along Reach 11. Industrial yards along Reach 12 probably limit the amount of trespass that is more prevalent in residential areas. Black-tailed hares, meadow mice, gophers, song birds and snowy egrets forage in the fields near the creek's protective cover.

SURVEY OF SPECIES OF SPECIAL CONCERN

Historical records and mapping show the location of hairless allocarya (Plagiobothrys glaber) in the area adjacent to Reach 1. The California Native Plant Society lists this California endemic species are rare and endangered. Special attention focused on this species during the survey of Reach 1. No evidence for this particular plant was found.

ENVIRONMENTAL IMPACT ASSESSMENT CHECKLIST

Explanations of all "Yes" and "Maybe" answers are required on attached sheets. If impact occurs during construction or is temporary, indicate with a "C" or "T" under Yes or Maybe.

	Yes	Maybe	No
1. Geology and Soils. Will the project result in:			
a. An increased hazard to the public resulting from geologic features of the site (landslide-prone areas, faults, slumping, etc.)?	___	___	X
b. Serious disruptions, displacements, compaction, or impervious covering of the soil?	X	___	___
c. Introduction of toxic materials in the soil or reduction of soil fertility?	___	___	X
d. Significant change in topography or ground surface relief features?	___	___	X
e. The destruction, covering or modification of any unique geologic or physical features?	___	___	X
f. Any substantial increase in wind or water erosion of soils, either on or off the site?	___	T	___
g. Changes in siltation, sediment transport, deposition or erosion which may modify a river, stream, or other body of water?	___	___	X
2. Air. Will the project result in:			
a. Generation of air emissions (such as dust) that will seriously deteriorate air quality standards (either locally or regionally)?	___	C	___
b. The creation of objectionable odors?	___	___	X
c. Major alteration of air movement, moisture or temperature, or any change in climate, either locally or regionally?	___	___	X

	Yes	Maybe	No
3. Water. Will the project result in:			
a. Changes in currents, or the course or direction of water movements?	___	___	X
b. Changes in infiltration rates, sedimentation, drainage patterns, or the rate and amount of surface water runoff?	___	___	X
c. Alterations in the course or flow of floodwaters?	X	___	___
d. An increase in downstream flood potential that might cause property damage?	___	___	X
e. Change in the amount of surface water in any body of water?	___	___	X
f. Contamination or any detrimental effect on existing water quality or quantities of either surface or sub-surface supplies?	___	___	X
g. Change in the quantity of groundwaters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations?	___	___	X
h. Reduction in the amount of water otherwise available for public water supplies?	___	___	X
4. Noise. Will the project increase existing noise levels during construction or operations to the extent that existing or future residents would be annoyed?	C	___	___
5. Plant Life. Will the project result in:			
a. Change in the diversity of species, or numbers of any species of plants (including trees, shrubs, grasses, microflora, and aquatic plants)?	X	___	___
b. Reduction of the numbers of any unique, rare or endangered species of plants?	___	___	X
c. Introduction of new plant species into an area, or a barrier to the normal replenishment of existing species?	X	___	___

	Yes	Maybe	No
6. Animal Life. Will the project result in:			
a. Changes in the diversity of species, or numbers of any species of animals (birds, land animals, including reptiles, fish and shellfish, benthic organisms, insects or microfauna)?	___	x	___
b. Loss or disturbance of a nesting area for resident or migrating birds?	x	___	___
c. Reduction of the numbers of any unique, rare or endangered species of animal?	___	___	x
d. Introduction of new species of animal into an area, or result in a barrier to the migration or movement of animals (or fish)?	___	___	x
e. Deterioration of existing fish or wildlife habitat?	___	___	x
7. Land Use/Community Plans and Values. Will the project result in:			
a. Alteration or nonconformance with regional, federal, state or local land use plans and policies of the surrounding area?	___	___	x
b. Conflict or inconsistency with adopted policies, plans and goals of the community where the project is located?	___	___	x
c. Deterioration of the integrity or quality of the surrounding neighborhood? Loss of privacy or security to residents over the long term?	___	___	x
d. Generation of a substantial public controversy resulting from environmental concerns?	___	___	x

	Yes	Maybe	No
8. Economic. Will the project:			
a. Foster economic or population growth, either directly or indirectly, in the surrounding area (particularly if faster than planned for)?	___	___	X
b. Remove a major constraint or obstacle to growth?	___	___	X
c. Decrease employment in the community?	___	___	X
d. Reduce acreage or yield of an agricultural crop?	___	___	X
9. Population. Will the location, distribution, character, or density of the surrounding human population be altered by the project?	___	___	X
10. Housing. Will the project adversely affect existing housing or result in the relocation of existing housing?	___	___	X
11. Transportation/Circulation. Will the project result in:			
a. An adverse impact upon existing transportation systems?	___	___	X
b. Reduction in existing parking facilities, or create demand for new parking?	___	___	X
c. Alterations to present patterns of circulation or movement of people and/or goods?	___	___	X
d. Increase in traffic hazards to motor vehicles, bicyclists, or pedestrians?	___	C	___
12. Public Services. Will the project result in a need for new or altered governmental services in any of the following areas:			
a. Fire or police protection?	___	___	X
b. Schools?	___	___	X
c. Parks or other recreational facilities?	___	___	X

	Yes	Maybe	No
d. Maintenance of public facilities (streets, highways, public transit, etc.)?	___	___	X
e. Flood Protection?	X	___	___
f. Other governmental services?	___	___	X
13. Utilities. Will the project result in a need for new systems, or alterations to the following utilities:			
a. Power or natural gas?	___	___	X
b. Communications systems?	___	___	X
c. Water?	___	___	X
d. Sewers or septic tanks?	___	___	X
e. Storm water drainage?	X	___	___
f. Solid waste disposal?	___	___	X
14. Energy. Will the project result in:			
a. Use of substantial amounts of fuel or energy?	___	___	X
b. Substantial demand upon existing sources of energy, or require the development of new sources of energy?	___	___	X
15. Public and Environmental Health. Will the project result in:			
a. Creation of any known human health hazard or potential health hazard (excluding mental health but including physical injury)?	___	___	X
b. Involve the application, use, or disposal of toxic or hazardous materials?	___	___	X
16. Aesthetics. Will the project result in the obstruction or elimination or any scenic vista or view open to the public, or will the project result in the creation of an aesthetically offensive site or structure presently or potentially open to public view?	___	___	X

	Yes	Maybe	No
17. Recreation. Will the project result in an impact upon the quality or quantity of existing recreational opportunities (such as fishing, boating, hiking, horseback riding, bicycling)?	___	___	x
18. Archeological/Historical. Will the project result in an alteration of a significant known archeological or historical site, structure, object or building? Is the project in a known archeologically sensitive area?	___	___	x
19. Natural Resources. Will the project substantially increase the consumption of an non-renewable natural resource such as minerals, precious metals, prime agricultural land, natural gas, oil, etc.?	___	___	x
20. Mandatory Findings of Significance.			
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	___	___	x
b. Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals? (A short-term impact on the environment is one which occurs in a relatively brief, definitive period of time while long-term impacts will endure well into the future.)	___	___	x
c. Does the project have impacts which are individually limited, but cumulatively considerable? (A project may impact on two or more separate resources where the impact on each resource is relatively small, but where the effect of the total of those impacts on the environment is significant.)	___	___	x

	Yes	Maybe	No
d. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	___	___	X

DETERMINATION

On the basis of this Initial Study:

[X] I find the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

[ ] I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described on an attached sheet have been added to the project.

[ ] I find the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

Dr. Bernard H. Goldner
Prepared by

Environmental Specialist
Title

Date: September 17, 1982

1b. Channel excavation will disrupt soil, construction of levees will result in compacted soil and lining portions of the channel with concrete will cover soil with impervious material.

1f. Increased rates of erosion are probable where soil is disturbed until these areas revegetate or otherwise stabilize. Lining portions of the channel with concrete and slope protection measures will reduce channel bank erosion over the long-term. Water quality in lower Penitencia Creek could be affected adversely by turbidity and sediment transport during-construction if adequate mitigations are not taken by the construction contractor.

2a. Air quality may deteriorate in localized areas during periods of construction due to generation of dust and exhaust emissions.

3c. Flooding will be reduced but not eliminated in the Lower Penitencia Creek floodplain. Floodwaters from Berryessa Creek, Coyote Creek and Upper Penitencia Creek presently comingle in the Lower Penitencia Creek floodplain.

4. During channel construction, high noise levels are likely to disturb residents located within 400 feet of the channel.

5a, c. Lower Penitencia Creek is a structural flood control channel that has been regularly maintained over the past six years to remove vegetative growth in the channel bottom, along the side slopes, and on the top of banks. Accumulated sediment together with emergent vegetation was removed from the channel as recently as the Fall of 1981. The regularity of the maintenance program accounts for the low abundance and diversity of vegetation in the channel. After project completion, the maintenance program will continue to remove silt and vegetation to restore hydraulic capacity according to criteria described in the Planning Study Report. In general, vegetative growth will not be permitted to exceed a certain height depending upon the type and location of vegetation before removal is required. The rate of sediment deposition will determine the frequency of its removal.

The only reach where emergent vegetation will not be cleared (at least until a flood control project is constructed for Coyote Creek) is in the reach between Coyote Creek and Highway 17. Enlarging the channel will result in a channel bottom area of 1.2 acres, as compared to the existing area of 0.4 acres. The channel will continue to support an emergent marsh plant community dominated by cattails and bulrushes. The enlarged channel will compensate in part for the areas of channel that will be concrete-lined.

During periods between maintenance clearing, the earth channel reaches will reestablish rapidly with emergent marsh vegetation and weedy species providing a limited amount of wildlife habitat. In the concrete-lined reaches, natural reestablishment will be prevented except where bottom sediment supports vegetation, although concrete will be used in a small proportion of the total channel work.

6 a, b. During construction of the channel wildlife dependent upon the creek will be displaced or, in some case, destroyed outright by construction activities, depending on their mobility. Birds, except those that are nesting, should be able to relocate to similar nearby stream habitats. Most mammals, amphibians and reptiles should be able to escape, although some borrowing species may be destroyed.

Whether the relocated wildlife survive in their new habitats depends upon the biological carrying capacity of these areas. If animal populations are already at carrying capacity, they would be unable to compete successfully and their survival would only be temporary.

As vegetation reestablishes in the channel, wildlife will return but, as in the past, maintenance clearing will periodically disrupt and displace a portion of the wildlife population. Because of these maintenance practices, the creek is not now, nor will it in the future, provide a great deal of habitat for wildlife. The creek can best be regarded as a flood control channel of incidental value to wildlife.

8 a, b. The project by itself will not completely remove the flood threat from the floodplain, only reduce the frequency of flooding. Flooding has not been perceived as an impediment to development in the floodplain. The proposed Cadillac-Fairview Business Park is funding a portion of the flood control project in order to receive approval from the City of Milpitas.

18. An archival search and archeological field reconnaissance was conducted by Mr. Miley Holman in 1973. The survey did not reveal any prehistoric or historic sites within the right of way of the project. A recorded prehistoric site exists on the grounds of the Elmwood Rehabilitation Center, however, a review by Dr. Robert Cartier determined that it was well outside the construction zone of the proposed flood control project.

MITIGATION MEASURES

1. Construction related impacts would be mitigated to the extent possible by imposing strict conditions on the contractor performing the work as regards adherence to local noise standards and ordinances, dust suppression, traffic control, avoidance of water pollution, site maintenance and cleanup procedures, vegetation removal, and public safety.

2. Should archeological artifacts be discovered during construction, work would be halted to avoid disturbing the site further, and an archeologist consulted to determine an appropriate course of action.

APPENDIX B

COST SUMMARY OF ALTERNATIVES

CHANNEL MODIFICATION

REACH 1
Station 0+00 - Station 5+50

EARTH LEVEES

Q 1% = 7,000 cfs; Existing Capacity = 1,750 cfs; Length = 550 feet

ITEM	QUANTITY	UNIT COST ($)	COSTS ($)
Clearing and Grubbing			
Inside channel	1.0 Acres	2,500/Acre	2,500
Outside channel	2.0 Acres	1,000/Acre	2,000
Earthwork	12,300 CY	5.00/CY	61,500
Concrete Lining	250 CY	180/CY	45,000
Rock Lining	200 CY	40/CY	8,000
6" Class III Agg. Base	325 CY	20/CY	6,500
Slope Seeding	0.25 Acres	2,000/Acre	500
Fencing	1,000 LF	10/LF	10,000
Relocate 8" Fuel Line	50 LF	60/LF	3,000
		Subtotal	139,000
		Mobilization (5%)	7,000
		10% Construction Contingencies	14,000
		Total Construction Cost	$160,000
		Engineering Design, Administration and Overhead (18%)	30,000
		Total Cost	$190,000

CHANNEL MODIFICATION

REACH 1
Station 5+50 - Station 7+20

CONCRETE CHANNEL

Q 1% = 7,000 cfs; Existing Capacity = 1,750 cfs; Length = 170 feet

ITEM	QUANTITY	UNIT COST ($)	COSTS ($)
Clearing and Grubbing (costs included in earthwork)			
Earthwork	1,000 CY	10/CY	10,000
Concrete Lining	270 CY	200/CY	54,000
Parapets		L.S	70,000
		Subtotal	134,000
		Mobilization (10%)	13,000
		10% Construction Contingencies	13,000
		Total Construction Cost	$160,000
		Engineering Design, Administration and Overhead (18%)	30,000
		Total Cost	$190,000

CHANNEL MODIFICATION

REACH 1
Station 7+20 - Station 13+80

CONCRETE CHANNEL

Q 1% = 7,000 cfs; Existing Capacity = 1,750 cfs; Length = 660 feet

ITEM	QUANTITY	UNIT COST ($)	COSTS ($)
Clearing and Grubbing			
Inside channel	1.0 Acres	2,500/Acre	2,500
Outside channel	1.0 Acres	1,000/Acre	1,000
Earthwork	5,000 CY	5.00/CY	25,000
Concrete Lining	1,220 CY	180/CY	220,000
Rock Lining	100 CY	40/CY	4,000
6" Class III Agg. Base	400 CY	20/CY	8,000
Slope Seeding	0.25 Acres	2,000/Acre	500
Fencing	1,200 LF	10/LF	12,000
		Subtotal	273,000
		Mobilization (5%)	14,000
		10% Construction Contingencies	27,000
		Total Construction Cost	$314,000
		Engineering Design, Administration and Overhead (18%)	56,000
		Total Cost	$370,000

CHANNEL MODIFICATION

REACHES 1 & 2
Station 13+80 - Station 38+40

EARTH LEVEES

Q 1% = 7,000/6,700 cfs; Existing Capacity = 1,850 cfs; Length = 2,460 feet

ITEM	QUANTITY	UNIT COST ($)	COSTS ($)
Clearing and Grubbing	10 Acres	1,000/Acre	10,000
Earthwork	40,000 CY	7.00/CY	280,000
PG&E Tower Modifications		L.S.	70,000
6" Class III Agg. Base	1,100 CY	20/CY	22,000
12" Armoring Agg.	3,280 CY	20/CY	65,000
Slope Seeding	2.0 Acres	L.S.	4,000
Fencing	5,000 LF	10/LF	50,000
		Subtotal	501,000
		Mobilization (5%)	25,000
		10% Construction Contingencies	50,000
		Total Construction Cost	$576,000
		Engineering Design, Administration and Overhead (18%)	104,000
		Total Cost	$680,000

CHANNEL MODIFICATION

REACH 2
Station 38+40 - Station 46+80

CONCRETE CHANNEL

Q 1% = 6,700 cfs; Existing Capacity = 1,750 cfs; Length = 840 feet

ITEM	QUANTITY	UNIT COST ($)	COSTS ($)
Clearing and Grubbing			
Inside channel	1.4 Acres	2,500/Acre	3,500
Outside channel	2.0 Acres	1,000/Acre	2,000
Earthwork	9,785 CY	7.00/CY	68,500
Concrete Lining	2,000 CY	180/CY	360,000
Rock Lining	200 CY	40/CY	8,000
6" Class III Agg. Base	450 CY	20/CY	9,000
Slope Seeding	0.5 Acres	2,000/Acre	1,000
Fencing	1,500 LF	10/LF	15,000
		Subtotal	467,000
		Mobilization (5%)	23,000
		10% Construction Contingencies	47,000
		Total Construction Cost	$537,000
		Engineering Design, Administration and Overhead (18%)	97,000
		Total Cost	$634,000

CHANNEL MODIFICATION

REACH 3
Station 46+80 - Station 66+50

EARTH LEVEES

Q 1% = 1,200 cfs; Existing Capacity = 1,100 cfs; Length = 1,970 feet

ITEM	QUANTITY	UNIT COST ($)	COSTS ($)
Clearing and Grubbing			
Inside channel	3.0 Acres	2,500/Acre	7,500
Outside channel	3.0 Acres	1,000/Acre	3,000
Earthwork	26,000 CY	7.00/CY	182,000
Replace Curtner Park Bridge		L.S.	50,000
Rock Lining	800 CY	40/CY	32,000
Structural Concrete	63 CY	400/CY	25,000
6" Class III Agg. Base	725 CY	20/CY	14,500
12" Armoring Agg.	900 CY	20/CY	18,000
Slope Seeding	1.0 Acre	2,000/Acre	2,000
		Subtotal	334,000
		Mobilization (5%)	17,000
		10% Construction Contingencies	33,000
		Total Construction Cost	$384,000
		Engineering Design, Administration and Overhead (18%)	69,000
		Total Cost	$453,000

