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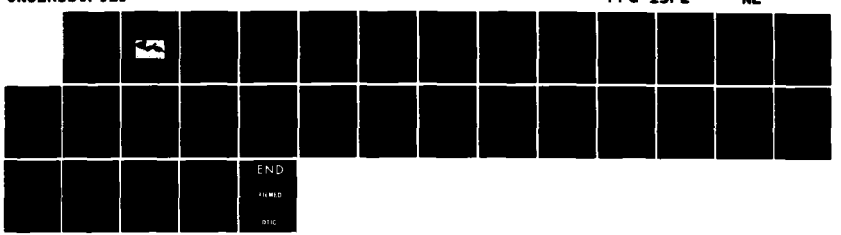

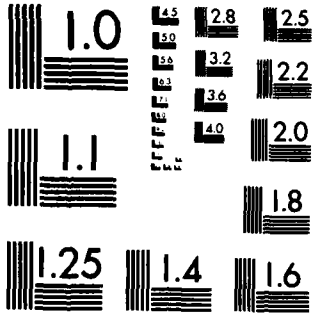

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US Army Corps of Engineers
Los Angeles District

Interim Feasibility Report for Ballona Creek and Tributaries

LOS ANGELES COUNTY DRAINAGE AREA, CALIFORNIA

DECEMBER 1982

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REPORT DOCUMENTATION PAGE

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18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Flood Control Planning

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

The purpose of the feasibility report is to review the existing Ballona Creek flood control system to determine possible inadequacies in flood control channels and determine the potential for flood control improvements in areas of unimproved tributaries. The primary flood problem found involved channel overflow caused by bridge constrictions in highly urbanized areas along Main Ballona Creek Channel.

Both structural and nonstructural plans were investigated. However, no

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plan was determined to have economic justification; therefore, no Federal participation in additional flood control improvements on the Ballona Creek system is recommended at this time.

The report was prepared to document the investigation and to provide local interests with the resulting information.

LOS ANGELES COUNTY DRAINAGE AREA, CALIFORNIA

INTERIM

FEASIBILITY REPORT

FOR

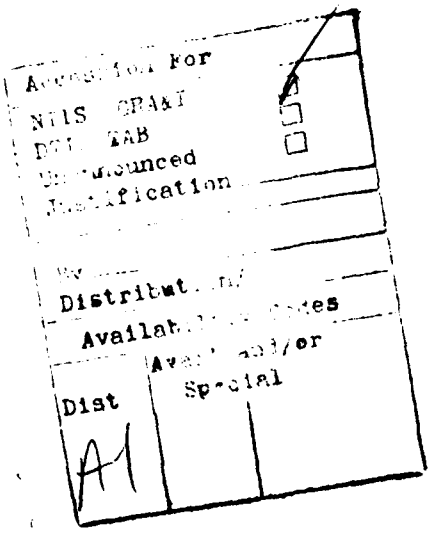
BALLONA CREEK

AND TRIBUTARIES

U.S. ARMY CORPS OF ENGINEERS

LOS ANGELES

DECEMBER 1982



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SUBJECT: Interim Feasibility Report for Ballona Creek and Tributaries, Los Angeles County Drainage Area, California

DA, South Pacific Division, Corps of Engineers, 630 Sansome Street, Room 1216, San Francisco, California 94111 28 February 1983

TO: CDR USACE (DAEN-CWP) WASH DC 20314

I concur in the conclusions and recommendations of the District Commander.

HOMER JOHNSTONE
Brigadier General, USA
Commanding

SYLLABUS

The purpose of this feasibility report is to review the existing Ballona Creek flood control system to determine possible inadequacies in flood control channels and determine the potential for flood control improvements in areas of unimproved tributaries. The primary flood problem found involved channel overflow caused by bridge constrictions in highly urbanized areas along Main Ballona Creek Channel.

Both structural and nonstructural plans were investigated. However, no plan was determined to have economic justification; therefore, no Federal participation in additional flood control improvements on the Ballona Creek system is recommended at this time.

This report has been prepared to document the investigation and to provide local interests with the resulting information.

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1.0 INTRODUCTION

1.1 Project Location. Ballona Creek drainage basin is located within the western portion of the Los Angeles County Drainage Area (LACDA) (Fig. 1). This Feasibility Report is an interim of the basin-wide LACDA Review study.

Ballona Creek drains an area of about 121 square miles. The drainage basin is bounded on the north by the crest of the Santa Monica Mountains and on the south by Baldwin Hills and Inglewood. The western boundary is approximately 1 mile inland from the ocean and extends from the Santa Monica Mountains southward to Venice and eastward to Baldwin Hills; the eastern boundary extends from the crest of the Santa Monica Mountains southward and westward to the vicinity of central Los Angeles and thence to Baldwin Hills.

Ballona Creek collects runoff from several partially urbanized canyons on the south slopes of the Santa Monica Mountains as well as from the intensely urbanized areas of West Los Angeles, Culver City, Beverly Hills, Hollywood, and parts of central Los Angeles. This urbanized area accounts for 80 percent of the watershed area; the partially developed foothills and mountains make up 20 percent.

1.2 Description of Existing Project. The existing Ballona Creek system consists of Main Ballona Creek Channel and several tributaries: Sawtelle - Westwood Channel, Benedict Canyon Channel and Centinela Creek (Figs. 1 and 2)

Main Ballona Creek Channel was constructed by the Corps of Engineers and the Los Angeles County Flood Control District between 1935 and 1939. Between 1959 and 1965, in response to the 1941 Flood Control Act, the Corps of Engineers and the Los Angeles County Flood Control District modified the existing channel to provide a higher level of protection. Modifications consisted of dredging silt deposits, raising walls and levees, and grouting levee facing.

The Benedict Canyon system channels (including Higgins and Coldwater Canyon channels) were constructed between December 1962 and January 1964. A major length of channel consists of covered box culverts. The confluence of Benedict Canyon Channel with Main Ballona Creek Channel is located at Madison Avenue just east of La Salle Avenue in Culver City.

