



US Army Corps
of Engineers
Los Angeles District



VENTURA RIVER LEVEE SECTION 905(b) (WRDA 86) ANALYSIS VENTURA COUNTY, CALIFORNIA



DRAFT-FINAL REPORT

APRIL 2012

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Prepared by:
Tetra Tech, Inc
17885 Von Karman Avenue
Irvine, CA 92614

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**VENTURA RIVER LEVEE
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1. STUDY AUTHORITY

- a. The review of the Ventura River Levee, Ventura County, California project, is authorized under provisions of Section 216 of Public Law 91-611, the River and Harbor and Flood Control Act of 1970, which states:

"The Secretary of the Army, acting through the Chief of Engineers, is authorized to review the operation of projects the construction of which has been completed and which were constructed by the Corps of Engineers in the interest of navigation, flood control, water supply, and related purposes, when found advisable due to significantly changed physical or economic conditions, and to report thereon to Congress with recommendations on the advisability of modifying the structures or their operation, and for improving the quality of the environment in the overall public interest."

2. STUDY PURPOSE

The purpose of this study is to determine if there is a Federal interest in modifying the Ventura River levee (Project) for the purposes of increasing public safety, continuing to provide flood risk management benefits, and better serve the public interest. The study will determine whether to proceed into a feasibility study based on a preliminary appraisal of the Federal interest and the consistency of potential solutions with current policies and budgetary priorities.

The protective works of the Ventura River levee were designed to provide protection from the 1-percent-annual-chance discharge (base flood) in conformance with Federal Emergency Management Agency (FEMA) required freeboard and other regulations. The levee system is intended to protect existing residential, commercial, and industrial property in low lying areas within the base flood floodplain of the Ventura River Watershed.

Based on recent investigations performed for FEMA levee certification and U.S. Army Corps of Engineers (Corps) periodic levee inspection, there is evidence that portions of the Project are showing deficiencies. This evaluation provides the impetus for studying requested changes to the existing Ventura River levee. This is consistent with the general policy of the Corps, that completed projects be observed and monitored to ascertain whether they continue to function as intended and whether there is a potential for modifications to better serve the public interest.

3. LOCATION OF STUDY, NON-FEDERAL SPONSOR AND CONGRESSIONAL DISTRICTS

- a. The Ventura River project was Authorized by Section 10 of the Flood Control Act of 1944; the Ventura River Levee was constructed between April 2 and December 21, 1948. The Ventura River Levee (VR-1) is located in the City of San Buenaventura in Ventura County, California (Figure 1). The levee system is located along the left side of the

Ventura River (Figure 2) and consists of embankment levees, side drainage penetrations, and a stop-log structure in the levee at a bike trail crossing.

- b. The non-Federal sponsor for the feasibility phase of the study is the Ventura County Watershed Protection District.
- c. The study area lies within the jurisdiction of the following Congressional Districts: California 24 and 26.

4. PRIOR REPORTS AND EXISTING PROJECTS

The following reports have been reviewed as a part of this study:

a. Corps of Engineers Reports

- *Matilija Dam Ecosystem Restoration Feasibility Study. U.S. Army Corps of Engineers, Los Angeles District. September 2004.*
- *Ventura River Basin, California, Flood Control. Operation and Maintenance Manual for Ventura River Levee, Ventura River Improvement. U.S. Army Corps of Engineers, Los Angeles District. January 1963.*

b. Reports Completed by Others

- *Ventura River Watershed Summary of Existing Information, Ventura County Watershed Protection District, October 2011.*
- *Notice of Preparation of a Draft Environmental Impact Report. City of Ventura-Westside Community Planning Project, December 2010.*
- *Habitat Restoration Opportunities for the Lower Ventura River. Santa Barbara Channel keeper, December 2010.*
- *Periodic Inspection Report: U.S. Army Corps of Engineers Periodic Levee Inspections Ventura River 1 Levee (VR-1), Fugro West, Inc., June 2011*
- *FEMA Levee Certification: Ventura County, California Ventura River Levee (VR-1), Pacific Ocean to Canada de San Joaquin, Evaluation Report, Tetra Tech, February 20, 2009.*
- *Vision Plan for the Lower Ventura River Parkway: Reconnecting People with the Ventura River. Department of Landscape Architecture, California State University Pomona, 2008.*
- *Integrated Regional Water Management Plan, Watersheds Coalition of Ventura County. 2006.*

This study is investigating potential modifications to the following project:

Name of Completed Project: Ventura River Levee, Ventura County, California.

Authorized Purpose: Section 10 of the Flood Control Act of 1944 authorized the project in accordance with recommendations of the Chief of Engineers Report in House Document No 323, 77th Congress, 1st Session, for local flood protection.

Date Constructed: The project was constructed between April 2 and December 31, 1948.

Non-Federal Project Sponsor: Ventura County Watershed Protection District, CA.

Project Location and Description: The project is located on the Ventura River in San Buenaventura, California, which is approximately 60 miles northwest of Los Angeles. The completed project includes a levee for flood risk management along the east bank of the lower Ventura River. The project also includes a debris basin and channel in Stewart Canyon to protect the city of Ojai north of Ventura.