CHANNEL MODIFICATION

REACH 4
Station 66+50 - Station 88+80

DEPRESSED ACCESS WITH FLOODWALLS

Q 1% = 1,200 cfs; Existing Capacity = 800 cfs; Length = 2,230 feet

ITEM	QUANTITY	UNIT COST ($)	COSTS ($)
Clearing and Grubbing			
Inside channel	2.25 Acres	2,500/Acre	6,000
Outside channel	2.00 Acres	1,000/Acre	2,000
Earthwork (exc. & export)	3,600 CY	5.00/CY	18,000
Concrete Lining	50 CY	180/CY	9,000
Rock Lining	1,100 CY	40/CY	44,000
Structural Concrete	1,275 CY	400/CY	510,000
12" Armoring Agg.	2,700 CY	20/CY	54,000
Replace Redwood Ave. Footbridge		L.S.	40,000
		Subtotal	683,000
		Mobilization (5%)	34,000
		10% Construction Contingencies	68,000
		Total Construction Cost	$785,000
		Engineering Design, Administration and Overhead (18%)	140,000
		Total Cost	$925,000

CHANNEL MODIFICATION

REACH 5
Station 88+80 - Station 111+74

DEPRESSED ACCESS WITH FLOODWALLS

Q 1% = 1,200 cfs; Existing Capacity = 800 cfs; Length = 2,294 feet

ITEM	QUANTITY	UNIT COST ($)	COSTS ($)
Clearing and Grubbing			
Inside channel	2.25 Acres	2,500/Acre	6,000
Outside channel	2.00 Acres	1,000/Acre	2,000
Earthwork (exc. & export)	4,000 CY	5.00/CY	20,000
Concrete Lining	100 CY	180/CY	18,000
Rock Lining	20 CY	50/CY	1,000
Structural Concrete	1,375 CY	400/CY	550,000
12" Armoring Agg.	3,000 CY	20/CY	60,000
Fencing	1,200 LF	10/LF	12,000
		Subtotal	669,000
		Mobilization (5%)	33,000
		10% Construction Contingencies	67,000
		Total Construction Cost	$769,000
		Engineering Design, Administration and Overhead (18%)	138,000
		Total Cost	$907,000

CHANNEL MODIFICATION

REACH 6
Station 111+74 - Station 120+38

DEPRESSED ACCESS WITH FLOODWALLS

Q 1% = 1,050 cfs; Existing Capacity = 800 cfs; Length = 864 feet

ITEM	QUANTITY	UNIT COST ($)	COSTS ($)
Clearing and Grubbing	1.0 Acre	3,000/Acre	3,000
Earthwork (exc. & export)	715 CY	7.00/CY	5,000
Concrete Lining	45 CY	180/CY	8,000
Structural Concrete	560 CY	400/CY	224,000
6" Class III Agg. Base	250 CY	20/CY	5,000
		Subtotal	245,000
		Mobilization (5%)	12,000
		10% Construction Contingencies	25,000
		Total Construction Cost	$282,000
		Engineering Design, Administration and Overhead (18%)	51,000
		Total Cost	$333,000

CHANNEL MODIFICATION

REACH 7
Station 120+38 - Station 135+43

FLOODWALLS

Q 1% = 1,050 cfs; Existing Capacity = 800 cfs; Length = 1,505 feet

ITEM	QUANTITY	UNIT COST ($)	COSTS ($)
Clearing and Grubbing	1.33 Acres	3,000/Acre	4,000
Structural Concrete	150 CY	400/CY	60,000
Earthwork			
Bank Restoration	1,200 CY	15/CY	18,000
Excavation	1,000 CY	5.00/CY	5,000
Masonry Wall	7,400 SF	7.00/SF	52,000
Concrete Lining	1,022 CY	180/CY	184,000
Pavement Restoration	2,400 SF	5.00/SF	12,000
Fence Relocation	1,200 LF	6.00/LF	7,000
		Subtotal	342,000
		Mobilization (5%)	17,000
		10% Construction Contingencies	34,000
		Total Construction Cost	$393,000
		Engineering Design, Administration and Overhead (18%)	71,000
		Total Cost	$464,000

CHANNEL MODIFICATION

REACH 8
Station 135+43 - Station 156+10

FLOODWALLS AND MODIFIED FLOODPLAIN

Q 1% = 1,050 cfs; Existing Capacity = 800 cfs; Length = 2,067 feet

ITEM	QUANTITY	UNIT COST ($)	COSTS ($)
Clearing and Grubbing			
Inside channel	0.50 Acres	3,000/Acre	1,500
Outside channel	1.50 Acres	1,000/Acre	1,500
Concrete Lining	65 CY	180/CY	12,000
Structural Concrete	320 CY	400/CY	128,000
Masonry Wall	430 SF	7.00/SF	3,000
Earthwork	5,150 CY	7.00 CY	36,000
Sacked Riprap	40 SY	100/SY	4,000
Slope Seeding	1.50 Acres	2,000/Acre	3,000
Fence Relocation	1,500 L.F.	6.00/L.F.	9,000
		Subtotal	198,000
		Mobilization (5%)	10,000
		10% Construction Contingencies	20,000
		Total Construction Cost	$228,000
		Engineering Design, Administration and Overhead (18%)	42,000
		Total Cost	$270,000

CHANNEL MODIFICATION

REACH 9-12
Station 156+10 - Station 216+38

FREEBOARD

Q 1% = Varies; Existing Capacity = Adequate; Length = 6,028 feet

ITEM	QUANTITY	UNIT COST ($)	COSTS ($)
84-inch RCP	104 LF	200/LF	21,000
Structural Concrete	15 CY	400/CY	6,000
		Subtotal	27,000
		10% Construction Contingencies	3,000
		Total Cost	$30,000

FLOOD FORECASTING SYSTEM

Item		Cost
Stream Gauges	1 @ $25,000	$25,000
Communication and Computer Equipment 1/	L.S.	$20,000
Miscellaneous Construction (20%)	L.S.	$5,000
	Construction Cost	$50,000
Design, Administration and Overhead		$10,000
	Total First Cost	$60,000
Amortized First Cost 2/		$6,000
Annual Maintenance		$1,000
Annual Operation		$1,000
	Annual Cost	$8,000

1/ This capital cost should be shared District-wide since the benefits from the system would be District-wide.

2/ Uniform series factor based on 10 percent discount rate over 30 years.

WATERWAYS PLANNING STUDY EAST ZONE ECONOMIC ANALYSIS

S U M M A R Y

LAND USE	AREA FLOODED ACRES	NUMBER OF BLDGS	1%FLOOD DAMAGES (1000$)	ANNUAL INSURANCE (1000$/YR)	FLOOD PROOFING (1000$)	FLOODPLAIN ACQUISITION (1000$)
SF RESIDENT	135.	619.	11722.	264.3	6187.	270.
APT RESID	15.	105.	1850.	76.6	145.	217.
MOBILE HOME	0.	0.	0.	0.0	0.	0.
COMMERCIAL	0.	0.	0.	0.0	0.	0.
INDUSTRIAL	0.	0.	0.	0.0	0.	0.
SCHLS,PUBLC	0.	0.	0.	0.0	0.	0.
OPEN IMPRVD	138.	0.	30.	0.0	0.	25035.
AGRICULTURE	0.	0.	0.	0.0	0.	0.
VACANT LAND	93.	0.	0.	0.0	0.	3607.
TOTAL	380.	724.	13602.	340.9	6332.	29129.

FLOOD INSURANCE

LAND USE	NUMBER OF BLDGS	REQUIRED STRUCTURE INSURANCE (1000$)	OPTIONAL ADDITION STRUCTURE INSURANCE	INSURANCE ON CONTENTS (1000$)	TOTAL ANNUAL COST (1000$)	PRESENT WORTH OF ANNUAL (1000$)
SF RESIDENT	619.	151.6	17.6	95.1	264.3	2491.3
APT RESID	105.	51.4	0.0	25.2	76.6	722.0
MOBILE HOME	0.	0.0	0.0	0.0	0.0	0.0
COMMERCIAL	0.	0.0	0.0	0.0	0.0	0.0
INDUSTRIAL	0.	0.0	0.0	0.0	0.0	0.0
SCHLS,PUBLC	0.	0.0	0.0	0.0	0.0	0.0
OPEN IMPRVD	0.	0.0	0.0	0.0	0.0	0.0
AGRICULTURE	0.	0.0	0.0	0.0	0.0	0.0
VACANT LAND	0.	0.0	0.0	0.0	0.0	0.0
TOTAL	724.	203.0	17.6	120.4	340.9	3213.4

FLOOD DAMAGES

LAND USE	AREA FLOODED ACRES	NUMBER OF BLDGS	DIRECT STRUCT DAMAGE (1000$)	DIRECT CONTENT DAMAGE (1000$)	INDIRECT DAMAGES (1000$)	TOTAL FLOOD DAMAGES (1000$)
SF RESIDENT	135.	619.	7841.	2352.2	1529.	11722.
APT RESID	15.	105.	1238.	371.3	241.	1850.
MOBILE HOME	0.	0.	0.	0.0	0.	0.
COMMERCIAL	0.	0.	0.	0.0	0.	0.
INDUSTRIAL	0.	0.	0.	0.0	0.	0.
SCHLS,PUBLC	0.	0.	0.	0.0	0.	0.
OPEN IMPRVD	138.	0.	0.	0.0	0.	30.
AGRICULTURE	0.	0.	0.	0.0	0.	0.
VACANT LAND	93.	0.	0.	0.0	0.	0.
TOTAL	380.	724.	9078.	2723.4	1770.	13602.

APPENDIX C

MAINTENANCE COSTS

	1975	1976	1977	1978	1979	1980	1981
Weed Abatement (mech. & chemical)					1578	6410	
Brush/Sapling Veg. Control			5544				4492
Tules					12734	6082	
Silt and Debris Removal	19266	3567	216		6950	324	148851
Erosion		2529		4017		2384	
Fence, Guardrail and Signs		921	1350	1116	1206	1440	
Access Maintenance		847	402		144	360	
Valve Maintenance				602			
Structure Maintenance		1331	324				
General Maintenance							
TOTAL ($/YEAR)	19266	9195	7836	5735	22612	17000	153343

APPENDIX D

THE ONE PERCENT FLOOD

The one percent flood is that flow of water from a drainage area that has a one percent chance (probability of 0.01) of occurring in any given year. It is equivalent to the so-called 100-year flood, but it should not be thought of as an event that occurs regularly every 100th year. Instead, it is the flood flow event that would be equaled or exceeded about 100 times in 10,000 years. It is alos possible that two repetitions of this flood flow could occur in a single year, or that a single event may not occur even once in 200 years.

The "one percent flood" is the preferred description of the design flood. However, the term "100-year flood" is equivalent. Unfortunately, this latter term often leads to the misconception that the design flood occurs only every 100th year.

Another terminology problem is the relation of the one percent storm and the one percent flood. The storm magnitude relates to the flood magnitude through a complex set of parameters such as antecedent rainfall conditions, drainage basin shape, length, slope, orientation, and others. Therefore, a one percent storm will not necessarily produce a one percent flood. The one percent flood should not be confused with the one percent storm, nor should it be referred to as the one percent storm flood.

The one percent flood has a small risk of occurrence in a given year, but this risk is cumulative. When compared with the 30-year life of the average home loan, for example, the chance that it will occur is quite large. During the 30-year loan period, the chance that a one percent flood will occur, or be exceeded, approaches 30 percent.

The magnitude of the one percent flood must be calculated by using statistical hydrological (stochastic) methods. Since it is the desire of the District to provide equal protection from flooding to all residents, a uniform method of determining design flood flows is required; one that is regional in scope and one that minimizes the chance of providing unequal protection from one area to another. This objective is reached through

a regional peak flood frequency analysis that uses the best available hydrologic data from stream systems in and adjacent to the District. The regional process utilized by the District was developed after considerable effort and has been reviewed and approved by the academic and professional community.

The research on the statistical measurement of flood flows and frequencies has shown that the larger magnitude floods that occur at relatively infrequent intervals, such as the one percent flood, are products of extremely heavy rainfalls, either of exceptionally high intensity or of long duration. With exceptionally high-intensity rainfall, so much rain falls in a short period of time that no matter what the ground cover is - soil, pavement, grass, trees, or buildings - the water cannot be stored or soaked up, and it runs off in a flood. With long-duration rainfall, a lot of rain falls, but it comes over a long period of time. Bare soil, grassland, forests, landscaping, house roofs, and pavement become fully saturated, and flooding occurs when no more water can be absorbed, stored, or evaporated.

Thus, for large floods, the type of development or degree of urbanization existing in the watershed is of little consequence.

However, the situation is different for the small magnitude floods, which occur at frequent intervals. In these, the rainfall intensity is less or of shorter duration. The absorption, holding, or storage characteristics of the land are much more important. With much less water present, soil, grass, and forests tend to soak up and hold back the rain that falls, while pavement and house roofs let a large percentage run off.

Therefore, when grassland is converted to pavement, the amount of water that runs off is much greater for the small amounts of rainfall. The magnitude of the small, more frequent type of flood flow is increased by urbanization.

In discussing flood flows and urbanization, one additional factor should be mentioned. This is over-bank storage in floodplain areas. Where urbanization occurs in the floodplain and the stream is channel, the storage of overbank floodwater is reduced.

This reduction results in greater downstream flood flows. This increase in flood flows occurs for any magnitude or frequency of flooding that would have resulted in channel overflow and storage of waters in the floodplain.

Lloyd C. Fowler

27 June 1974

APPENDIX E

LIST OF TECHNICAL TERMS

Channel - That portion of a stream system that contains the normal low flows.

Confluence - Where two streams join.

Cubic Feet Per Second (cfs) - A rate of flow equivalent to one cubic foot, about 7 1/2 gallons, passing a point during one second (approximately 450 gallons/minute).

Flood Flows - Those flows of water that cannot be contained within the natural channel.

Floodplain - A wide, gentle sloping area subject to periodic flooding.

One Percent (1%) Flood - The flood that has a one percent chance of being equaled or exceeded in any one year.

Overbanking - When flows exceed the channel capacity and flood the surrounding areas.

RCB - Reinforced concrete box culvert.

Reach - A subdivision of the creek for ease of study and reference.

Riparian - Vegetation and wildlife living within and immediately adjacent to a river, stream or lake. In this report, riparian means the creek environment.

Roughness Coefficient - Represents the frictional resistance of a surface to the flow of water.

Slope - The degree of upward or downward inclination of rising or falling ground.

Watershed - The geographical region or area drained by a stream.

APPENDIX F

PERSONS TO CONTACT FOR MORE INFORMATION

About this Report

Jose L. Ortiz
Santa Clara Valley Water District
265-2600, extension 291

About Flood Insurance

Randall R. Talley
Santa Clara Valley Water District
265-2600, extension 303

About Environmental Considerations

Dr. Bernard H. Goldner
Santa Clara Valley Water District
265-2600, extension 350

About Creek Maintenance

Donald Erling
Santa Clara Valley Water District
265-2600, extension 360

APPENDIX G

COMMENTS AND RESPONSES

A public hearing on the proposed project was held on November 17, 1982 in the Council Chambers at the Milpitas City Hall, 455 East Calaveras Boulevard, Milpitas, California. The District Board of Directors considered all written and oral comments on the project at that time.

Comments received at the public hearing included:

1. Support by the City of Milpitas for the project and an indication that the work should be performed as quickly as possible.

2. Concern by some citizens over aesthetic treatment of the proposed floodwalls, in particular along Abel Street.

3. Concern that the project would place an additional financial burden on residents in the area.

4. Concern over ways to expedite the project.

5. Support for the project by the citizens.

Written comments on the Engineer's Report included:

1. Letter dated November 15, 1982 from Ruth and Going, Inc., on behalf of John J. Donovan, Jr., expressing concern over possible adverse effects to Mr. Donovan's building by the proposed project.

2. Letter dated November 22, 1982 from the State Clearinghouse indicating that none of the State agencies that reviewed the planning study had comments.

In response to these comments, District staff indicated the following:

1. District work would be financed through existing revenue sources.

2. Mitigation of the impacts associated with floodwalls would be coordinated with the City of Milpitas. Possible measures to be considered would include concrete coloring or texturing and vegetative cover.

3. During final design of the project, measures would be implemented to mitigate possible adverse impacts to adjacent properties.

The following pages contain all written comments on the Engineer's Report. Also included are letters and memoranda prepared in conjunction with various meetings and hearings conducted during the planning process.

RUTH AND GOING, INC ARCHITECTURE ENGINEERING PLANNING

919 THE ALAMEDA P O BOX 26430 SAN JOSE CALIFORNIA 95159 (408) 297-8273

Leo W Ruth Jr., C E., M E
E Jackson Going, Jr., C E
William H Bender, S E
Harry N Lalor, C E.
Donald C Landberg, C E
Albert W Ostoff, A I.A.

November 15, 1982

11886-201

Mr. Jose Ortiz
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118

Re: SCVWD Project for Penitencia Creek

Dear Jose:

This letter is our response to your notification of a public hearing on November 17th for the subject project.

We represent the owner of Serra Shopping Center, John J. Donovan, Jr., whose property is located along the west bank of Penitencia Creek between Serra Way and Junipero Drive.

We have reviewed the project plans prepared by your office and the project will adversely affect our site unless mitigating measures are taken.