The Sawtelle-Westwood system channels were built between March 1950 and February 1960. The channels are covered box culverts along most of the system. The confluence with Ballona Creek channel is located near Slauson Avenue west of the San Diego Freeway.

Centinela Creek channel was constructed between 1960 and 1962. It is an open, concrete-lined, rectangular channel except for an approximately 1/2 mile reach east of the Marina Freeway. The confluence with Ballona Creek Channel is located about 1/2 mile upstream from the Lincoln Boulevard crossing.

1.3 Study Authority. This report is submitted in partial response to Senate Committee on Public Works Resolution dated June 25, 1969, which reads as follows:

"Resolved by the Committee on Public Works of the United States Senate, that the Board of Engineers for Rivers and Harbors, created under Section 3 of the River and Harbor Act, approved June, 1902, be, and is hereby requested to review the report of the Chief of Engineers on the Los Angeles and San Gabriel Rivers and Ballona Creek, California, published as House Document Numbered 838, seventy-sixth Congress, and other pertinent reports, with a view to determining whether any modifications of the recommendations contained therein are advisable at the present time, in the interest of providing optimum development of all water and related land resources in the Los Angeles County Drainage Area.

1.4 Study Purpose. The purpose of this feasibility study is to review the existing Ballona Creek system of flood control improvements to determine possible inadequacies of the flood control channels and determine the potential for improvements.

1.5 Ongoing Studies and Projects.

Ballona Creek Bike Trail System.

The Ballona Creek Bike Trail project (Fig. 2) authorization was granted under a Code 710 cost sharing agreement (as defined by EC 1130-2-1121, "Recreation Development at Completed Projects," dated May 1975) between the Corps of Engineers (50 percent) and local interests (50 percent) consisting of the Los Angeles County Flood Control District, the City of Los Angeles and the City of Culver City. The trail has been planned in accordance with the Los Angeles County Drainage Area (LACDA) study.

2.0 ASSESSMENT OF PROBLEMS AND OPPORTUNITIES

2.1 Flood History. The largest historical flood in the Ballona Creek basin occurred in 1862. The greatest floodflows of record on Main Ballona Channel occurred on November 21, 1967, when a peak discharge of 32,500 cubic feet per second (cfs) was recorded at Sawtelle Boulevard. The next largest peak discharge values at this location were estimated at 27,960 cfs February 10, 1978 and 27,000 cfs on February 15, 1980. On the Sawtelle-Westwood Channel tributary to Ballona Creek, the greatest peak discharge occurred on February 15, 1980. The discharge was estimated at 12,700 cfs at a location about two-thirds of a mile north of the confluence with Main Ballona Creek Channel.

2.2 Identification of Potential Problems.

2.2.1. Main Ballona Creek Channel. The study area for Main Ballona Creek Channel extends from Cochran Avenue downstream to the Pacific Ocean (Fig. 3). Both the 100-year and Standard Project Flood (SPF) events were analyzed and overflow areas resulting from channel breakout were determined.

A. Description of Problems.

100-Year Flood. Flow in excess of a 100-year flood would cause flooding in two general areas along Main Ballona Creek Channel; one in the vicinity of the Santa Monica Freeway and another in the vicinity of the San Diego Freeway. Channel overflow would result mainly from constrictions caused

by bridges where the bottom of the bridge girders are below the top of the channel wall. In addition, there are two short channel reaches in the vicinity of the Santa Monica Freeway which have minor capacity deficiencies with respect to the 100-year discharge.

In the vicinity of the Santa Monica Freeway, a 100-year flood would cause flooding at three locations; namely, the Fairfax Avenue Bridge, a service road bridge underneath the Santa Monica Freeway approximately 1500 feet downstream from Fairfax Avenue, and an area from National Boulevard to approximately 700 feet south of the Rodeo Road Bridge.

- At the Fairfax Avenue Bridge channel 100 year flow is restricted to 18,000 cfs, 7900 cfs would overtop the bridge, 3/4 of which would return to the channel. The remaining overflow would flow southward along Fairfax Avenue under the Santa Monica Freeway and reenter the channel near Washington Boulevard.

- At the service road bridge channel 100 year flow is restricted to 17,200 cfs, 1500 cfs would overflow the channel. Floodwater would pond on the right overbank behind the freeway embankment; flow through the freeway underpasses at Venice Boulevard, La Cienega Boulevard and Corning Street; flow southeastward and return to the channel near Washington Boulevard.

- At the left overbank from National Boulevard to approximately 700 feet south of the Rodeo Road Bridge channel 100 year flow is restricted to 34,500 cfs, 2100 cfs would overflow and return to the channel.

- In the vicinity of the San Diego Freeway, a problem area was identified at the Sepulveda and Sawtelle Boulevard Bridges. At these bridges, constrictions of flow are caused by inadequate bridge height and a series of old wooden support piers. At the Sepulveda Boulevard Bridge, channel flow is restricted to 37,700 cfs; 8300 cfs would overtop the channel during a 100-year discharge.

- At the Sawtelle Boulevard Bridge, channel flow is restricted to 39,300 cfs; however, no breakout would occur during a 100-year discharge due to the breakout just upstream at Sepulveda Boulevard.

Standard Project Flood. The constraints to conveyance of the SPF discharge result from constrictions caused by bridges, and inadequate channel capacity in several reaches. The most significant breakouts from the channel would occur at the following bridge locations: Hauser Boulevard, Thurman Avenue, Fairfax Avenue, Santa Monica Freeway (service road bridge) and Sepulveda Boulevard. Breakouts where localized flooding would occur and where floodwaters would generally return to the channel are located at National Boulevard, Rodeo Road, Duquesne Avenue, Overland Avenue and Centinela Avenue.

- At Hauser Boulevard, the peak overflow would be 3,800 cfs, half of which would return to the channel on the north side; the remaining overflow would spread out south of the channel.

- At Thurman Avenue, the peak overflow would be 2,500 cfs; half the overflow would return to the channel on the north side and half would spread out south of the channel.