The critical area lies between the existing building and Penitencia Creek adjacent to Serra Way. Storm waters are presently collected on a portion of the roof of the building and are discharged through the eaves to the landscaped area between the building and the creek. This area is generally flat, but has a minor slope to the creek and storm waters find their way over the bank.

Should the proposed floodwall be constructed, no such escape route will be available and resulting flood waters will adversely affect our building. We therefore request your consideration of implementing some mitigating measures into your design between stations 121+20± and 122+55.

The majority of the frontage along the creek is landscaped adjacent to parking lots and will retain water after the flood wall is constructed. However, these areas will flood over the parking curb, after minor puddling, to the parking lot and subsequent underground drainage systems. These areas are not of great concern to us and mitigating measures need not be taken.

Should you require more details, please contact me at 297-8273.

Very truly yours,

Bryce E. Carroll

Bryce E. Carroll

ko

cc: John J. Donovan, Jr.
Serra Shopping Center

KRL

State of California

GOVERNOR'S OFFICE

OFFICE OF PLANNING AND RESEARCH

1400 TENTH STREET

SACRAMENTO 95814

EDMUND G. BROWN JR
GOVERNOR

November 22, 1982

Bernard Goldner
Santa Clara Valley Water
5750 Almaden Expressway
San Jose, CA 95118

SUBJECT: SCH# 82102610 Lower Penitencia Creek

Dear Mr. Goldner:

The State Clearinghouse submitted the above named environmental document to selected state agencies for review. The review period is closed and none of the state agencies have comments.

This letter certifies only that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act (EIR Guidelines, Section 15161.5). Where applicable, this should not be construed as a waiver of any jurisdictional authority or title interests of the State of California.

The project may still require approval from state agencies with permit authority or jurisdiction by law. If so, the state agencies will have to use the environmental document in their decision-making. Please contact them immediately after the document is finalized with a copy of the final document, the Notice of Determination, adopted mitigation measures, and any statements of overriding considerations.

Once the document is adopted (negative declaration) or certified (final EIR) and if a decision is made to approve the project, a Notice of Determination must be filed with the County Clerk. If the project requires discretionary approval from any state agency, the Notice of Determination must also be filed with the Secretary for Resources (EIR Guidelines, Sections 15083 (f) and 15085 (h)).

Sincerely,

Anna Polvos

Charles E. Brandes
Deputy Director for Project Coordination

Santa Clara Valley Water District

5750 ALMADEN EXPRESSWAY
SAN JOSE, CALIFORNIA 95118
TELEPHONE (408) 265-2600

July 9, 1982

Dear Resident:

Lower Penitencia Creek has the potential to cause millions of dollars of flood damages in the City of Milpitas. The Santa Clara Valley Water District is conducting a study to develop a plan for flood protection on Lower Penitencia Creek. Your home or business is located in this study area and may be subject to flooding.

As part of the study process on Lower Penitencia Creek we invite your participation in the development of a flood control plan.

A public meeting will be held on July 21, 1982 at 7:30 p.m. in the Council Chambers at Milpitas City Hall. Results of studies conducted to date will be presented. You will also be provided an opportunity to ask questions, comment, or express concerns at the meeting. Written comments are also welcome. Map exhibits will also be on display prior to the meeting for your review.

If you have any questions, please call Mr. Randy Talley, Division Engineer of our Predesign Division, at Extension 303, or Mr. Jose Ortiz, the Project Engineer, at Extension 291.

Sincerely yours,

George Korbay

George Korbay
Flood Control Manager

LOWER PENITENCIA CREEK

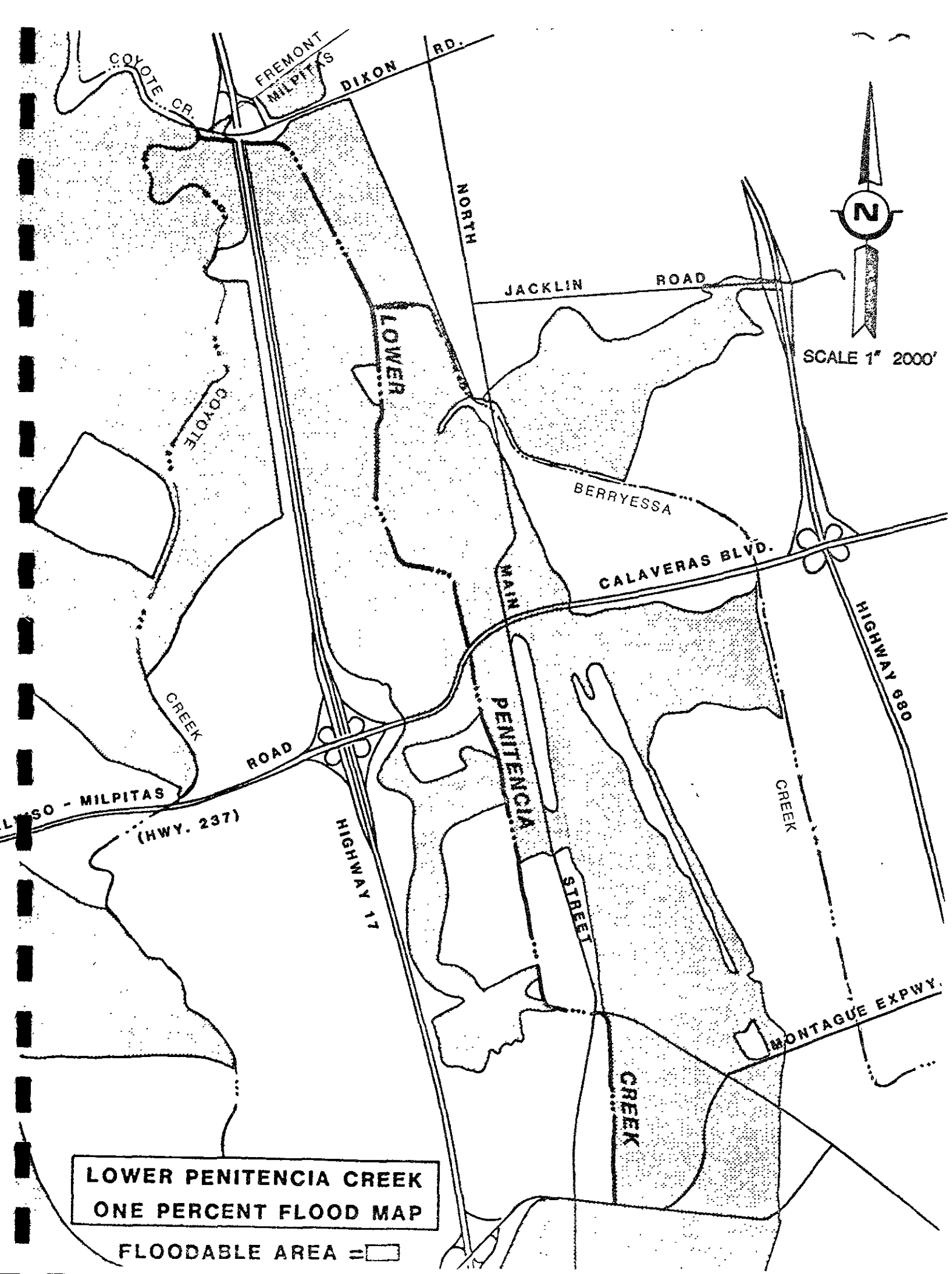
SUMMARY

Areas in the City of Milpitas have flooded periodically from Lower Penitencia Creek; most recently in March, 1982. During the one percent flood* the area bounded by Highway 17, Lower Penitencia Creek and north of Calaveras Boulevard would be flooded to depths up to three feet. Lower Penitencia Creek would flood approximately 700 structures, nearly all residential, during the one percent event and could cause an estimated $14.0 million in damages.

Alternative solutions to the flooding problems have beeen investigated. These include: (1) channel modifications, (2) flood forecasting system, (3) flood-proofing, (4) flood insurance and, (5) no project. The costs, advantages, and disadvantages of these alternatives were examined.

The proposed project consists of various channel modifications to the creek to increase its capacity. In the reaches downstream of the confluence with Berryessa Creek, the existing channel would be widened and levees constructed to provide adequate capacity and freeboard. Portions of the channel would be concrete lined. Upstream of Berryessa Creek, flood control measures would extend to the entrance to Elmwood Rehabilitation Center. These measures consist of a combination of earth levees, floodwalls, culvert enlargement and concrete lining. The existing channel upstream of the entrance to Elmwood Center is adequate to convey the one percent flows and, therefore, no additional modifications are required.

* A one percent, or 100-year, flood has a one percent chance of being equaled or exceeded in any one year.


COYOTE CR.
FREMONT
MILPITAS
DIXON RD.
NORTH
JACKLIN ROAD
LOWER
COYOTE
BERRYESSA
SCALE 1" 2000'
CALAVERAS BLVD.
MAIN
HIGHWAY 680
CREEK
ROAD
PENITENCIA
CREEK
STREET
(HWY. 237)
HIGHWAY 17
MONTAGUE EXPWY.
CREEK
LOWER PENITENCIA CREEK
ONE PERCENT FLOOD MAP
FLOODABLE AREA =

memorandum

FC 14 (12-23-80)

17C
351

TO: Randy Talley

FROM: Jose L. Oritz

SUBJECT: Public Meeting on Lower Penitencia Creek Project

DATE: August 2, 1982

On July 21, 1982, at 7:30 p.m., a meeting was held in the Council Chambers of Milpitas City Hall to inform citizens and affected agencies in the study area on the development of a flood control plan for Lower Penitencia Creek. In attendance were representatives from the City of Milpitas, the Army Corps of Engineers, TV Channels 4 and 11, and residents and property owners in the study area (list attached). The approximately25 residents and property owners in attendance had received a letter from the District staff which had been mailed to over 1200 persons. District staff present included Dave McIntire, Joan Astrue, Jeff Micko, Shaikh Buksh, Bob Smith, Randy Talley, and Jose Ortiz.

Mr. Talley welcomed those in attendance and indicated that the purpose of the meeting was to present the results of studies conducted to date and to invite questions, comments or concerns about the proposed project.

Mr. Ortiz followed with a slide presentation of the Lower Penitencia Creek Planning Study. He described the project limits, watershed, and existing creek setting. Lower Penitencia Creek would flood approximately 700 residences during the one percent event up to 3 feet deep and cause approximately $14 million damage. Alternate solutions investigated were flood proofing, flood insurance, and channel modifications. The proposed flood control measures, their costs and responsibility for their construction were described for each reach.

It was explained that the reaches downstream of the Berryessa Creek confluence would be constructed by adjacent property owners as a condition for development. The District would construct all the measures upstream of Berryessa Creek and the concrete lined section under Highway 17. The District's cost would be $3.5 million. The sources of funding for the District's share would be existing revenues generated by the East Zone and ad valorem tax and benefit assessments. No additional assessments would be levied on the properties and no additional right of way is required upstream of Berryessa Creek.

The remaining steps in the planning process were described. The planning study consisting of the engineer's report and environmental document would be circulated for review in September and a Board of Directors action on approval of the project would be in November of this year. If approved, Lower Penitencia Creek flood protection measures by the District could be completed by 1985.

The meeting was then opened to questions. The following questions were noted:

Q. When will the area (Milpitas Manor) be protected from flooding?

A. The District's portion could be completed by 1985.

Q. When would the measures in the immediate Milpitas Manor area be completed?

A. Reaches 3 and 4, which extend from Berryessa Creek to Marylinn Drive could be completed by late 1983. This area would be addressed first.

Q. Will construction of these reaches have any bearing on the requirement for flood insurance?

A. No. Flood insurance will remain a requirement when financing property in a flood hazard area because the area would still be subject to flooding from Berryessa Creek and Upper Penitencia Creek. The Corps is actively working on Berryessa Creek. Upper Penitencia Creek is the next highest priority in the East Zone and will be studied as soon as the Lower Penitencia Creek planning process is completed. All three creeks must be enlarged to solve the total flood problem.

Q. Will additional easements be required for the proposed measures?

A. No additional right of way is required through the developed areas.

Q. Will there be any cost to the existing homeowners?

A. None other than those already in effect. The current benefit assessment rate is $11.78 per year and may increase at 2% per year. (Bob Smith explained that benefit assessment will continue for a ten-year period, the question of whether or not to continue the assessments would again be put before the electorate).

Q. After these measures are completed will Milpitas Manor flood?

A. Until other sources of flooding such as Berryessa and Upper Penitencia Creeks are addressed, the area is subject to flooding but not as frequently. During the more frequent events local flooding may be experienced in the Manor, but not to the degree that occurred in February, 1980 and March, 1982.

Other comments were made regarding creek maintenance, trash, debris, and shopping carts in the creek, and some unrelated problems. The general response to the proposed project was favorable with the indication that the sooner the measures were constructed, the better.

The meeting adjourned at approximately 9 p.m.

M. Whitehead for
Associate Civil Engineer
Predesign Division

Attachment

cc: B. Smith
D. McIntire
B. Goldner
J. Ortiz

RRS:RRT:JLO:mw

CONFORMED COPY

AGENDA MEMORANDUM

AGENDA DATE 10/26/82 ITEM NO. 5 UNIT Flood Control

ZONE E PROJECT NO. 4033 NAME Lower Penitencia Creek - Coyote Creek to Montague Expressway (Milpitas)

SUBJECT: Lower Penitencia Creek Planning Study Consisting of Draft Engineer's Report and Draft Negative Declaration. Board Action Required: a) Authorize Circulation of Report; b) Resolution Setting Time and Place of Public Hearing

EXPLANATION:

The attached draft Engineer's Report identifies and assesses the potential damages from flooding in the reaches of Lower Penitencia Creek from its confluence with Coyote Creek to Montague Expressway. The report demonstrates the need to provide flood protection from Lower Penitencia Creek as the first step towards an area-wide solution to the flooding problem in areas of the City of Milpitas. The report also presents alternative means of providing this protection and discusses these alternatives with respect to their economic evaluations and environmental impacts.

The recommended project proposes channel modifications consisting of channel widening, levees, floodwalls, channel lining and culvert enlargements. The proposed flood control measures would extend from Coyote Creek to the entrance of Elmwood Rehabilitation Center. The project also recommends maintenance program guidelines to ensure the efficient operation of the proposed flood control measures. The estimated total cost of the project is $5.4 million. The cost to the East Zone is estimated to be $3.6 million with development paying for $1.8 million.

On July 21, 1982 a public meeting was held in Milpitas to inform citizens on the proposed project. There was general acceptance of the plan.

Based on environmental assessment, according to Section 15080 of the State EIR Guidelines, staff has determined that the proposed project will not have a substantial adverse impact on the environment. A draft negative declaration to that effect is included as Appendix A of the report.

RECOMMENDATION: That the Board authorize circulation of the draft planning study report for public review for a period of ~~28~~ 21 days and adopt the resolution scheduling a public hearing on November 17, 1982 at 7:30 p.m. in the Council Chambers at Milpitas City Hall located at 455 E. Calaveras Boulevard, Milpitas, CA 95035

APPROVED
OCT 26 1982

RESOLUTION NO. 82 - 112

SPECIFYING INTENTION TO UNDERTAKE
WORK OF IMPROVEMENT WITHIN THE EAST ZONE
OF SANTA CLARA VALLEY WATER DISTRICT
AND PROVIDING FOR NOTICE OF TIME
AND PLACE OF PUBLIC HEARING THEREON

WHEREAS, the East Zone of Santa Clara Valley Water District has been duly and regularly established and exists pursuant to the provisions of the Santa Clara Valley Water District Act; and

WHEREAS, on the 26th day of October 1982 the report of the District's Engineer was duly filed with this Board containing information in regard to a work of improvement ("project") on Lower Penitencia Creek in said Zone showing:

1. A general description of the project together with general plans and profiles relating thereto;

2. A general description of and maps showing the location of the proposed project and the lands, rights of way, and easements required therefor; and

3. An estimate of the cost of the proposed project, and means of financing these costs;

NOW, THEREFORE, be it resolved by the Board of Directors of Santa Clara Valley Water District as follows:

Section 1. Subject, nevertheless, to a determination whether to proceed with the project following the public hearing thereon hereinafter provided for, it is hereby found and determined:

(a) That the public interest and convenience require and it is the intention of this Board to undertake said project within said Zone in accordance with the Engineer's Report heretofore filed on the 26th day of October 1982 with this Board, to which said report, together with the maps showing the general location and general construction of the said project in said report contained, reference is hereby made for further particulars;

(b) That this Board does hereby find and determine that the said proposed work is for the benefit of said Zone and this Board further determines and declares that the cost and expense of said work shall be chargeable and charged upon property within said Zone;

Section 2. That the Engineer of this District has estimated the approximate cost of the construction of said project to be $5,400,000, of which total $3,600,000 shall be borne by the property within said Zone; the balance is to be borne by private sources as development of lands adjacent to said creek occurs;

Resolution Specifying Intention to Undertake Work of Improvement Within the East Zone of Santa Clara Valley Water District and Providing for Notice of Time and Place of Public Hearing Thereon.

Section 3. That the aforesaid Engineer's Report, containing maps and general construction plans of the said Zone, showing the general location and general construction of said project, has been prepared by said District Engineer for public inspection by any interested person and may be seen at

Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, California 95118

Calaveras Library
1345 East Calaveras Boulevard
Milpitas, California 95035

Sunnyhills Library
115 Dixon Road
Milpitas, California 95035

which are hereby designated as the public places where a copy of said maps, showing the location, and general construction plans of said project may be viewed; that such maps and plans shall be posted at said public places for at least two weeks prior to the public hearing hereby fixed;

Section 4. That the 17th day of November 1982 at the hour of 7:30 p.m. in the Council Chambers at Milpitas City Hall, 455 East Calaveras Boulevard, Milpitas, California, be and the same are hereby fixed as the time and the place where this Board will consider all written and oral objections to the proposed project;

Section 5. That the Clerk of this Board be and she is hereby directed to cause notice to be given of said public hearing by the publication of a notice thereof once a week for two consecutive weeks prior to the date fixed for said public hearing, the last publication of which notice shall be at least seven days before said hearing, in the Milpitas Post and the San Jose Mercury, newspapers of general circulation circulated in said Zone, and hereby designated by this Board to be the newspapers most likely to give notice of said public hearing to the residents and property owners in said Zone; said notice shall be in words and figures as follows, to wit:

NOTICE OF TIME AND PLACE OF PUBLIC HEARING
ON PROPOSED WORK OF IMPROVEMENT AND COSTS THEREOF
WITHIN THE EAST ZONE OF SANTA CLARA VALLEY WATER DISTRICT

NOTICE IS HEREBY GIVEN that the 17th day of November 1982 at the hour of 7:30 p.m. in the Council Chambers at Milpitas City Hall, 455 East Calaveras Boulevard, Milpitas, California, is the time when and the place where a public hearing will be held on the Resolution of the Board of Directors of the Santa Clara Valley Water District specifying intention to undertake a work of improvement ("project") within and for the benefit of the East Zone of the Santa Clara Valley Water District;

That plans for the construction of said project are contained in an Engineer's Report of proposed improvements for the said Zone entitled "Lower Penitencia Creek Planning Study - Coyote Creek to Montague Expressway consisting of the Engineer's Report and Negative Declaration" which said Report also contains maps of the Zone showing the general location and general construction of said project and is on file in the office of the Clerk of the Board of Directors, 5750 Almaden Expressway, San Jose, California, and may also be seen by any interested person at

Calaveras Library
1345 East Calaveras Boulevard
Milpitas, California 95035

Sunnyhills Library
115 Dixon Road
Milpitas, California 95035

The cost of the work, according to engineering estimates, is $5,400,000, of which total $3,600,000 shall be borne by the property within said Zone, the balance is to be borne by private sources as development of lands adjacent to said creek occurs.

That at the time and place fixed for said hearing or at any time to which said hearing may be continued, said Board will consider all written and oral objections to the proposed project; that upon the conclusion of the hearing the Board may abandon the proposed project or proceed with the same unless prior to the conclusion of said hearing written protests against the proposed project signed by a majority in number of the registered voters resident within said Zone be filed with the Board, in which event further proceedings relating to such project shall be suspended for not less than six (6) months following the date of the conclusion of said hearing, or said proceedings may be abandoned in the direction of the Board;

That any registered voter residing within the District may file a written protest against the proposed project at said hearing prior to its conclusion, or such protest may be filed prior to the time of such hearing in the office of the Clerk of said District Board, 5750 Almaden Expressway, San Jose, California.

Dated: October 26, 1982

Susan A. Ekstrand
Clerk of the Board of Directors

33RL776a

Resolution Specifying Intention to Undertake Work of Improvement Within the East Zone of Santa Clara Valley Water District and Providing for Notice of Time and Place of Public Hearing Thereon

PASSED AND ADOPTED by the Board of Directors of Santa Clara Valley Water District on OCT 26 1982 by the following vote:

AYES: Directors M. E. DULLEA, P. T. FERRAPO, A. H. FISHER, R. W. GROSS, J. J. LENIHAN, A. T. PFEIFFER, S. SANCHEZ

NOES: Directors None

ABSENT: Directors J.J.Lenihan

SANTA CLARA VALLEY WATER DISTRICT

By: /S/ ARTHUR T. PFEIFFER
Chairman of the Board of Directors

ATTEST: SUSAN A. EKSTRAND

/S/ SUSAN A. EKSTRAND
Clerk of the Board of Directors

33RL776a

Santa Clara Valley Water District

5750 ALMADEN EXPRESSWAY
SAN JOSE, CALIFORNIA 95118
TELEPHONE (408) 265-2600

November 1, 1982

Dear Resident:

Enclosed for your information is a Notice of Public Hearing and a summary of the Santa Clara Valley Water District's Engineer's Report and Draft Negative Declaration on Lower Penitencia Creek.

This report describes a proposed flood control project on Lower Penitencia Creek from Coyote Creek to Montague Expressway in Santa Clara County. Copies of the report are available for your review at the locations indicated in the Notice.

The public hearing on the proposed project is scheduled to be held on November 17, 1982 at 7:30 p.m. in the Council Chambers at the Milpitas City Hall, 455 East Calaveras Boulevard, Milpitas, California. The District's Board of Directors will consider all written and oral comments on the project at that time.

Your written comments may be submitted to the District and/or you may make an appearance before the Board to present your views at the public hearing.

If you have any questions regarding the proposed project, please call Mr. Randy Talley, Division Engineer of our Predesign Division, at extension 303, or Mr. Jose Ortiz, the project engineer, at extension 291.

Sincerely yours,

George Korbay

George Korbay
Flood Control Manager

Enclosures

AGENDA

Santa Clara Valley Water District

5750 ALMADEN EXPRESSWAY SAN JOSE, CALIFORNIA 95118

BOARD OF DIRECTORS MEETING

INFORMATION AND COPIES OF SUPPORTING MATERIAL ON THESE AGENDA ITEMS ARE AVAILABLE FOR PUBLIC USE AND REVIEW AT NO COST IN ROOM 103 (ACROSS THE HALL FROM THE BOARD ROOM)

NOTICE OF PUBLIC HEARING

Council Chambers
Milpitas City Hall
455 East Calaveras Boulevard
Milpitas, California 95035

Wednesday, November 17, 1982

7:30 p.m.

1. Roll Call.
2. PUBLIC HEARING on Engineer's Report for the Lower Penitencia Creek Flood Control Project, Coyote Creek to Montague Expressway.
3. Close Public Hearing.
4. Consider:
   a) Approval of Negative Declaration
   b) Resolution Approving General Construction Plans in Report of Engineer and Determining to Proceed with Work of Providing Flood Protection Measures on Lower Penitencia Creek.
5. Adjournment.

SUSAN A. EKSTRAND
CLERK OF THE BOARD
TELEPHONE (408) 265-2600

Santa Clara Valley Water District
5750 ALMADEN EXPRESSWAY SAN JOSE, CALIFORNIA 95118

LOWER PENITENCIA CREEK PUBLIC HEARING

SUPPLEMENTAL INFORMATION

Several people in the project area have misinterpreted the meaning of the formal public notice which they recently received. The flood protection measures which are being proposed for Lower Pentencia Creek will not result in any additional taxes or assessments to the property owners.

The proposed measures would be financed through three sources: (1) existing District East Zone ad valorem tax, (2) existing benefit assessments (approved by voters in June, 1982), and (3) private developers (where existing vacant lands may someday be developed).

The District has been studying Lower Penitencia Creek because it has the potential for frequent and damaging flooding. We address flood problems on a priority basis. Lower Penitencia has one of the highest priorities in the District's East Flood Control Zone.

We hope this clarifies any misunderstanding. If you have additional questions, please feel free to ask them at this public hearing.

RESOLUTION NO. 82-116

APPROVING GENERAL CONSTRUCTION PLANS IN REPORT OF ENGINEER AND DETERMINING TO PROCEED WITH WORK OF PROVIDING FLOOD PROTECTION MEASURES ON LOWER PENITENCIA CREEK

WHEREAS, the East Zone of Santa Clara Valley Water District has been duly and regularly established and exists pursuant to the provisions of the Santa Clara Valley Water District Act; and

WHEREAS, on the 26th day of October, 1982, the Report of the District Engineer was filed with this Board containing information regarding a work of flood protection measures ("project") on Lower Penitencia Creek in said Zone showing:

1. A general description of the project, together with plans and profiles relating thereto;

2. A general description of and maps showing the location of the proposed project and the lands, rights of way, and easements required therefor; and

3. An estimate of the costs of the proposed project, and means of financing these costs; and

WHEREAS, this Board of Directors did on the 26th day of October, 1982 adopt its resolution declaring that the public interest and convenience require the construction of said project in accordance with said maps and general construction plans as contained in said report and specifying its intention to undertake construction of the same and setting a time and place for public hearing of said resolution, to wit, the 17th day of November 1982 at the hour of 7:30 p.m. in the Council Chambers at Milpitas City Hall, 455 East Calaveras Boulevard, Milpitas California; and

WHEREAS, notice of the time and place of said public hearing was duly given and published pursuant to law; and

WHEREAS, on said 17th day of November, 1982 at the time and place in said resolution and in said notice specified, a public hearing was duly held;

NOW, THEREFORE, be it resolved by the Board of Directors of Santa Clara Valley Water District as follows:

1. That all comments including all written and oral objections to the proposed project have been heard and considered;

2. That this Board hereby finds and determines that the requirements of the California Environmental Quality Act of 1970, as amended, and Guidelines for the implementation thereof have been met and complied with;

3. That this Board hereby approves said Engineer's Report including the general construction plans for Lower Penitencia Creek, Project No. 4033 in said Zone;

Resolution Approving Report of Engineer and Determining to Proceed with Work of Providing Flood Protection Measures on Lower Penitencia Creek.

4. That this Board hereby determines that said project is for the benefit of a single zone of the District, to wit, East Zone, further determines to proceed with the construction of said project in said Zone according to the said report and plans of the Engineer of this District and further determines that the cost thereof shall be borne by said Zone; and

5. That the District Engineer is directed to draw up precise plans and specifications for said project based upon the said report.

PASSED AND ADOPTED by the Board of Directors of the Santa Clara Valley Water District on the 17th day of November, 1982, by the following vote:

AYES: Directors ~~M. E. DULLEA, P. T. FERRARO;~~ A. H. FISHER, R. W. GROSS, J. J. LENIHAN, ~~A. J. PFEIFFER;~~ S. SANCHEZ