- At Fairfax Avenue, a peak discharge of 10,800 cfs would overtop the bridge and three-fourths of this discharge would immediately return to the channel. The remaining overflow would likely travel southward along Fairfax Avenue underneath the Santa Monica Freeway to a low area at Smiley Drive and Fairfax Avenue and thence return to the channel. However, this return flow would not contribute to peak flows in the channel.

- At the access road bridge underneath the Santa Monica Freeway, a peak overflow of 3,900 cfs would occur. The overflow would back-up north of Venice Boulevard; flow southward underneath the Santa Monica Freeway at La Cienega Boulevard, Venice Boulevard, and Corning Street; and return to the channel in the vicinity of Washington Boulevard.

- At the existing Sepulveda Boulevard Bridge, a peak overflow of about 12,300 cfs would occur during an SPF event, affecting areas both north and south of the channel. North of the channel, overflow would flood an area between Sepulveda Boulevard and the San Diego Freeway where ponding would occur. The overflow would continue westward until reaching the Sepulveda Channel. Possible ponding would occur west of the San Diego Freeway. In the area south of Ballona Creek Channel, flow breaking out at the Sepulveda Boulevard Bridge would travel south along Sepulveda Boulevard until reaching the San Diego Freeway-Marina Freeway interchange, thence flow into Centinela Creek and eventually into Ballona Creek Channel west of Lincoln Boulevard.

B. Level of Protection. Because the channel in the reach upstream from National Boulevard was improved at various locations by the Corps and local interests at different times, the level of protection along Ballona Channel varies from a minimum of 50-year protection at the service road bridge underneath the Santa Monica Freeway (17,200 cfs bridge capacity) to greater than SPF protection at Hauser and Thurman Avenues (24,200 cfs bridge capacity).

In the reach downstream from National Boulevard, the major constrictions are caused by Sepulveda and Sawtelle Boulevard bridges. At the present time, the City and County of Los Angeles are planning to replace the Sepulveda and Sawtelle Boulevard Bridges. With these new bridges in place, the reach downstream from National Boulevard would have greater than 100-year level flood protection under present conditions of development.

C. Flood Damages. In the reach upstream from National Boulevard, the Standard project flood would affect about 385 acres of residential, commercial, industrial and public development valued at about $107,000,000 (Table 1). The SPF floods and the 100-year would cause damages estimated at $14,800,000 and $6,800,000, respectively (Table 2). The equivalent annual damages over a 50-year period are estimated at about $81,000 (Table 2).

In the reach downstream from National Boulevard, replacement of the Sepulveda and Sawtelle Boulevard Bridges by local interests would provide channel containment of greater the 100-year flood. Based on comparision of overflow areas with the reach upstream from National Boulevard, the maximum equivalent annual damages that can be expected in this reach is estimated at about $300,000.

2.2.2 Ballona Tributaries. Tributary systems were analyzed to determine whether there are any major flood problem areas.

A. Sawtelle-Westwood. The Sawtelle-Westwood Systems consist of the Sawtelle and Sepulveda channels which join together to form the Sawtelle-Westwood channel which empties into Ballona Creek channel. These channels could convey nearly a 100-year flood peak discharge. The small amount of over flow produced by a 100-year flood event is expected to be safely handled by existing streets without producing any significant damage.

During an SPF event, the peak discharge on the channels would exceed their capacities. In some areas, overflow would be contained in the streets; in other areas development would be subject to damage by flooding up to two feet in depth.

B. Benedict Canyon Channel, Centinela Creek. Along Stone Canyon Creek, an unimproved tributary to Sepulveda channel, floodflows would cause damages to residential properties and to development at U.C.L.A.

The other major tributaries to Ballona Creek are Benedict Canyon Channel and Centinella Creek. Hydrologic studies of these tributaries have determined that these channels would provide protection approaching a SPF flood event. Therefore no further investigations of these tributaries were conducted.

3.0 PLAN FORMULATION

The basic method used in formulating plans for flood protection on Ballona Creek system involved determining the capacity of the existing channel and determining if any modification to the existing channel is needed and economically feasible. The study assumed future urban conditions and proper channel maintenance.

3.1 Main Ballona Channel

In addition to the aforementioned assumptions the Main Ballona Creek channel study assumed prior replacement of the Sepulveda and Sawtelle Boulevard Bridges.

Based on these assumptions two plans on the Main Channel were developed for study: one providing 100-year flood protection and the other SPF flood protection. Nonstructural methods of achieving flood protection were also considered.

100-year Flood. Three potential problem areas were identified, which if they were to be modified, would provide 100-year level flood protection along

the entire channel. Plans formulated for two of these locations consist of modifications of the Fairfax Avenue Bridge and of the service road bridge underneath the Santa Monica Freeway including modification of 1800 feet of channel. Plans were not developed for the third area which is located in the reach between National Boulevard and a point about 100 feet south of Rodeo Road because an examination of the largely undeveloped overflow area revealed that it would not experience any significant damage.

In order to provide 100-year level protection at Fairfax Avenue and the service road bridge, each bridge should be raised 4.25 feet above its existing level. At the Fairfax Avenue Bridge, the road must be regraded and paved and existing access driveways must be raised. The service road bridge requires replacement and regrading. In addition, approximately 1800 feet of channel wall between Fairfax Avenue and the Santa Monica Freeway should be raised 1.8 feet.

Standard Project Flood. To provide SPF protection along the entire channel, bridges at the following locations must be replaced: Hauser Avenue, Thurman Avenue, Fairfax Avenue, National Boulevard (Southern Pacific Railroad Bridge), Rodeo Road, Duquesne Avenue, Inglewood Boulevard; and Centinela Avenue. The SPF plan also involves the following channel improvements: raising the channel wall 5 feet from Fairfax Avenue to the Santa Monica Freeway, adding 4 feet of side slab from National Boulevard to Rodeo Road, raising the channel wall 2 to 3 feet from Rodeo Road to Duquesne Avenue, adding 3 feet of side slab from Duquesne Avenue to La Salle Avenue, and raising the channel wall 4.5 feet from La Salle Avenue to Sawtelle Boulevard and Sepulveda Channel to Centinela Avenue.

The service road bridge underneath the Santa Monica Freeway must be removed under the SPF plan. In order to pass the SPF event, this bridge would need to be raised to a level that would then make it impassable by service vehicles due to the Santa Monica freeway bridge being located directly over the service bridge.

3.2 Sawtelle-Westwood System. Along unimproved Stone Canyon Creek, a number of flood control measures were considered to provide protection to residential properties and to UCLA. No measures could be economically justified. In addition, a number of plans were considered to provide a higher level of protection along the existing channels. These plans included detention basin in Hogg. Stone, Sepulveda and Dry Canyons. However, basin sites which are both physically suitable and economically justified could not be identified. No modification of the exisitng channels were considered because the existing system consists primarily of covered channels and the cost of modifying such channels would be prohibitive.

3.3 Nonstructural Methods. Application of nonstructural flood protection measures such as floodproofing, relocation, and flood plain regulation was investigated.

- o Flood Plain Regulation. Main Ballona Channel flows through the cities of Los Angeles and Culver City. These cities currently participate in the regular phase of the National Flood Insurance Program and are

therefore already covered by flood plain regulations. Because these regulations are being enforced by local interests, the study gave no further consideration to this measure

- Floodproofing. Consideration was given to floodproofing the 651 existing structures by providing floodwalls around each structure.

- Relocation. Relocation was not considered a viable alternative because of the tremendous cost as well as tremendous adverse economic and social impacts.

4.0 EVALUATION OF PLANS

Plans were evaluated to determine project benefits as related to project costs. The resulting benefit-to-cost ratios provide the basis for determining the economic justification of providing flood control improvements on Ballona Creek. An account of project benefits and costs, is given in Tables 3, 4 and 5.

No geotechnical assessment of the sites were made inasmuch as during the preliminary investigation it became apparent that the project would not have economic justification.

4.1 100-Year Flood: Benefits and Costs. The first cost of providing 100-year flood protection by bridge improvements at Fairfax Avenue and the service road bridge underneath the Santa Monica Freeway, and by modification of about 1800 feet of channel between Fairfax Avenue and the Santa Monica Freeway is estimated at $780,000. Equivalent annual costs are calculated to be about $61,000 using a discount rate of 7-5/8 percent over a 50-year period. Equivalent annual benefits from flood damages reduction are estimated at $52,000. The benefit-to-cost ratio for the 100-year plan is 0.85 to 1. With the anticipated Sepulveda/Sawtelle bridge replacements by local interests, the entire reach downstream from National Boulevard will have greater than 100 year level of protection.

- Floodproofing. A comparison of the benefits and costs of floodproofing indicated that this measure is not economically justified. In the 100-year overflow area upstream from National Boulevard, the annual cost of floodproofing the 651 structures in the flooded area is approximately $1,070,000. Comparing this cost to the $52,000 in annual benefits from flood damage reduction (Table 5) yields a benefit-to-cost ratio of less than 0.1 to 1.

4.2 Standard Project Flood; Benefits and Costs. The first cost of providing SPF protection in the reach upstream from National Boulevard by bridge replacements at Hauser Avenue, Thurman Avenue and Fairfax Avenue; and by channel modification from Fairfax Avenue to the Santa Monica Freeway is estimated at $2,520,000. Equivalent annual costs are calculated to be about $200,000 using a discount rate of 7-5/8 percent over a 50-year period. Equivalent annual benefits from flood damage reduction in this reach are estimated at $81,000, assuming no residual damages. The benefit-to-cost ratio for this reach is 0.4 to 1.

The first cost of providing SPF protection for the reach downstream from National Boulevard by replacing bridges at National Boulevard (Southern Pacific Railroad Bridge), Rodeo Road, Duquesne Avenue, Inglewood Boulevard and Centinela Avenue; and by modifying reaches of channel from National Boulevard to Sawtelle Boulevard and Sepulveda Channel to Centinela Avenue is estimated at $15,220,000. Equivalent annual costs are about $1,190,000 using a discount rate of 7-5/8 percent over a 50-year period. Equivalent annual benefits are estimated to be a maximum of about $300,000. The benefit-to-cost ratio in this reach is roughly 0.3 to 1.

- o Floodproofing. In the SPF overflow area upstream from National Boulevard, the annual cost of floodproofing 1073 structures is about $1,650,000. Comparing this cost to the annual benefits of $81,000 (assuming no residual damages) benefit-to-cost ratio of less than 0.1 to 1.

4.3 Economic Justification. Based on a comparison of project benefits and costs, neither the 100-year plan nor the SPF plan for flood control improvements on Main Ballona Creek Channel can be economically justified.

5.0 EFFECTS OF NO FEDERAL PROJECT

It is anticipated that the Sepulveda and Sawtelle Boulevard Bridges will be replaced by local interests. The replacement of these bridges would provide that reach of channel with greater than 100-year level flood protection; i.e. the entire reach of Main Ballona Channel downstream of National Boulevard would then have greater than 100-year level flood protection under present conditions of development. A potential for flood damages from the 100-year flood, however, will continue in the reach of channel upstream from National Boulevard.

In the event of a Standard Project Flood, there is a potential for greater and more widespread damages in overflow areas from Hauser Boulevard downstream to about Lincoln Boulevard. From Lincoln Boulevard to the Pacific Ocean, the existing channel has sufficient capacity to convey the SPF discharge.

6.0 VIEWS OF COORDINATING AGENCIES AND LOCAL SPONSORS

A public meeting on the Los Angeles County Drainage Area Review study was held on June 7, 1972. The meeting included a discussion of flood control on the Ballona Creek system. Little public concern, however, was expressed regarding Ballona Creek. Since the time of the public meeting, close coordination has been maintained with the local sponsor, Los Angeles County Flood Control District, and other appropriate agencies.

Drafts of this report were forwarded to the Los Angeles County Flood Control District for their informal review and comments in October 1982. Their comments indicated general agreement with the report conclusions (see letter following page 8).