NOES: Directors None

ABSENT: Directors M. E. DULLEA P. T. FERRARO A. J. PFEIFFER

SANTA CLARA VALLEY WATER DISTRICT

by: _____
Chairman of the Board of Directors

ATTESTED: SUSAN A. EKSTRAND

_____
Clerk of the Board of Directors

17RL501b

MAP AND GENERAL PLAN

FOR

LOWER PENITENCIA CREEK

FROM

COYOTE CREEK

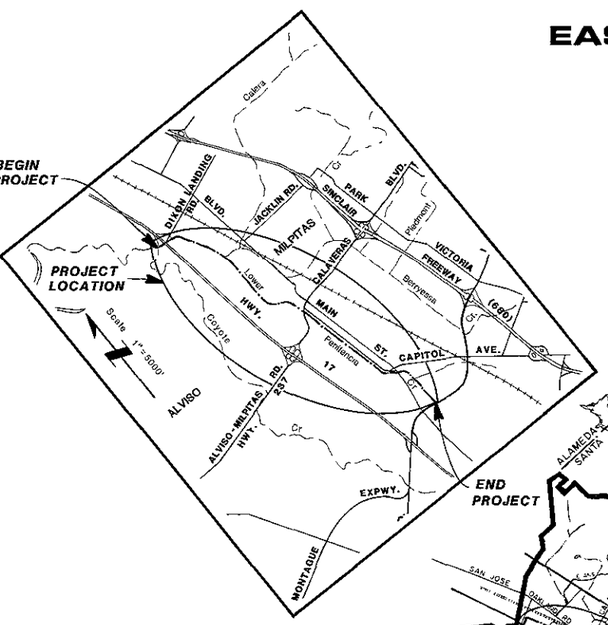
TO

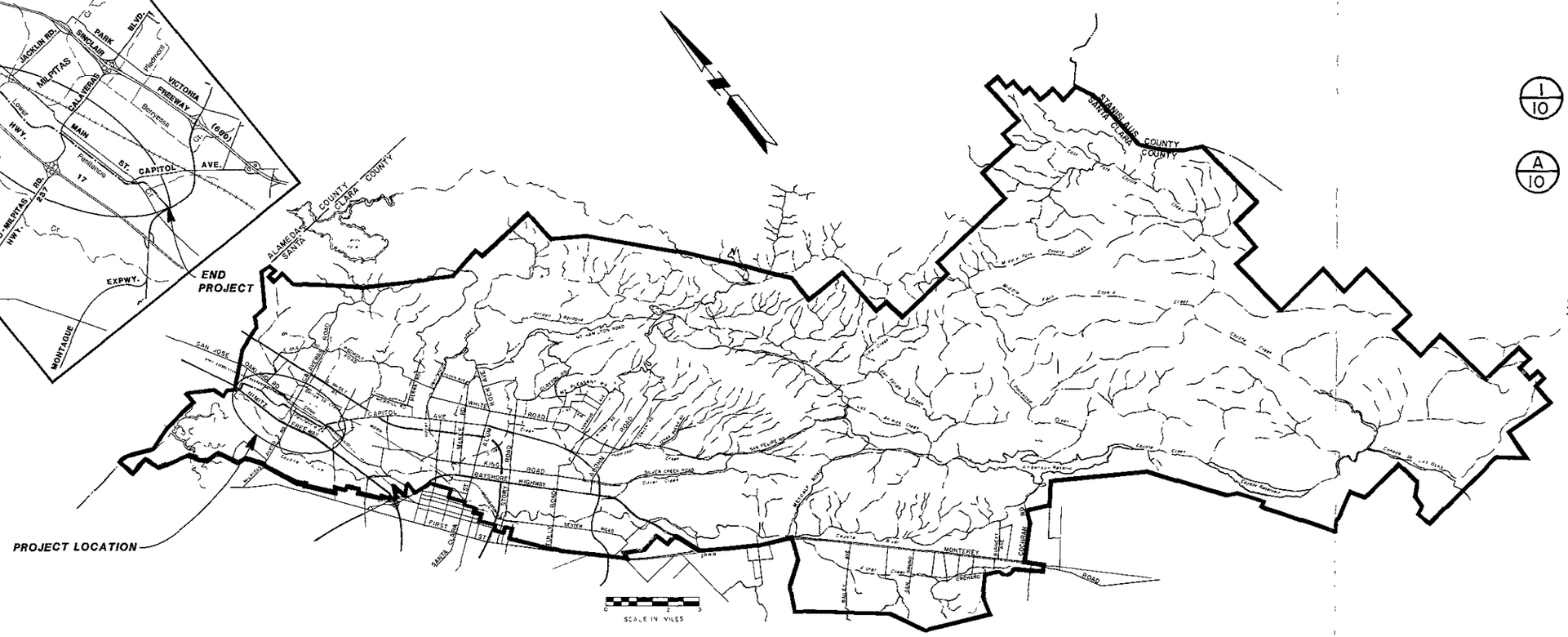
MONTAGUE EXPRESSWAY

Santa Clara Valley Water District

EAST FLOOD CONTROL ZONE

PROJECT NO. 4033





(1/10) 1 INDICATES DETAIL NUMBER
10 INDICATES NUMBER OF SHEET ON WHICH DETAIL APPEARS

(A/10) A INDICATES SECTION
10 INDICATES NUMBER OF SHEET ON WHICH SECTION APPEARS

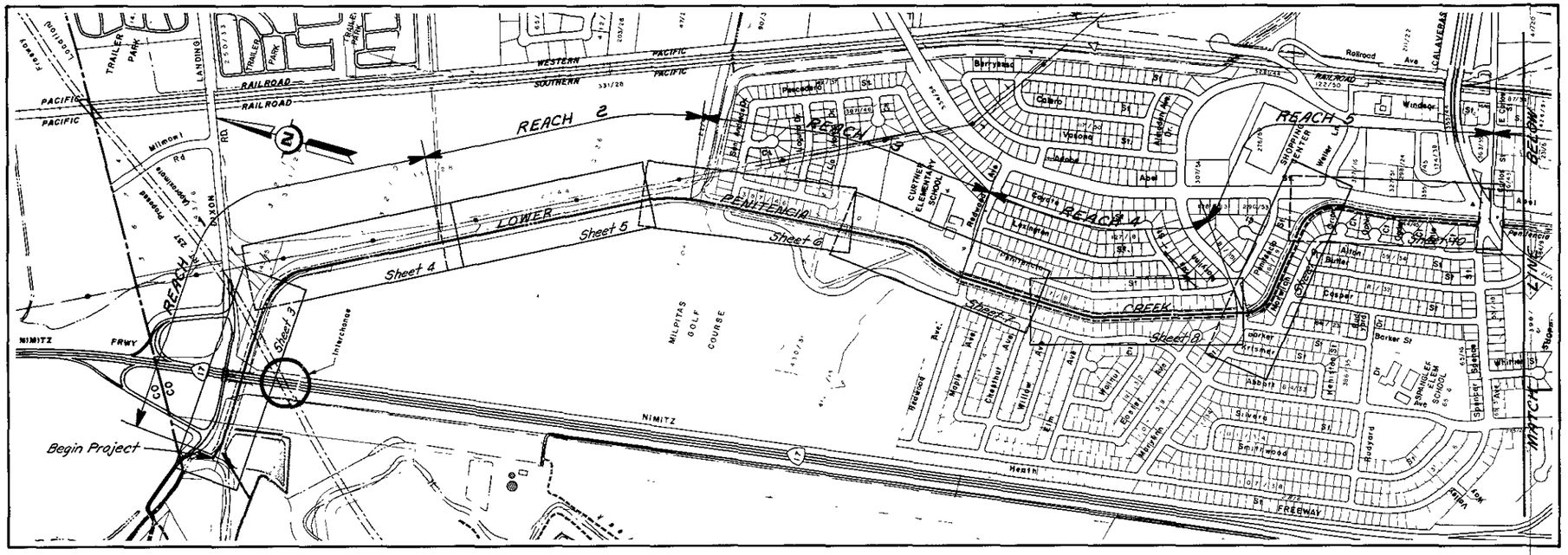
INDEX

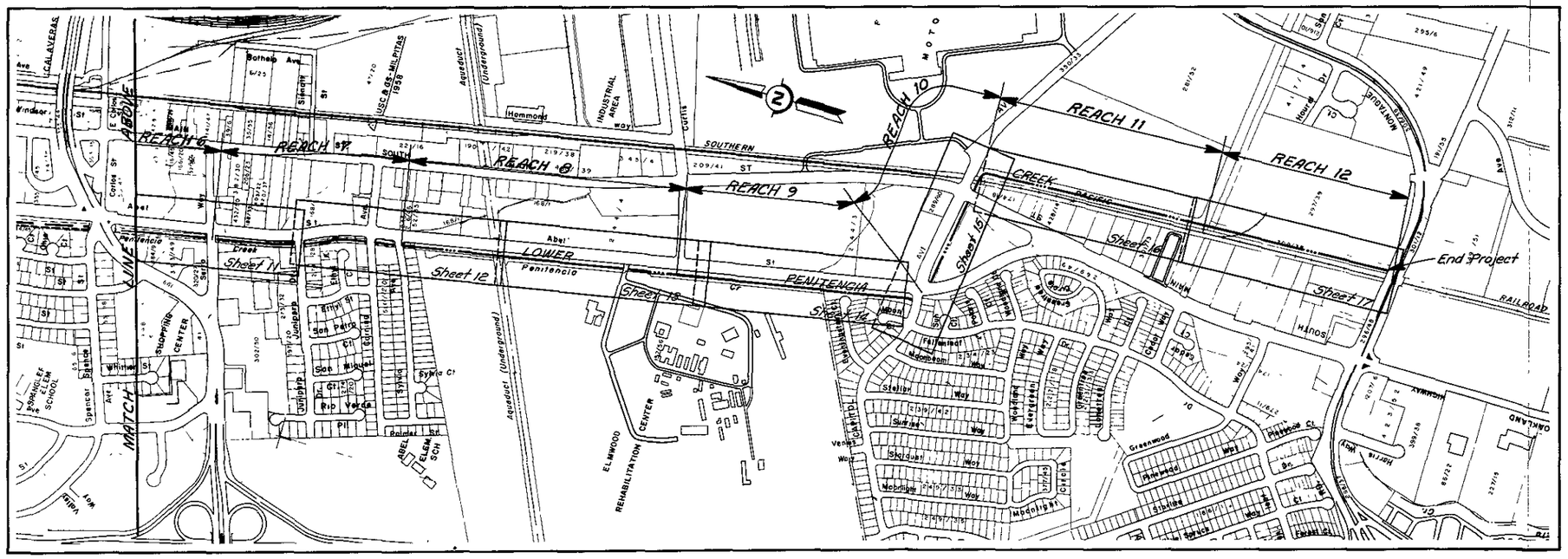
REDUCED PLAN
USE SCALE BELOW
1 2 3
INCHES ON ORIGINAL PLAN

PROJECT APPROVAL:

George Kobayashi
FLOOD CONTROL MANAGER

DATE: 9/28/82





ABBREVIATIONS

℄	Centerline
CFS	Cubic Feet per Second
CMP	Corrugated Metal Pipe
El.	Elevation
Exist.	Existing
Horiz.	Horizontal
Inv.	Invert
Max.	Maximum
Min.	Minimum
n	Manning's Roughness Coefficient
Q(1%)	100-yr. Flow
RCB	Reinforced Concrete Box Culvert
RCP	Reinforced Concrete Pipe
R/W	Right of Way
S	Slope
STA.	Station
Vert.	Vertical

REV	DESCRIPTION	DATE	APPR	REFERENCE INFORMATION AND NOTES
	REDUCED PLAN USE SCALE BELOW (0 — 2 — 3; 3 INCHES ON ORIGINAL PLAN)			

DATE Sept. '82
DESIGN S.E.B.
DRAWN S.W
CHECKED J. Ortiz

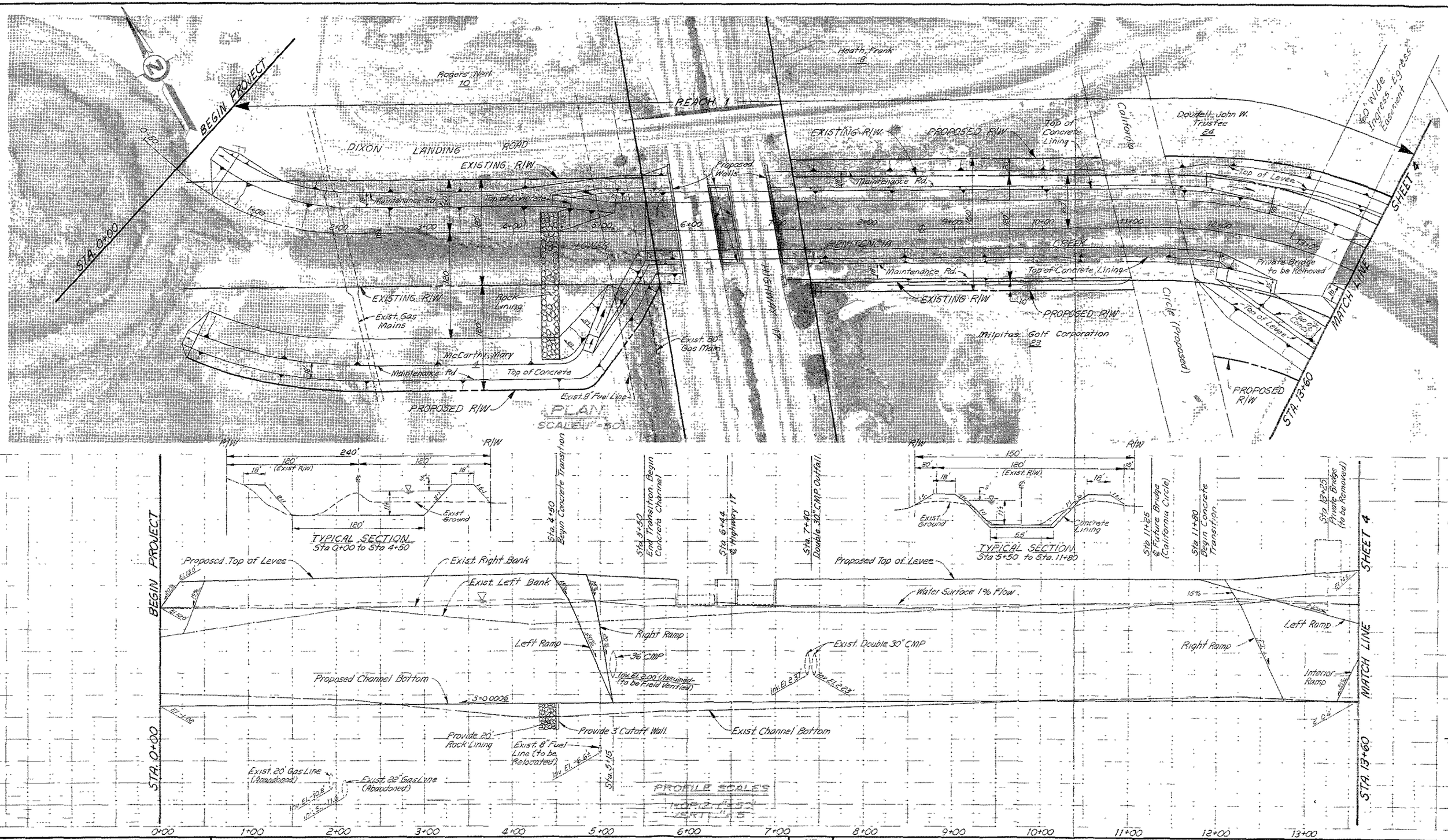
Santa Clara Valley Water District

ENGINEERING CERTIFICATION
PROJECT ENGINEER — R.C.E. NO. 29584
DIVISION ENGINEER — R.C.E. NO. 25093

ENGINEERING APPROVAL
HEAD, PROJECT DEVELOPMENT BRANCH (R.C.E. NO. 17778)

INDEX MAP
LOWER PENITENCIA CREEK

SCALE 1"=500'
SHEET 2 OF 17



REFER TO TRACING FOR LATEST REVISION

DESCRIPTION	SUB	APPR
REDUCED PLAN USE SCALE BELOW		

0 1 2 3

3 INCHES ON ORIGINAL PLAN

REFERENCE INFORMATION AND NOTES

1. Sections Viewed Looking Upstream Basis of Elevation = NGS Datum Bench Mark K-179, Elevation 49.10 (Reset 1969).
2. Freeboard Below Soffit Under New Bridges Must Be Equal to That Value Used for the Channel Upstream or Downstream, Whichever is Larger.
3. Q(1%) = 7000 CFS, Manning's n = .07 Downstream of Sta. 4+50 & n=.015 Upstream of Sta 4+50.
4. Concrete Lining on Banks Extends up to 1% Water Surface Elevation.

PHOTOGRAPHY BY AIR-PHOTO CO., INC. DATE 5-19-78 RECTIFICATION BY AIR-PHOTO CO., INC

DATE	Sept. '82
DESIGN	S.E.Z.
DRAWN	S.W.
CHECKED	J. Ortiz

Santa Clara Valley Water District

ENGINEERING CERTIFICATION: Jose L. Ortiz, R.C.E. 29554; K. Talley, 25093

ENGINEERING APPROVAL: K. L. Smith, Chief, Engineering Branch, 17781

GENERAL PLAN AND PROFILE
LOWER PENITENCIA CREEK

SCALE: As Shown

SHEET 3 OF 17

Doudell, John W.
43

REACH 1

REACH 2

P.G.&E. Tower Line

See Note 5

Goble St.

P.G.&E. Easement

EXIST. R/W

PROPOSED R/W

Doudell, John W.
43

End of Concrete Lining

STA. 13+60

MATCH LINE

SHEET 3

Maintenance Road

LOWER PENITENCIA CREEK

Maintenance Road

EXIST. R/W

Milpitas Golf Corporation
23

PROPOSED R/W

Rock Lining

Goble St.

Exist. 18" R.C.P. Sanitary Sewer

SHEET 5

MATCH LINE

STA. 28+00

PLAN
SCALE 1"=50'

R/W

240'

40'

120'
(Exist. R/W)

80'

R/W

P.G.&E. Tower
(See Note 5)

Exist. Ground

Proposed Main Channel

Proposed Secondary Channel

TYPICAL SECTION - STA. 13+80 TO STA. 38+40
N.T.S

STA. 26+63
Sunnyhills Outfall

SHEET 3

STA. 13+60
End Concrete Transition

Proposed Top of Levee

Exist Left Bank

Exist Right Bank

Water Surface 1% Flow

Proposed Maintenance Roads

Proposed Secondary Channel Bottom

S=0.0006

10' Rock Lining

Provide 3' Cutoff Wall

Exist. Channel Bottom
(To Remain as Main Channel)

Exist. Double 42" CMP

Exist 15" RCP
Inv. El. 29.3

SHEET 5

MATCH LINE

STA. 28+00

PROFILE SCALES
HORIZ. 1"=50'
VERT. 1"=5'

14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00 25+00 26+00 27+00 28+00

20 15 10 5 0 -5

DESCRIPTION	DATE	APPR
REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. Armoring Aggregate Shall Be Placed 1' Thick On All Depressed Maintenance Roads.
2. Outside Toe of Westerly Levee is Based On Adjacent Ground Filled to Elev. 8.00' (U.S.V.D)
3. Elevation Of Proposed Secondary Channel Bottom is 1' Above Elevation Of Proposed Main Channel Bottom.
4. Manning's "n" = .035, Q(1%) = 7000 CFS Downstream Of Sta 26+63 & 6700 CFS Upstream of Sta. 26+63.
5. Provide Grade Beam Foundation For Existing P.G.&E. Tower.

PHOTOGRAPHY BY AIR-PHOTO CO., INC DATE 5-19-78 RECTIFICATION BY AIR-PHOTO CO., INC

DATE	Sept '82
DESIGN	S.E.B
DRAWN	S.W.
CHECKED	J Ortiz

Santa Clara Valley Water District

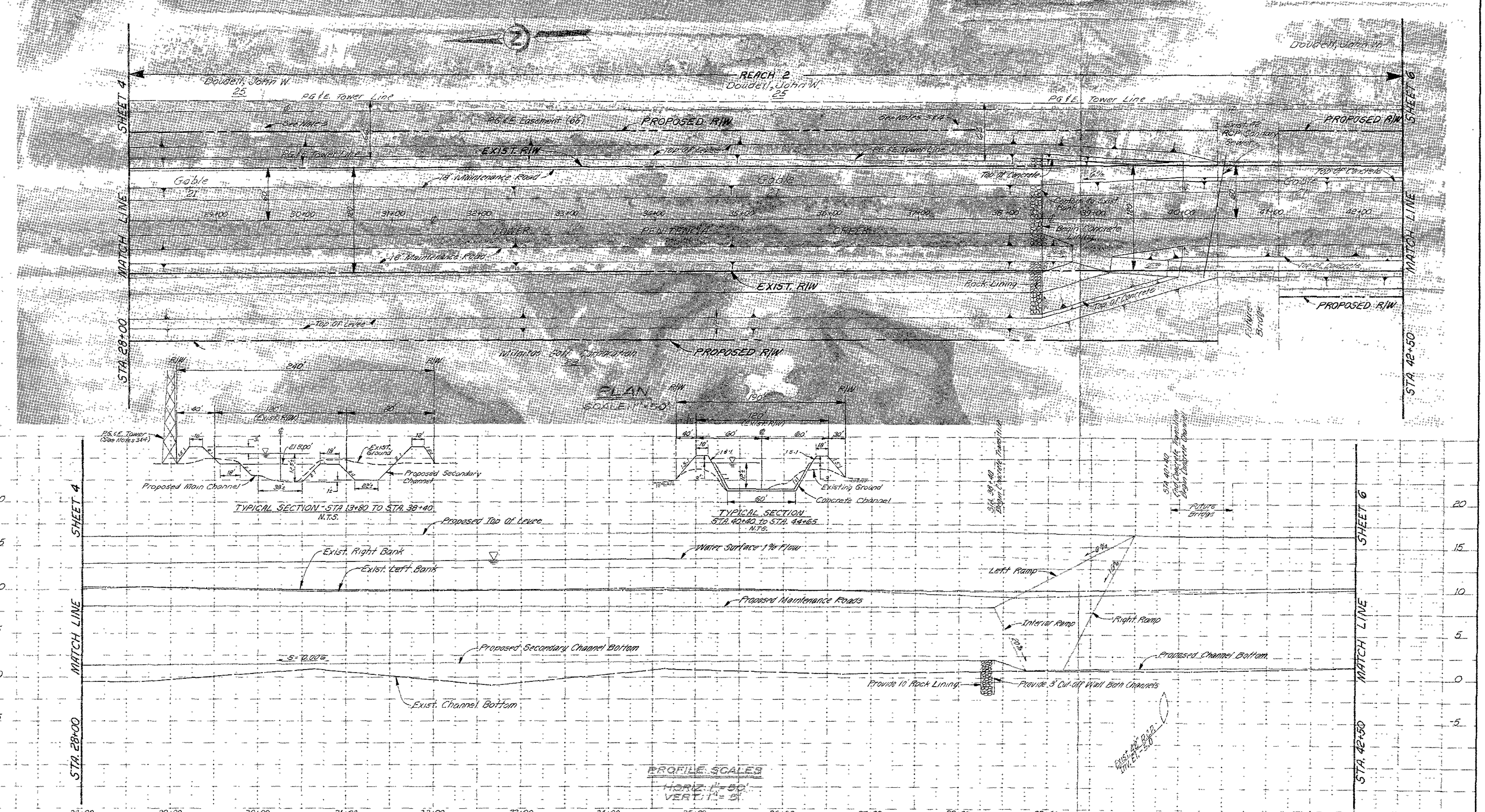
ENGINEERING CERTIFICATION: Jose L. Ortiz RCE 29554; L.R. Talley RCE 25093

ENGINEERING APPROVAL: L. R. Smith

GENERAL PLAN AND PROFILE
LOWER PENITENCIA CREEK

SCALE As Shown

SHEET 4 OF 17



DESCRIPTION	DATE	APPR
REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1 Q(1%) = 6700 CFS, n = .035 downstream of Sta 38+40 & n = .016 upstream of Sta 38+40
2. Freeboard below soffit under new bridge must be equal to that valve used for the channel upstream or downstream, whichever is larger
3 Provide grade beam foundation for existing PG&E. towers
4 Raise existing PG&E towers to provide minimum clearance per PUC requirements.
5 Concrete lining on banks extends up to 1% water surface elevation