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
P. O. BOX 2711, TERMINAL ANNEX
LOS ANGELES, CALIFORNIA 90053

HOWARD H. HALE
CHIEF ENGINEER

TELEPHONE 226-4321

January 13, 1983

IN REPLY PLEASE REFER TO
FILE NO. 17.41
Ballona Creek
Feasibility Report

Col. Paul W. Taylor
District Engineer
Department of the Army
Los Angeles District, Corps of Engineers
P.O. Box 2711
Los Angeles, CA 90053

Attention Mr. Tad Ouchi

Dear Colonel Taylor:

This will confirm discussions with members of your staff regarding the Ballona Creek Feasibility Report prepared as an interim part of the basin-wide Los Angeles County Drainage Area (LACDA) Review study. Our review indicated general agreement with the report conclusions.

The Sawtelle and Sepulveda Boulevards bridges will be reconstructed by contracts administered by the City of Los Angeles under 50/50 cost sharing agreements with this District. The Sawtelle Boulevard bridge is scheduled to be advertised in December 1983 and the Sepulveda Boulevard bridge in June 1984. The new bridges will eliminate the major restrictions at these two locations.

Yours very truly,

Carl L. Blum

Carl L. Blum, Division Engineer
Program Management Division

DJK:du

cc: Mr. Phillip V. King
Acting City Engineer
City of Los Angeles

2250 ALCAZAR STREET, LOS ANGELES

7.0 ENVIRONMENTAL ASSESSMENT.

7.1 INTRODUCTION AND PROJECT DESCRIPTION.

7.1.1 The Ballona Creek watershed, located in western Los Angeles County, consists of a drainage basin of 121 square miles. The rectangular to trapezoidal-rectangular concrete channel, constructed from 1936 through 1939, extends from the intersection of Cochran Avenue and Venice Boulevard and flows southwesterly through Culver City and Marina Del Rey to the Pacific Ocean. It serves as a collecting duct from several canyons of the Santa Monica Mountains and also collects runoff from streets and storm drains from West Los Angeles, Beverly Hills, Culver City, Hollywood, and part of Los Angeles, west of the main business district.

7.1.2 The project involves a re-evaluation of the existing channel in terms of any existing and/or possible future flood problems with respect to overflow locations, based on updated meteorological and hydrological data. The study area extends from the Cochran-Venice intersection, down the length of the channel, including the properties adjacent to it, to Lincoln Boulevard.

7.1.3 The following alternative plans were considered:

a. Do nothing. Present conditions would continue.

b. To ensure protection from a 100-year event, bridges at Fairfax Avenue and Sepulveda and Sawtelle Boulevards would be replaced or modified, and a service bridge under the Santa Monica Freeway would be removed because these structures restrict the effective conveyance of floodwaters. Also, improvements would be made to the section of levee 300 feet upstream from Fairfax Avenue to the Santa Monica Freeway because of potential failure during a 100-year flood event.

c. To provide protection from a standard project flood, the bridges at Hauser, Thurman, and Fairfax Avenues, and Higuera Street and the Southern Pacific Railroad Bridge (SPRR) at the National Boulevard would be replaced. The proposed work would also include the removal of the service bridge under the Santa Monica Freeway and improvements to the stretch of levee 300 feet upstream from Fairfax Avenue to the Santa Monica Freeway and from the SPRR Bridge at National Boulevard to Duquesne Avenue. Downstream of Duquesne Avenue, the proposed improvements would include: replacement of bridges at Duquesne Avenue, at Sepulveda, Sawtelle and Centinela Boulevards, and channel modifications from Duquesne Avenue to Sawtelle Boulevard and from Sepulveda Channel to Centinela Avenue.

7.2 ENVIRONMENTAL SETTING AND IMPACTS.

7.2.1 The channel goes through a highly developed residential and industrial region. In several reaches, homes have been built right up to the channel. The vegetation along Ballona Creek consists of ornamental shrubs and trees planted adjacent to the channel; the channel itself is essentially devoid of vegetation. Due to the high degree of urbanization, there are no areas of significant habitat within the boundaries of the project area. There are extensive wetlands of significant habitat value west of Lincoln Boulevard, in the tidal and intertidal zones, outside of the project area. However, no significant adverse impacts to the wetland area are anticipated from any of the alternatives considered.

7.2.2 Any areas that would directly impacted by alternatives that include the replacement of bridges are located in highly developed regions; therefore, no new impacts are expected. No impacts to cultural resources or historic places are anticipated by the proposed action. No rare or endangered species would be impacted. The most severe impact would be the disruption of traffic flow during reconstruction of the bridges, but this is considered to be a temporary inconvenience.

7.3 AGENCIES CONTACTED.

Informal coordination was conducted with the following agencies and staff at both agencies concur with the findings of this environmental assessment.

U.S. Fish and Wildlife Service, Laguna Niguel
Mr. Dale Pierce

California Department of Fish and Game, Long Beach
Mr. Jack Spruill

7.4 CONCLUSION.

Based on limited available data and on a brief reconnaissance survey conducted by a Corps biologist, it is considered that the environmental impact of any of the alternative plans discussed in paragraph 7.1.3 would not significantly affect the environment.

7.5 REFERENCES.

US Army Corps of Engineers, Environmental Assessment for Recreational Development; Ballona Creek Bicycle Trail, 31 January 1978.

US Army Corps of Engineers, Hydrology for Feasibility Report, Ballona Creek Channel and Sawtelle-Westwood Channel, California LACDA, February 1979.

US Army Corps of Engineers, Review Report for Flood Control and Allied Purposes, LACDA, April 1976.

Finding of No Significant Impact
Ballona Creek, Los Angeles County, California
Los Angeles County Drainage Area
November 1982

I have reviewed the Environmental Assessment prepared for Ballona Creek, Los Angeles County, California (Inclosure 1). I have considered the environmental conditions prior to the project, the alternatives and their impacts and find that due to the high degree of urbanization within the study area, impacts from any of the alternatives considered are not significant. An environmental impact statement need not be prepared for the proposed action.

7 DEC 1982
Date

Paul W. Taylor
PAUL W. TAYLOR
COLONEL, CE
Commanding

8.0 CONCLUSIONS

It is concluded that:

- The primary flood problems in the study area are from channel overflow caused by bridge constrictions along Main Ballona Creek Channel.

- There are two problem areas along Main Ballona Channel: one is in the vicinity of the San Diego Freeway at Sepulveda/Sawtelle Boulevards, and the other is in the vicinity of the Santa Monica Freeway.

- The problem area at Sepulveda/Sawtelle Boulevards was identified in the early phase of the Ballona Creek Study. Local interests have subsequently taken steps to replace these bridges. This action will significantly reduce flood problems downstream from National Boulevard.

- The economic analysis determined that neither the Standard Project Flood plan nor the 100-year plan can be economically justified.

- Bridge improvements recommended in the 100-year plan are traditionally a local responsibility. Accordingly, the local interests are modifying the Fairfax Avenue Bridge and the service road bridge underneath the Santa Monica Freeway to provide at least 100-year flood protection.

9.0 RECOMMENDATIONS

I have given consideration to all information and studies pertinent to the Ballona Creek Study and recommend that no Federal participation in additional flood control improvements on the Ballona Creek system be undertaken at this time.

PAUL W. TAYLOR
Colonel, CE
District Engineer

TABLE 1
PRESENT VALUE OF DEVELOPMENT
OVERFLOW AREAS ABOVE NATIONAL BLVD[1]

BALLONA CREEK

Land Use	Value of Development (in Thousands) SPF Overflow	100-Year Overflow	Number of Units[2] SPF Overflow	100-Year Overflow
Residential				
Single Family Structures	33,195	19,540	637	365
Single Family Contents	13,278	7,183		
Multi Family Structures	20,585	10,265	731	387
Multi Family Contents	8,714	4,586		
Commercial	14,935	14,152	91	70
Industrial	12,888	11,088	96	82
Public	3,586	3,586	5	5
TOTAL	107,181	70,400	1560	909

1 See page 8 for discussion of reach below National Boulevard; overflow areas assume future conditions of development

2. Units defined as individual residences or business; units located on second floors were not counted nor were their values included.

TABLE 2

PROBABLE AND EQUIVALENT ANNUAL DAMAGES
ABOVE NATIONAL BOULEVARD[1]
WITHOUT IMPROVEMENT
(IN THOUSANDS; 50 YR LIFE PRICE LEVEL 7-5/8 Percent)

BALLONA CREEK

LAND USE	SPF Damages[2]	100-year Flood Damages[2]	Equivalent Annual Damages
Residential			
Single Family Structure	3,519	1,889	21.1
Single Family Contents	2,452	1,156	13.6
Multi Family Structure	1,333	334	5.5
Multi Family Contents	1,184	299	4.9
Commercial	1,671	401	6.7
Industrial	4,363	2,512	27.3
Public	315	206	2.2
TOTAL	14,837	6,797	81.3

1. See page 8 for discussion of reach below National Boulevard
2. Assumes future conditions of development

TABLE 3

FIRST COSTS, 100-YEAR FLOOD PLAN
(1982 PRICE LEVEL)

BALLONA CREEK

Construction Costs	
Raise Fairfax Avenue Bridge	$170,000
Replace Service Road Bridge at Santa Monica Freeway	$300,000
Improve Channel, Fairfax Avenue to Santa Monica Freeway	60,000
Contingencies - 25 percent	130,000
Total Construction Costs	$660,000
Engineering and Design - 10 percent	70,000
Supervision and Administration - 7 percent	50,000
TOTAL FEDERAL FIRST COSTS	$780,000

TABLE 4

FIRST COSTS, STANDARD PROJECT FLOOD PLAN
(1982 PRICE LEVEL)

BALLONA CREEK

UPSTREAM FROM NATIONAL BOULEVARD

Construction Costs	
Replace Hauser Avenue Bridge	$ 450,000
Replace Thurman Avenue Bridge	450,000
Replace Fairfax, Avenue Bridge	670,000
Improve Channel Fairfax Avenue to Santa Monica Freeway	150,000
Contingencies - 25 percent	430,000
Total Construction	$2,150,000
Engineering and Design - 10 percent	220,000
Supervision and Administration - 7 percent	150,000
FEDERAL FIRST COSTS	$2,520,000

DOWNSTREAM FROM NATIONAL BOULEVARD

Construction Costs	
Replace Southern Pacific Railroad Bridge (National Boulevard)	$ 690,000
Replace Rodeo Road Bridge	2,160,000
Replace Duquesne Avenue Bridge	1,510,000
Replace Inglewood Boulevard Bridge	2,070,000
Replace Centinela Avenue Bridge	2,070,000
Improve Channel, National Boulevard to Sawtelle Boulevard	1,550,000
Improve Channel, Sepulveda Channel to Centinela Avenue	360,000
Contingencies - 25 percent	2,600,000
Total Construction	$13,010,000
Engineering and Design - 10 percent	1,300,000
Supervision and Administration - 7 percent	910,000
TOTAL FEDERAL FIRST COSTS	$15,220,000
FEDERAL FIRST COSTS UPSTREAM FROM NATIONAL BOULEVARD	2,520,000
TOTAL FEDERAL FIRST COSTS	$17,740,000