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DATE Sept. '82
DESIGN S.E.B
DRAWN S.W.
CHECKED J. Ortiz

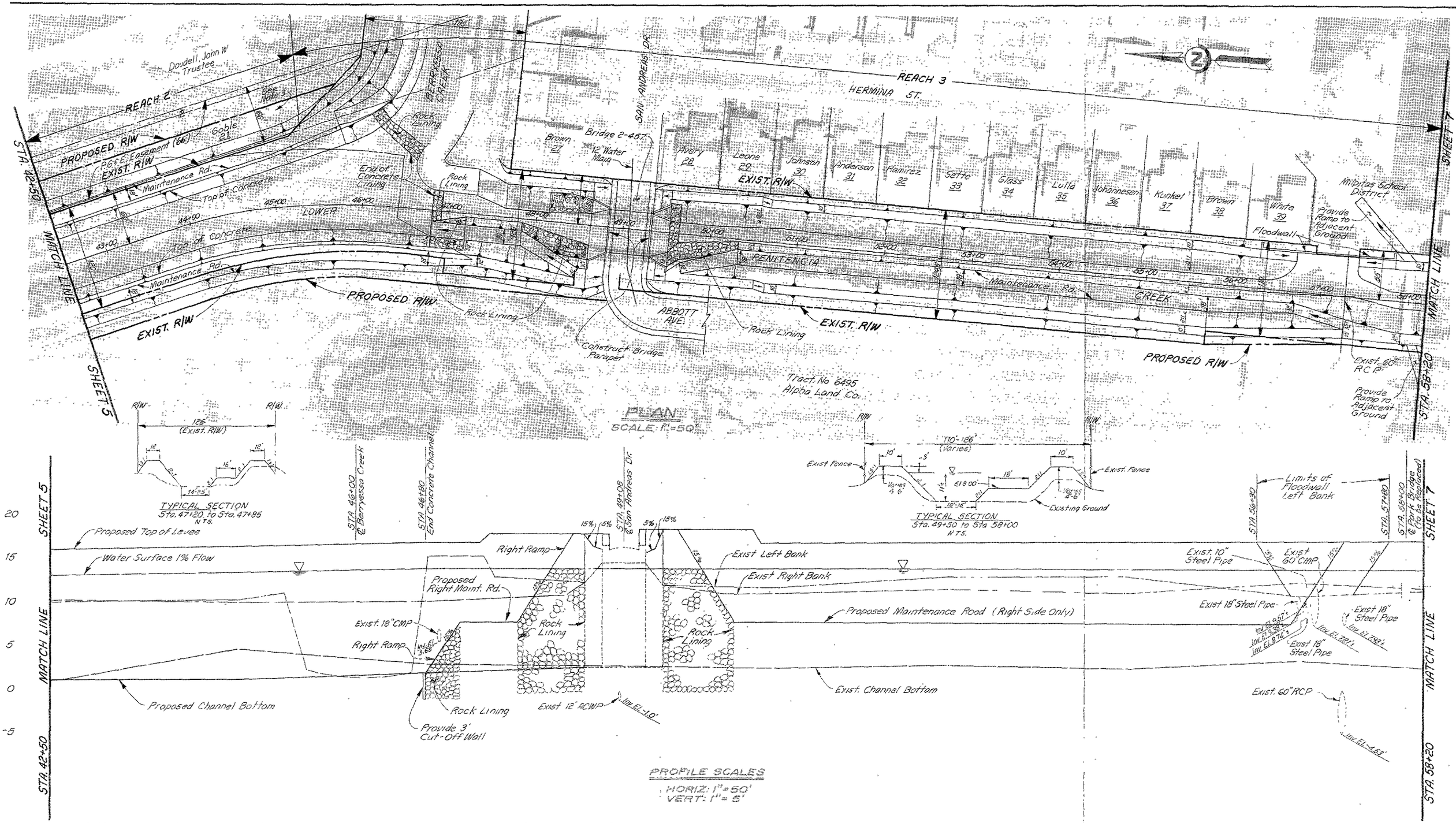
Santa Clara Valley Water District

ENGINEERING CERTIFICATION
ENGINEERING APPROVAL

GENERAL PLAN AND PROFILE
LOWER PENITENCIA CREEK

SCALE As Shown

SHEET 5 OF 17



REV	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 — 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. Q(1%) = 6700 CFS Downstream of Sta 46+80 & Q(1%) = 12000 CFS Upstream of Sta. 46+80; n=.015 Downstream of Sta 49+52 & n=.03 Upstream of Sta. 49+52.
2. Concrete Lining on Banks Extends up to 1% Water Surface Elevation.
3. Provide Grade Beam Foundation & Extend Existing P.G.&E. Tower to Provide Minimum Clearance Per P.U.C. Requirements.

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DATE Sept. 82
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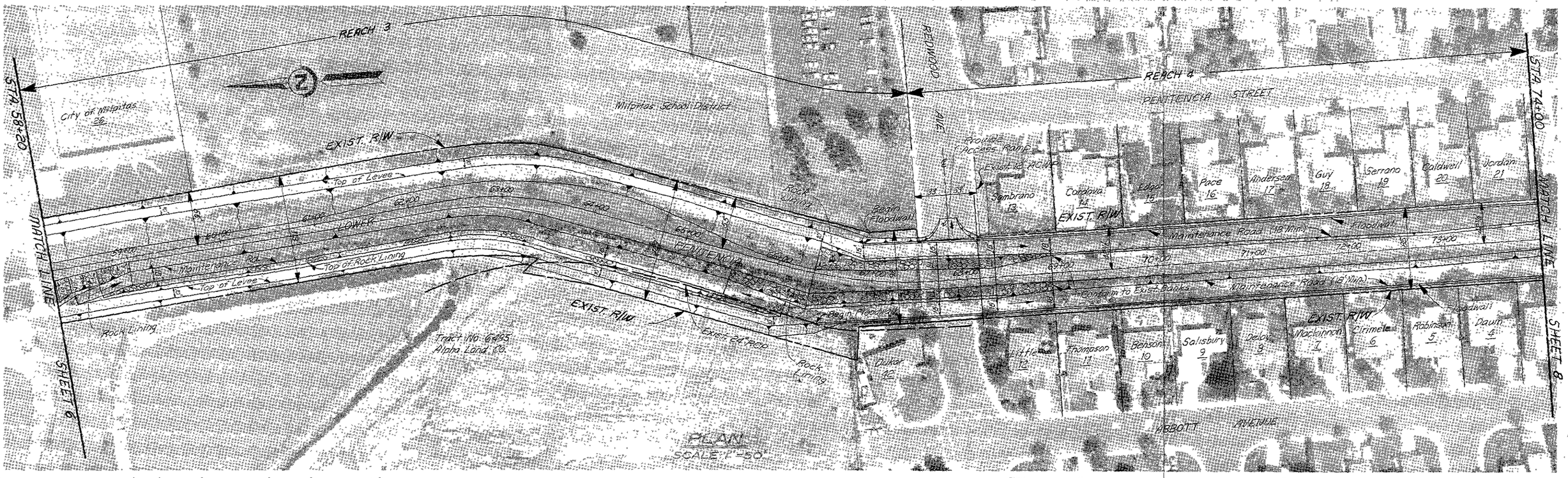
CHECKED J. Ortiz

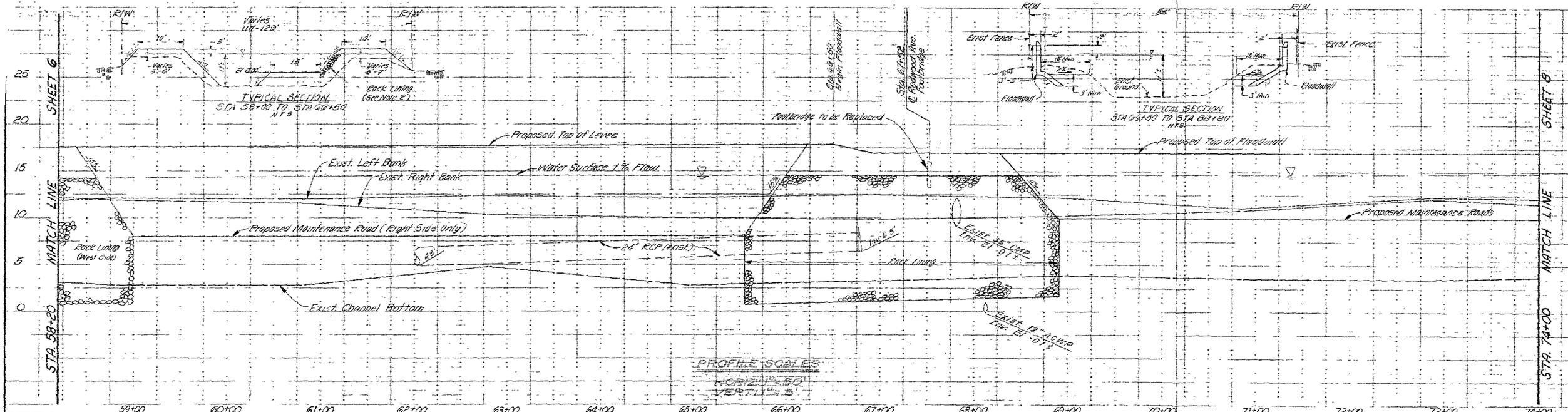
ENGINEERING CERTIFICATION — ENGINEERING APPROVAL

Santa Clara Valley Water District

GENERAL PLAN AND PROFILE
LOWER PENITENCIA CREEK

SCALE As Shown
SHEET 6 OF 17





REV.	DESCRIPTION	DATE	APPR

REDUCED PLAN
USE SCALE BELOW
0 1 2 3
3 INCHES ON ORIGINAL PLAN

REFERENCE INFORMATION AND NOTES
1. Q(1%) = 1200 CFS ; n=.03
2. Rock Lining Extends From Depressed Maintenance Road to 1% Water Surface Elevation.

DATE 8-19-78

RECTIFICATION BY AIR-PHOTO CO., INC.

DATE Sept '82
DESIGN S.E.B.
DRAWN S.W.
CHECKED J Ortiz

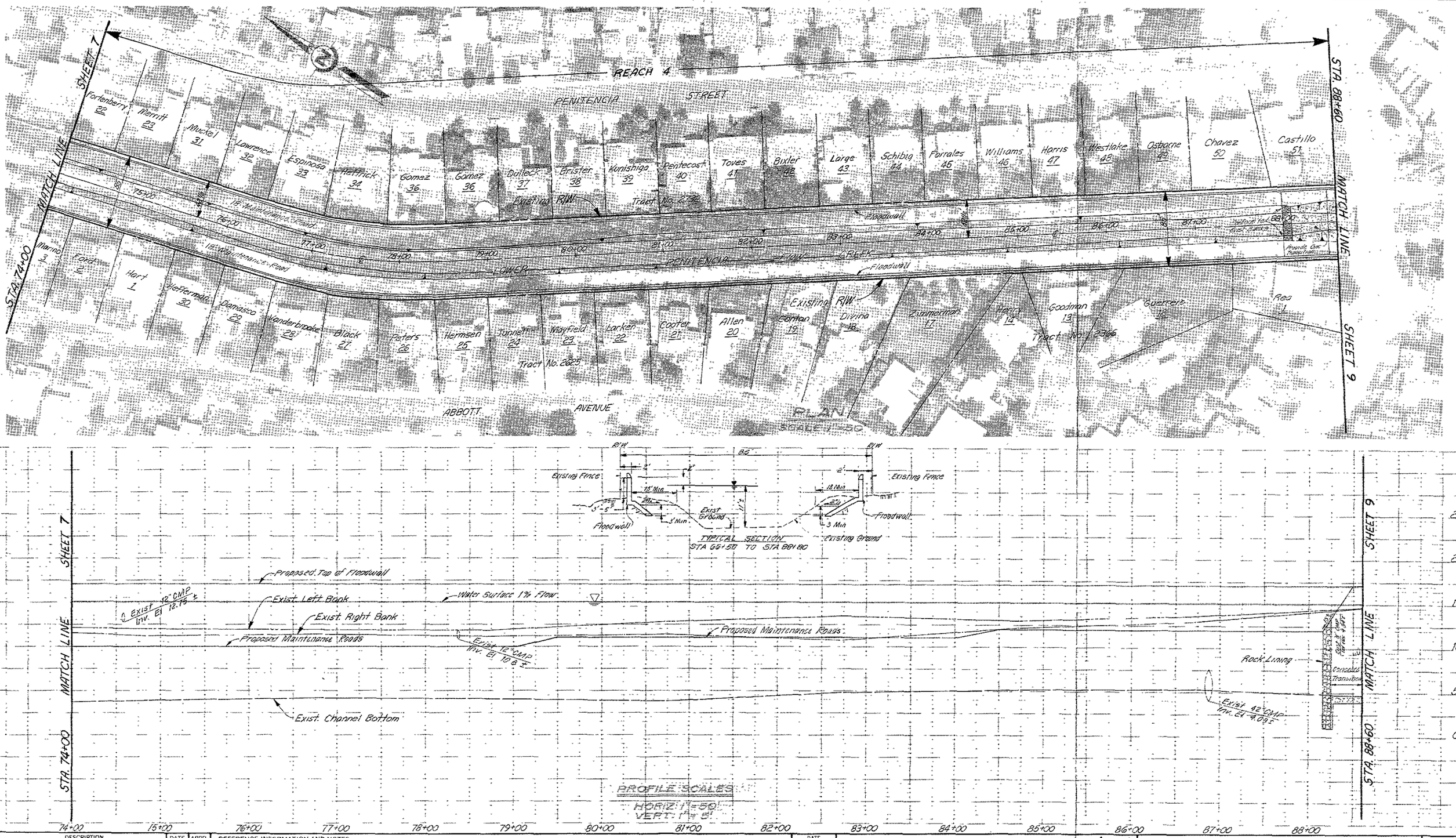
Santa Clara Valley Water District

ENGINEERING CERTIFICATION
James L. Datis
R.C.E. No. 29554
R. R. Talley
R.C.E. 28097

ENGINEER NO. APPROVAL
L. K. Smith
R.C.E. 17781

GENERAL PLAN AND PROFILE
LOWER PENITENCIA CREEK

SCALE As Sho
SHEET 7
OF 1



DESCRIPTION	DATE	APPR.
REDUCED PLAN USE SCALE BELOW 0 2 3 — 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. Q(1%) = 1200 CFS, n = .03.

PHOTOGRAPHY BY AIR PHOTO CO., INC. DATE 5-19-78 RECTIFICATION BY AIR-PHOTO CO., INC.

DATE Sept '82
DESIGN S.E.B.
DRAWN S.W.
CHECKED J Ortiz

Santa Clara Valley Water District

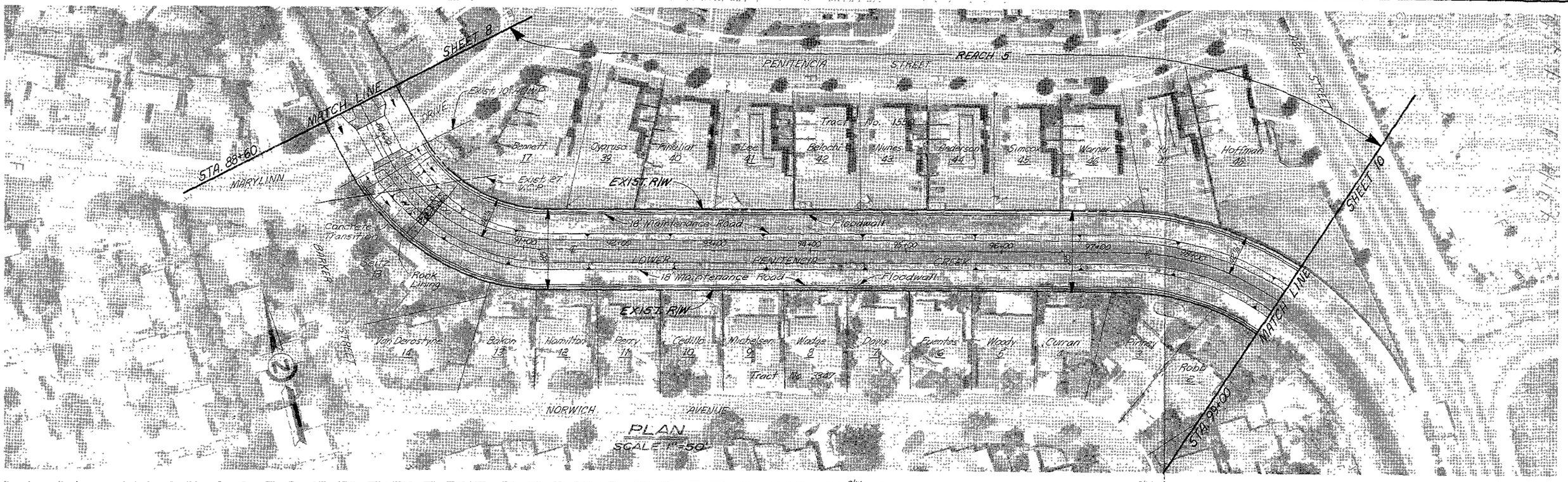
ENGINEERING CERTIFICATION Joe L. Ortiz R.C.E. NO. 29554 — R. L. Valley R.C.E. NO. 25093