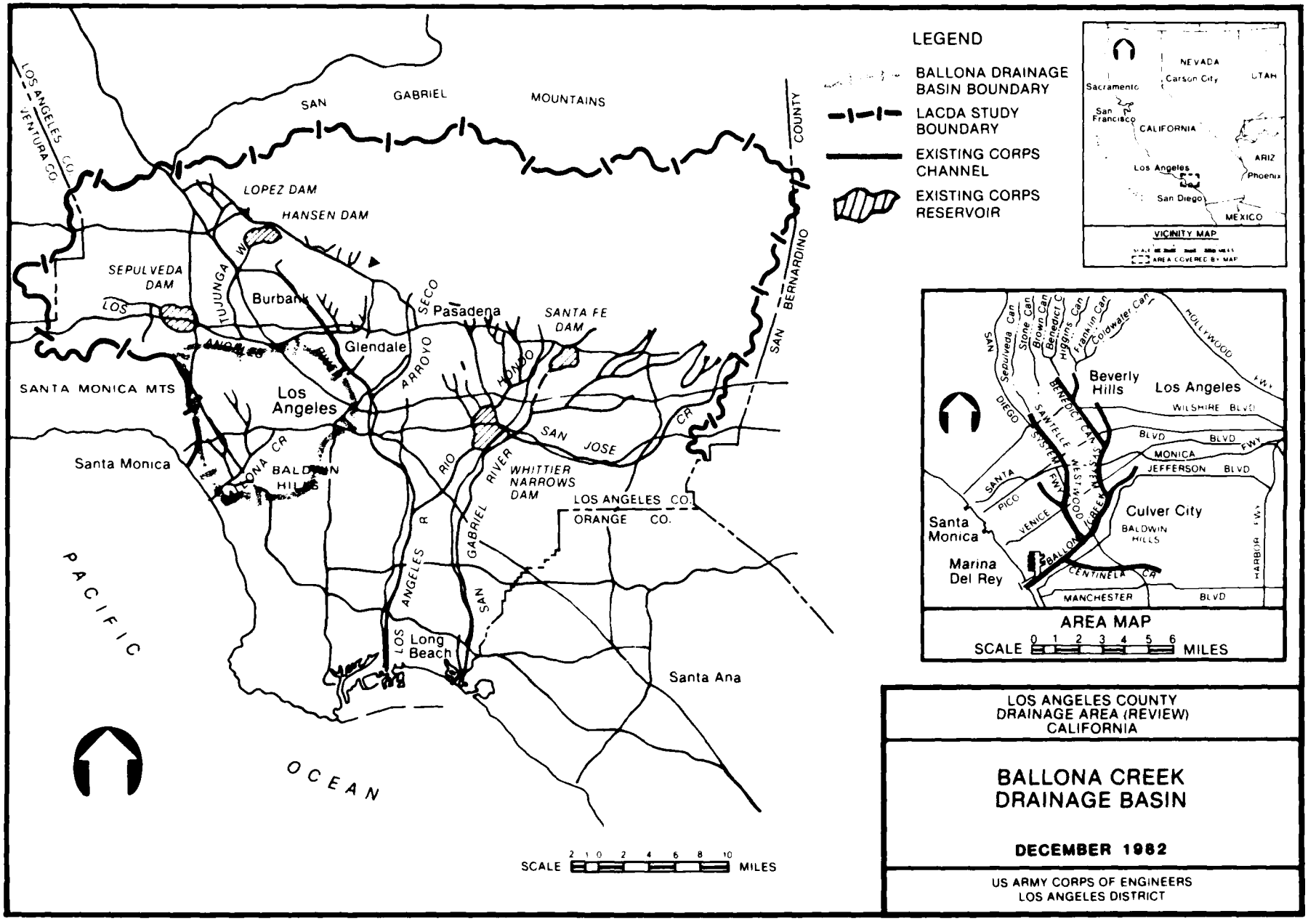
TABLE 5

SUMMARY OF BENEFITS AND COSTS ABOVE NATIONAL BOULEVARD[1]
(50-YEAR LIFE, 7-5/8 Percent)

BALLONA CREEK

Flood Control Benefits and Costs	100-Year Protection[2] above National Blvd.	SPF Protection[2] above National Blvd.
Equivalent Annual Benefits	52,000	81,000
Equivalent Annual Costs	61,000	197,000
Benefit-to-Cost Ratio	0.85	0.4
Net Benefits	-9,000	-116,000

1. See page 8 for discussion of reach below National Boulevard
2. Overflow areas assume future conditions of development



LOS ANGELES COUNTY
DRAINAGE AREA (REVIEW)
CALIFORNIA

BALLONA CREEK DRAINAGE BASIN

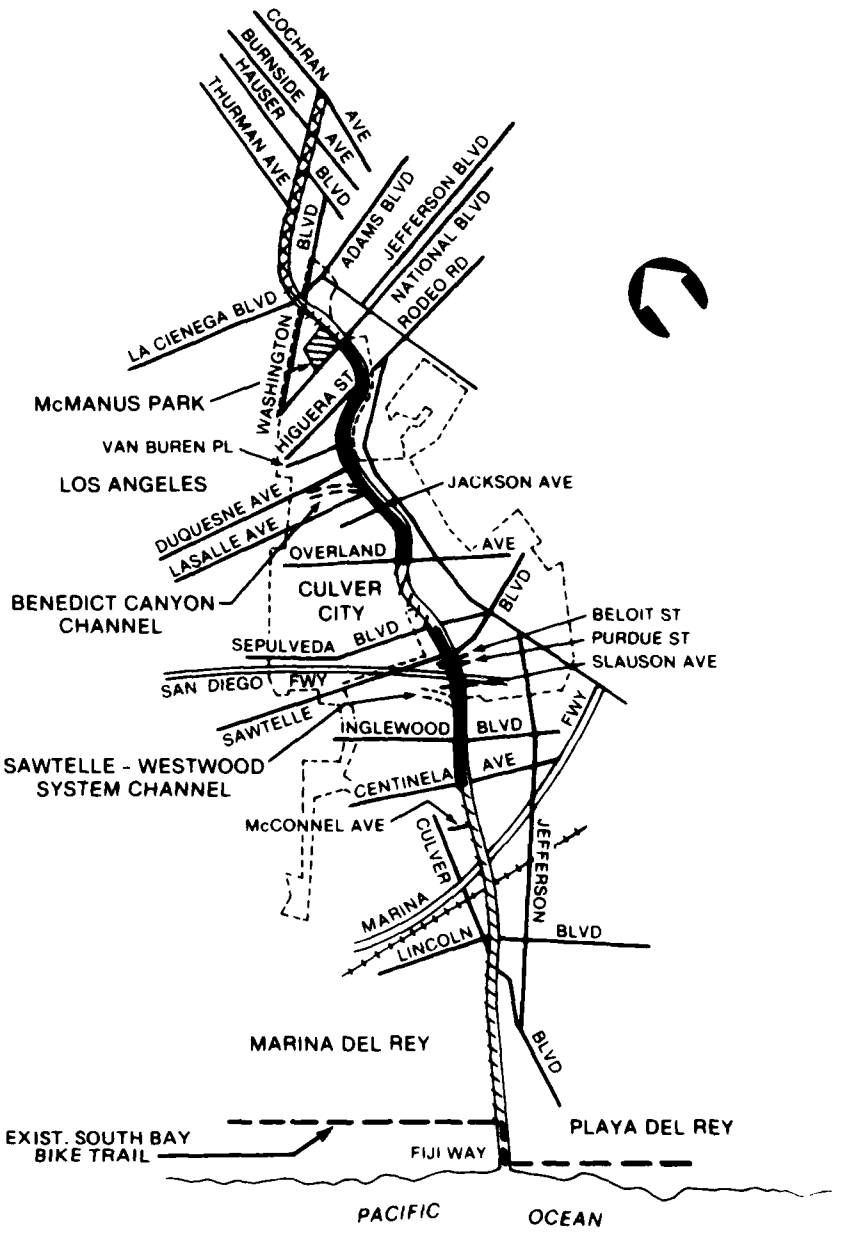
DECEMBER 1982

US ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT

Figure 1

BALLONA CREEK BIKE TRAIL SYSTEM

GENERAL DEVELOPMENT PLAN



LEGEND

- Future Development Area
- Corps of Engineers Development Area
- County of Los Angeles Development Area
- Existing Trail-Improvements to be by Corps of Engineers

Figure 2

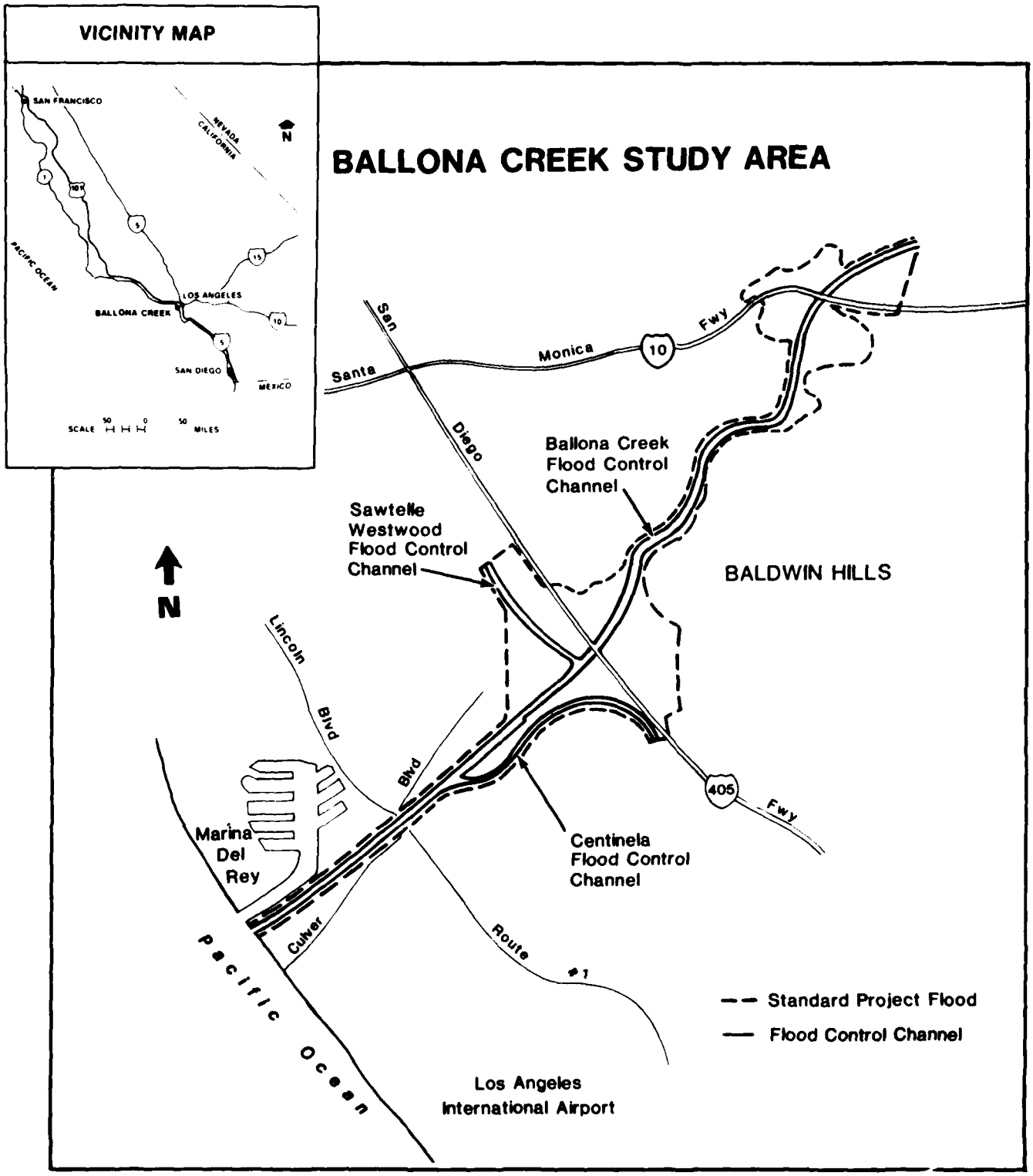

VICINITY MAP
SAN FRANCISCO
NEVADA
CALIFORNIA
N
PACIFIC OCEAN
LOS ANGELES
BALLONA CREEK
SAN DIEGO
MEXICO
SCALE
50
0
50
MILES
BALLONA CREEK STUDY AREA
San Monica Fwy
10
Santa Diego
Ballona Creek Flood Control Channel
Sawtelle Westwood Flood Control Channel
BALDWIN HILLS
N
Lincoln Blvd
Blvd
405 Fwy
Marina Del Rey
Centinela Flood Control Channel
Culver
Route #1
pacific Ocean
Standard Project Flood
Flood Control Channel
Los Angeles International Airport

Figure 3

END

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