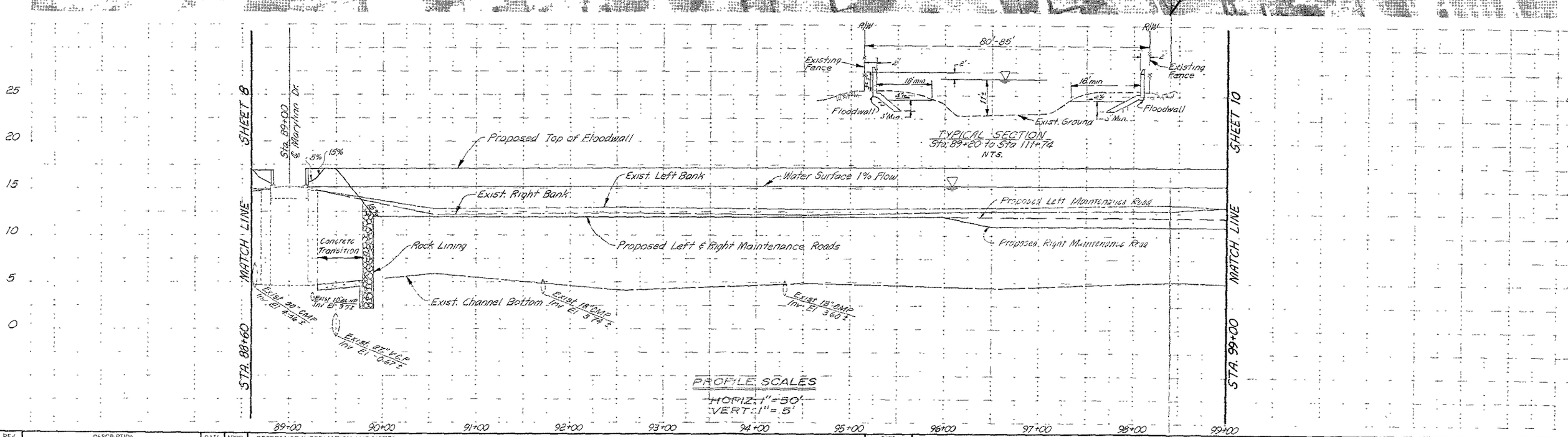
ENGINEERING APPROVAL L. L. Smith R.C.E. NO. 7701

GENERAL PLAN AND PROFILE
LOWER PENITENCIA CREEK

SCALE As Shown

SHEET 8 OF 17





REV	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 — 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. Q(1%) = 1200 CFS; n = .03

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DATE Sept '82
DESIGN S.E.B.
DRAWN S.W.
CHECKED J Ortiz

Santa Clara Valley Water District

ENGINEERING CERTIFICATION — R.C.E. 29554

ENGINEERING APPROVAL — R.C.E. 17781

GENERAL PLAN AND PROFILE
LOWER PENITENCIA CREEK

SCALE As Shown

SHEET 9 OF 17

REACH 5

STA. 99+00 MATCH LINE SHEET 9

SHEET 11 MATCH LINE STA. 111+74

CALAVERAS BLVD.

ABEL STREET

ALTON STREET

R/W

18' Maintenance Road

PENITENCIA CREEK

Floodwall

Concrete Transition

Rock Lining

Tract No. 1551

Lawlor 26

Singleton 27

Guarrar 26

Polyniak 23

Lascarain 22

Nunez 21

Falk 18

Hayes 17

Smith 16

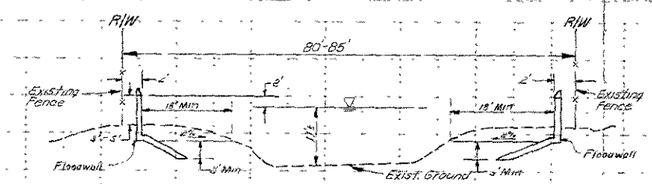
Bean 13

Bravo 12

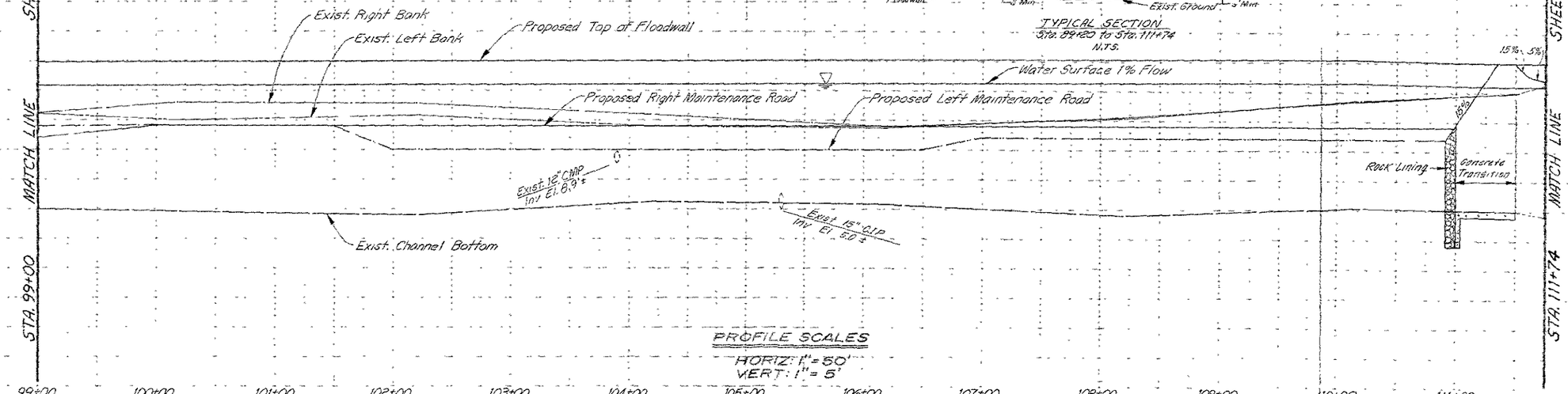
Osborn 11

Guerrero 7

PLAN
SCALE 1"=50'



TYPICAL SECTION
Sta. 89+20 to Sta. 111+74
N.T.S.



PROFILE SCALES
HORIZ: 1"=50'
VERT: 1"= 5'

REV	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES
1. Q(1%) = 1200 CFS ; n = .03

TOPOGRAPHY BY AIR PHOTO CO. INC DATE 3-19-78 RECTIFICATION BY AIR-PHOTO CO., INC

DATE Sept. '82
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DRAWN S.W.
CHECKED J. Ortiz

Santa Clara Valley Water District

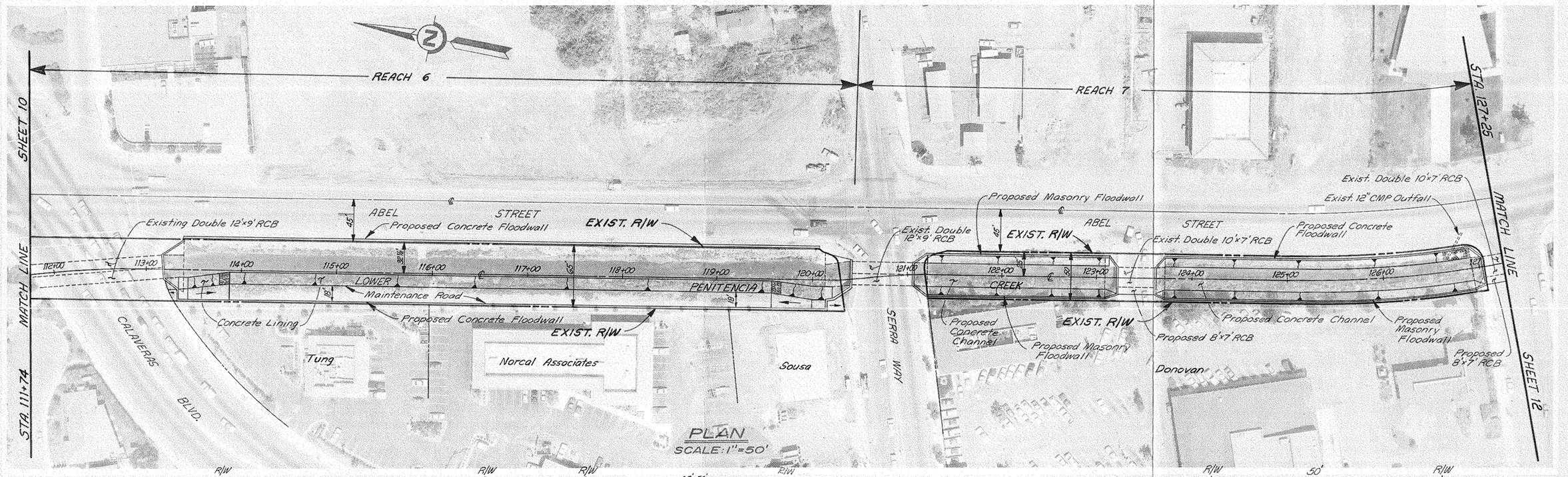
ENGINEERING CERTIFICATION Joe E. Ortiz R.C.E. 19065 R.E. Tally R.C.E. 15093

ENGINEERING APPROVAL L. L. Smith R.C.E. 7781

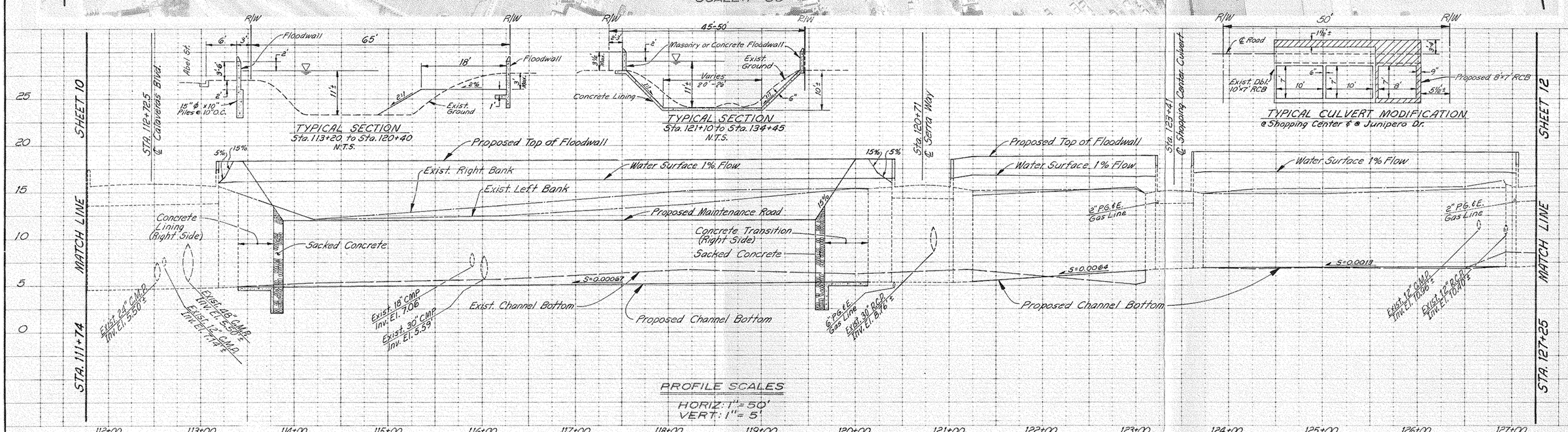
GENERAL PLAN AND PROFILE
LOWER PENITENCIA CREEK

SCALE As Shown

SHEET 10 OF 1



PLAN
SCALE: 1"=50'



REV.	DESCRIPTION	DATE	APPR.
	REDUCED PLAN USE SCALE BELOW 0 2 3 — 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. Q(1%) = 1050 CFS; n = .03 Downstream of Serra Way; n = .015 Upstream of Serra Way.

PHOTOGRAPHY BY: AIR-PHOTO CO., INC. DATE: 5-19-78 RECTIFICATION BY: AIR-PHOTO CO., INC.

DATE Sept. '82
DESIGN S.E.B.
DRAWN S.W. FSW
CHECKED J. Ortiz

Santa Clara Valley Water District

ENGINEERING CERTIFICATION
Jose L. Ortiz — PROJECT ENGINEER — R.C.E. NO. 29554
O.R. Talley — DIVISION ENGINEER — R.C.E. NO. 15093

ENGINEERING APPROVAL
R. L. Smith — HEAD, PROJECT DEVELOPMENT BRANCH — R.C.E. NO. 17781

GENERAL PLAN AND PROFILE
LOWER PENITENCIA CREEK

SCALE As Shown
SHEET 11 OF 17

REACH 7

REACH 8

SHEET 11

SHEET 13

MATCH LINE

STA 127+25

JUNIPERO SERRA DR.

CORNING AVE.

ABEL STREET

STREET

PENITENCIA CREEK

Hetch-Hetchy Aqueduct
City of San Francisco

EXIST. R/W

PROPOSED R/W

Proposed Concrete Floodwall

Exist. Double 10'x7' RCB

Proposed Masonry Floodwall

Proposed Concrete Channel

Proposed 6'x7' RCB (See Sht. 9)

Common Area for Condominiums
R.P.M. 86-35

A.B.C. Nursery School

Tract No. 4817 - Condominiums

Morrison
Williams
McCarthy
Braezell

Yeh
Shaw
Wrigley
Jorgensen

Helms

Mitnell

Proposed Concrete Lining (Right Side Only)

Ingress-Egress Easement

Rock Lining

Proposed Levee

County of Santa Clara

Exist. 12" ACMP

PLAN
SCALE: 1"=50'

TYPICAL SECTION
Sta. 121+10 to Sta. 134+45
N.T.S.

Masonry or Concrete Floodwall

Exist. Ground

Concrete Lining

Varies 20'-26'

45'-50'

TYPICAL SECTION
Sta. 135+42 to Sta. 136+85
N.T.S.

Floodwall

Concrete or Masonry Wall

Exist Fence

15"Ø x 8' Piles @ 10" O.C.

3' Scour Depth

Proposed Top of Floodwall

Exist. Right Bank

Exist. Left Bank

Water Surface 1% Flow

Proposed Top of Floodwall (Earth Levee 1' Higher)

Exist. 12" CMP Inv El 11.51 ±

Exist. 30" CMP Inv El 8.47 ±

Exist. 30" CMP Inv El 9.15 ±

Exist. 12" CMP Inv El 13.84 ±

Exist. 12" CMP Inv El 13.62 ±

Exist. 12" CMP Inv El 19.55 ±

Exist. 48" CMP Inv El 10.92 ±

Exist. 12" CMP Inv El 16.96 ±

Exist. 14" CMP Inv El 15.6 ±

Exist. 24" CMP Inv El 10.97 ±

73" Hetch-Hetchy Pipe

12" ACMP

S=0.0036

S=0.0046

Proposed Channel Bottom

Exist. Channel Bottom

TYPICAL CULVERT MODIFICATION
@ Sylvia Ave.
N.T.S.

Exist. Dbl. 10'x7' RCB

Proposed 6'x7' RCB

TYPICAL SECTION
Sta. 136+85 to Sta. 152+00
N.T.S.

63'-77' (Exist. R/W)

100'

Abel Street

Exist Fence (to be Relocated)

Earth Levee (4½' Max)

Existing Ground

15"Ø x 8' Piles @ 10' O.C.

PROFILE SCALES
HORIZ. 1"=50'
VERT. 1"=5'

128+00 129+00 130+00 131+00 132+00 133+00 134+00 135+00 136+00 137+00 138+00 139+00 140+00 141+00 142+00

STA. 142+60

25 20 15 10 5 0

DESCRIPTION: REDUCED PLAN
USE SCALE BELOW
0 1 2 3
3 INCHES ON ORIGINAL PLAN

DATE | APPR

REFERENCE INFORMATION AND NOTES

1. Q(1%) = 1050 CFS ; n= 015 Downstream of Sylvia Ave. ; n=.030 Upstream of Sylvia Ave.
2. No Modification is Proposed @ Corning Ave.

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DATE Sept. '82
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DRAWN S.W.
CHECKED J. Ortiz

Santa Clara Valley Water District

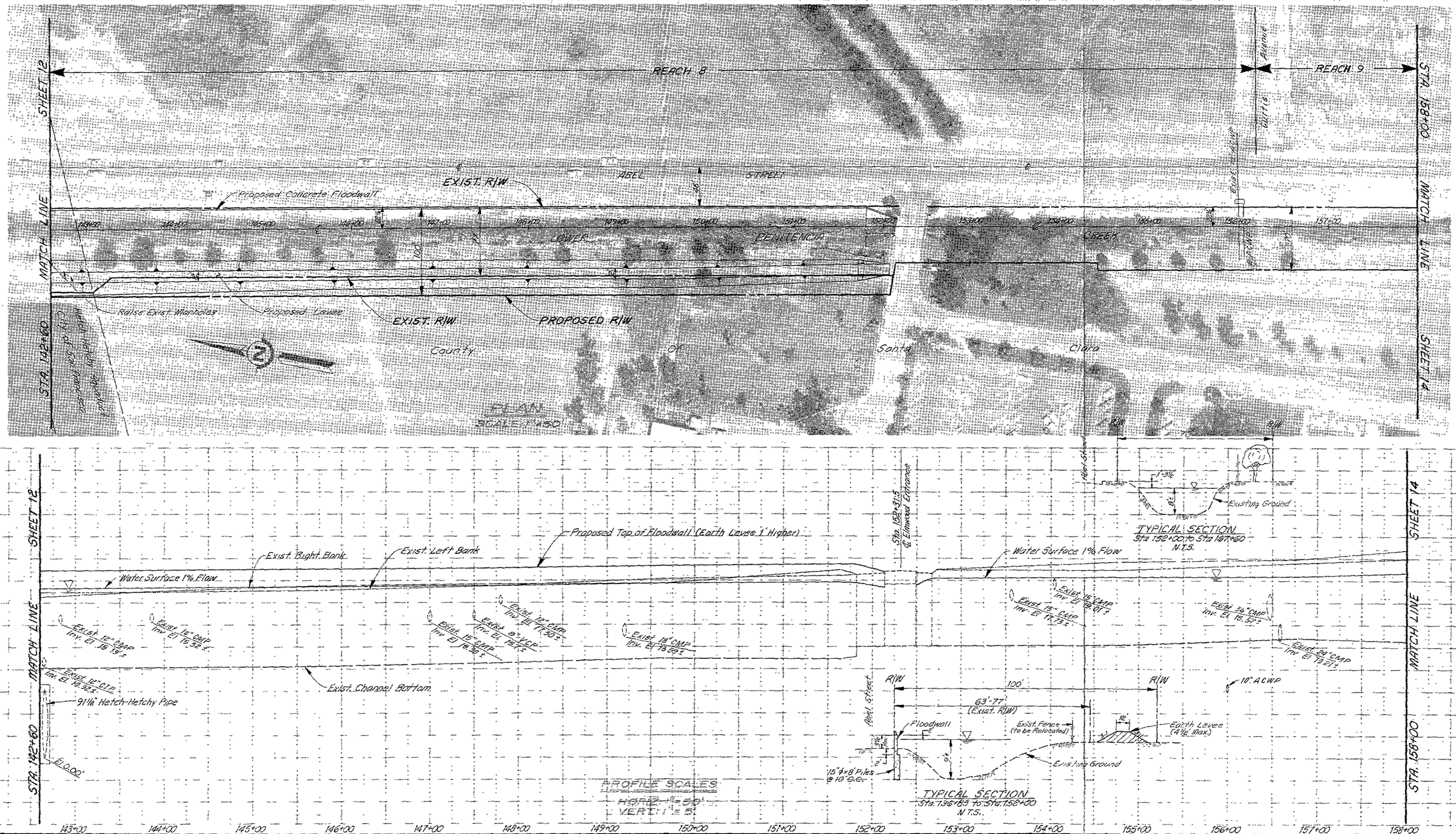
ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO 29554
CIVIL ENGINEER R.C.E. NO 25092

ENGINEERING APPROVAL
CHIEF OF SURVEY AND DESIGN R.C.E. NO 17787

GENERAL PLAN AND PROFILE
LOWER PENITENCIA CREEK

SCALE As Shown

SHEET 12 OF 17



REV	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 =3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. Q(1%) = 1050 CFS Downstream of Curtis Ave.; Q(1%) = 890 CFS Upstream of Curtis Ave.; n = .03.

AERIAL SURVEY BY AERIAL SURVEYS, INC. DATE 5-19-78 RECTIFICATION BY AIR-PHOTO CO., INC.

DATE	Sept. '82
DESIGN	S.E.B.
DRAWN	S.W.
CHECKED	J.Ortiz

Santa Clara Valley Water District

ENGINEERING CERTIFICATION: Joe L. Oates, R.C.E. No. 29264; R.K. Talley, R.C.E. No. 25793

ENGINEERING APPROVAL: R. L. Sweet, HEAD, PROJECT DEVELOPMENT BRANCH, R.C.E. No. 17781

GENERAL PLAN AND PROFILE
LOWER PENITENCIA CREEK

SCALE: As Shown

SHEET 13 OF 1

SHEET 13

MATCH LINE

STA. 158+00

REACH 9

STA. 173+20

MATCH LINE

SHEET 15

EXIST. R/W

ABEL STREET

EXIST. 10" A.C.W.P.

159+00 160+00 161+00 162+00 163+00 164+00 165+00 166+00 167+00 168+00 169+00 170+00 171+00 172+00 173+00

LOWER PENITENCIA CREEK

EXIST. R/W

County Of Santa Clara

Common Area for Condominiums

Common Area for Condominiums

Strom 86-13-27

Snow 86-13-7

Weaver 86-13-6

Bellavia 86-13-5

86-13-29

44'

P.G.&E. R/W

EXISTING 5' FIR RT.

PLAN
SCALE 1"=50'

R/W R/W

70

Abel Street

3½"

8'

Existing Ground

TYPICAL SECTION
Sta. 152+00 to Sta. 167+60
N.T.S.

Exist. Right Bank

Exist. Left Bank

Water Surface 1% Flow

Exist. Channel Bottom

Sta. 167+20 & P.G.&E. R/W

EXIST. 24" CMP. INV. EL. 214.2'

EXIST. 36" CMP.

EXIST. 18" A.C.W.P. INV. EL. 213.8'

R/W R/W

50

Abel Street

3½"

7'-8½"

Existing Fence

TYPICAL SECTION
Sta. 167+60 to Sta. 174+10
N.T.S.

EXIST. 9" V.C.P. INV. EL. 228.57'

EXIST. 15" CMP. INV. EL. 226.6'

PROFILE SCALES
HORIZ. 1"=50'
VERT. 1"=5'

35 30 25 20 15 10 5

159+00 160+00 161+00 162+00 163+00 164+00 165+00 166+00 167+00 168+00 169+00 170+00 171+00 172+00 173+00

DESCRIPTION	DATE	APPR
REDUCED PLAN USE SCALE BELOW 0 2 3 — 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. Q(1%) = 890 CFS ; n = .03.

PHOTOGRAPHY BY AIR-PHOTO CO., INC. DATE: 5-19-78 RECTIFICATION BY AIR-PHOTO CO., INC.

DATE	Sept. '82
DESIGN	S.E.B.
DRAWN	S.W. FEB
CHECKED	J. Ortiz

Santa Clara Valley Water District

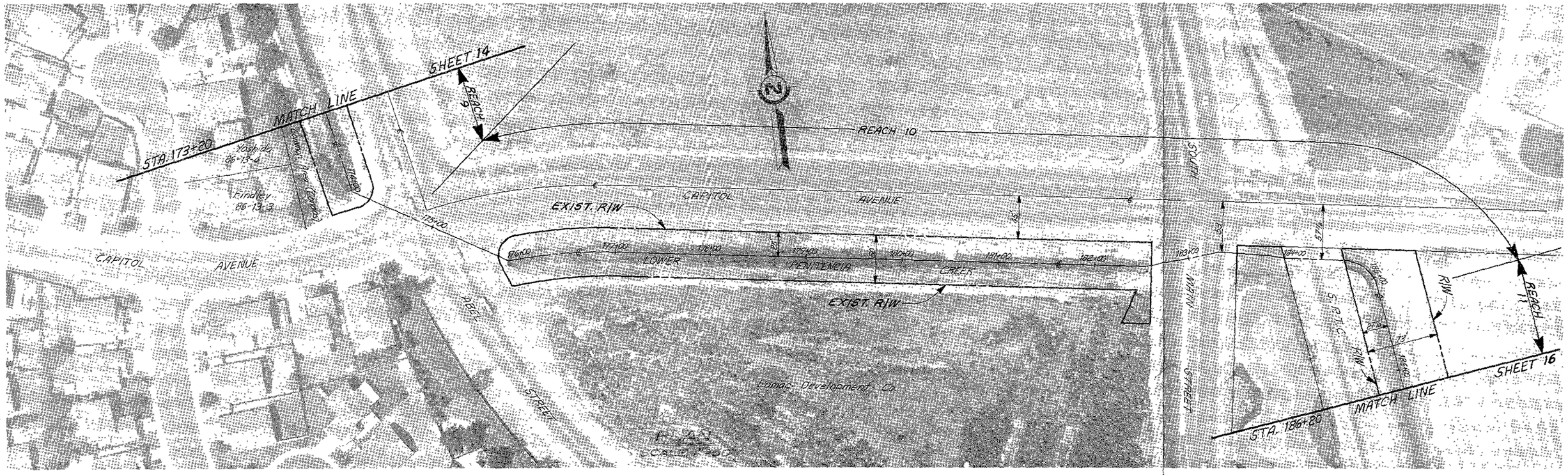
ENGINEERING CERTIFICATION: Joe L. Oates, C.E. 12,29554 — DIVISION ENGINEER — P.E. or L.S. 28093

ENGINEERING APPROVAL: L. L. Smith — HEAD, PROJECT DEVELOPMENT BRANCH — R.C.E. or L.S.

GENERAL PLAN AND PROFILE
LOWER PENITENCIA CREEK

SCALE: As Shown

SHEET 14 OF 17



REV.	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 INCHES ON 22 X 36 PLANS		

REFERENCE INFORMATION AND NOTES

1. Q(1%) = 890 CFS Downstream of Sta. 185+32, n = .03

DATE 5-19-78 RECTIFICATION BY AIR-PHOTO CO., INC.

DATE Sept. '82
DESIGN S.E.B.
DRAWN S.W.
CHECKED J. Ortiz

Santa Clara Valley Water District

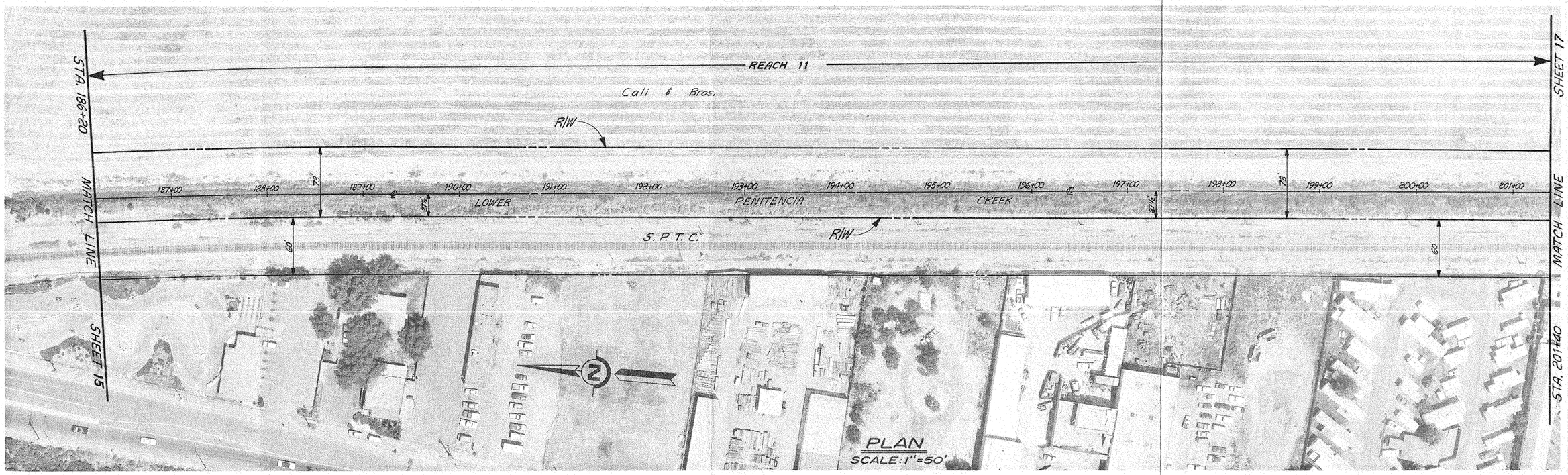
ENGINEERING CERTIFICATION: Jose L. Ortiz, R.C.E. 29564; L.K. Talley, R.C.E. 21093

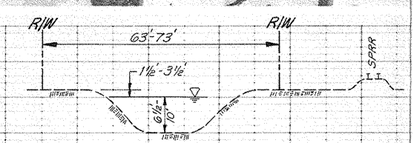
ENGINEERING APPROVAL: L. L. Smith, HEAD PROJECT DEVELOPMENT BRANCH, R.C.E. 17781

GENERAL PLAN AND PROFILE
LOWER PENITENCIA CREEK

SCALE As Shown

SHEET 15 OF





PROFILE SCALES
HORIZ: 1"=50'
VERT: 1"=5'

REV.	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES
1. Q(1%) = 810 CFS ; n = .03.

PHOTOGRAPHY BY: AIR-PHOTO CO., INC. DATE: 5-19-78 RECTIFICATION BY: AIR-PHOTO CO., INC.

DATE Sept. '82
DESIGN S.E.B.
DRAWN S.W.
CHECKED J. Ortiz

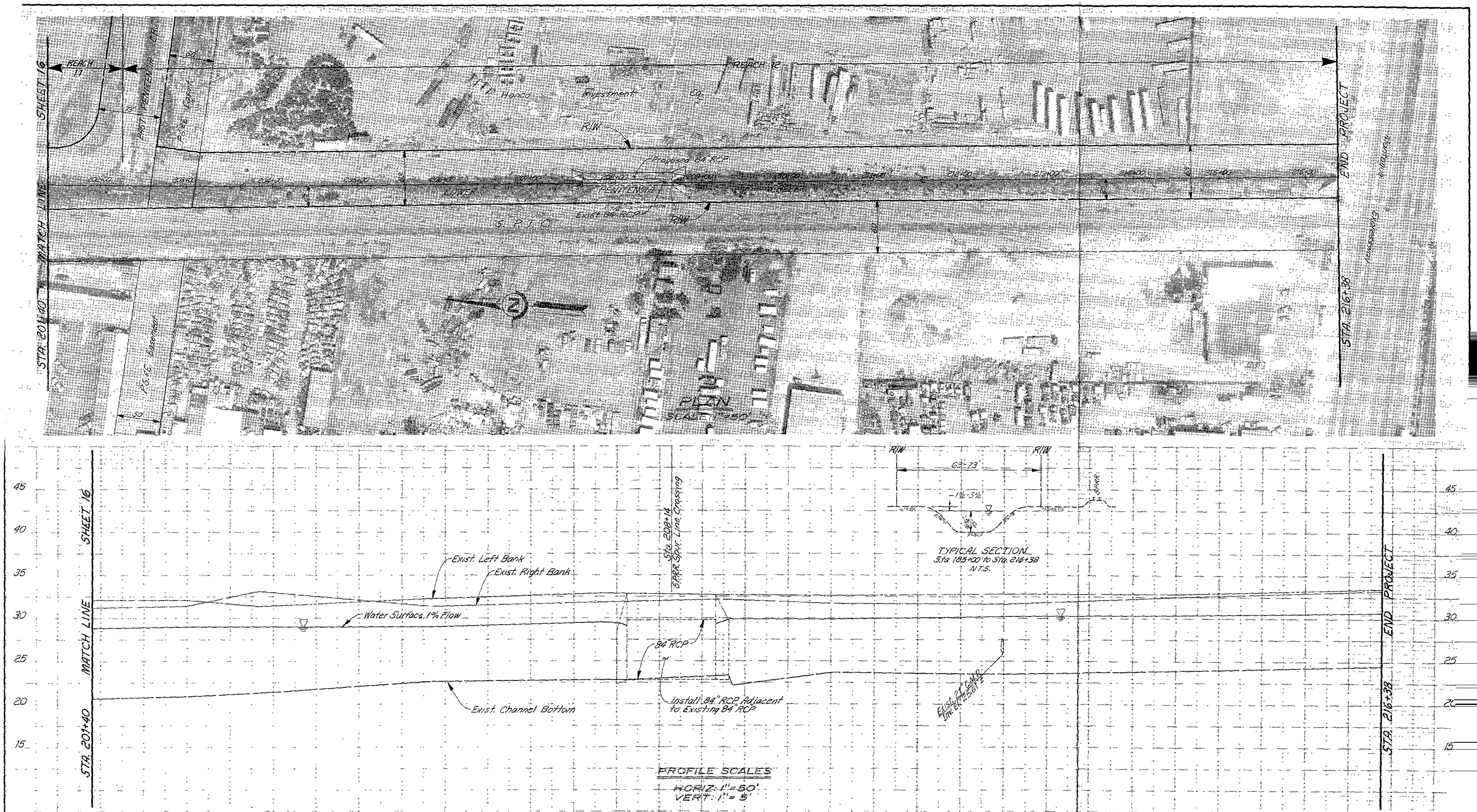
Santa Clara Valley Water District

ENGINEERING CERTIFICATION
Jose L. Ortiz R.C.E. NO. 29594
PROJECT ENGINEER
K. Talley R.C.E. NO. 25093
DIVISION ENGINEER

ENGINEERING APPROVAL
L. A. Smith
HEAD, PROJECT DEVELOPMENT BRANCH R.C.E. NO. 17781

GENERAL PLAN AND PROFILE
LOWER PENITENCIA CREEK

SCALE As Shown
SHEET 16 OF 17



REV	DESCRIPTION	DATE	APPR

REDUCED PLAN
USE SCALE BELOW
0 1 2 3
3 INCHES ON ORIGINAL PLAN

REFERENCE INFORMATION AND NOTES

1. Q (1%) = 470 CFS Upstream of Sta. 202+20, n=.03.

DATE 5-19-78 RECTIFICATION BY AIR PHOTO CO., INC.

DATE Sept. '82
DESIGN S.E.B.
DRAWN S.W.
CHECKED J. Ortiz

Santa Clara Valley Water District

ENGINEERING CERTIFICATION
ENGINEERING APPROVAL

GENERAL PLAN AND PROFILE
LOWER PENITENCIA CREEK

SCALE As Shown
SHEET 17