The 2.65-mile-long earthen levee extends from the Pacific Ocean to the Canada de San Joaquin. It has 1-foot-thick grouted-stone slope protection on its riverward face upstream of Main Street and loose riprap revetment from downstream of Main Street to the Pacific Ocean. The levee was completed by the Corps in December 1948. The Ventura River Levee is the only portion of the project under review at this time.

The Stewart Canyon Debris Basin and channel—approximately 12 miles upstream of the 2.65-mile-long earthen levee—was constructed by the Corps in January 1963. It consists of a 40-foot-high earth-filled embankment debris basin with a storage capacity of 300,000 cubic yards, along with a 4,500-foot-long box and open rectangular concrete-lined channel that extends from the basin through Ojai to a natural channel south of the city.

5. PLAN FORMULATION

During a Corps of Engineers Feasibility Study, there are six planning steps that are set forth in the Water Resource Council's Principles and Guidelines to focus the planning effort and eventually to select and recommend a plan for authorization. The six planning steps are:

- (1) Specify problems and opportunities
- (2) Inventory and forecast conditions
- (3) Formulate alternative plans
- (4) Evaluate effects of alternative plans
- (5) Compare alternative plans
- (6) Select recommended plan

These steps are meant to be iterative based on the emphasis that is placed on each of the steps. In the early iterations, those conducted during the reconnaissance phase, the step of specifying problems and opportunities is emphasized. That is not to say, however, that the other steps are ignored since the initial screening of preliminary plans that results from the other steps is very important to the scoping of the follow-on feasibility phase studies. The sub-paragraphs that follow present the results of the initial iterations of the planning steps that were conducted during the reconnaissance phase. This information will be refined in future iterations of the planning steps that will be accomplished during the feasibility phase.

a. National Objectives

- (1) The national or Federal objective of water and related land resources planning is to contribute to national economic development consistent with protecting the nation's environment, pursuant to national environmental statutes, applicable executive orders, and other Federal planning requirements. Contributions to National Economic Development (NED) are increases in the net value of the national output of goods and services, expressed in monetary units. Contributions to NED are the direct net benefits that accrue in the planning area and the rest of the nation.
- (2) The Corps has added a second national objective for Ecosystem Restoration in response to legislation and administration policy. This objective is to contribute to the nation's ecosystems through ecosystem restoration, with contributions measured by changes in the amounts and values of habitat.

b. Public Concerns

A number of public concerns have been identified during the course of the reconnaissance study. These concerns have been identified by the potential non-federal sponsor as well as the studies referenced in Section 4 above. Public concerns that are related to the establishment of planning objectives and planning constraints are:

- (1) During a FEMA levee certification process it was discovered that the VR-1 levee does not have sufficient toedown protection, and there is landside encroachment. With these findings, the ability to provide continued flood protection is in question and properties may not be protected as designed.
- (2) Flood flows and the erosive nature of the river continue to threaten damage of both property and infrastructure.
- (3) Invasive plant species have become established within the river corridor including Giant Reed (*Arundo donax*), which reduces ecosystem function and habitat availability for native species.
- (4) Residents have expressed a desire to see recreational opportunities (fishing, swimming, and walking) along the Ventura River restored, and commented on the lack of river access.
- (5) Habitat degradation has resulted in loss of both quantity and quality of habitat for fish, birds, and wildlife both within the river and downstream estuary.

- (6) Water quality (surface and groundwater) are of concern in some locations with the majority of problems including eutrophication in the estuary and lagoon.

c. Problems and Opportunities

The evaluation of public concerns often reflects a range of needs which are perceived by the public. This section describes these needs in the context of problems and opportunities that can be addressed through water and related land resource management.

(1) Problems

Embankment Protection. The most significant issues are deficient toedown protection and encroachments on the landward side embankment upstream of the ocean outlet and upstream of Main Street. There are also areas along the levee where vegetation (trees and shrubs) has grown within 15 feet of the levee toe and requires removal. The 1949 as-built plans show that a minimum of 8 feet of toedown were provided when the levee was constructed. A preliminary evaluation of the levee system's current top, toe, toedown, and river thalweg has been performed, and field investigations have identified several locations where the levee embankment has been adversely affected and requires restoration/mitigation.

Additional concerns associated with the levee include the following:

- Approximately 1.5 miles of the Ventura River thalweg along VR-1, from Simpson Drain to the Hwy 33 crossing, is either below or very close to the existing levee toedown. There are no geological features such as bedrock, or manmade features such as rock groins, that would prevent the thalweg from migrating toward the levee and undermining the toedown. Therefore, in its current condition, VR-1 has a reasonable potential for failure due to toedown undermining during major flood events.
- From the Main Street crossing to Simpson Drain, modifications to the landside slope of VR-1 that have been made over time, such as undercutting and construction of retaining structures, have potentially resulted in adverse effects on the stability of the slope.
- Downstream of the Main Street crossing, the adjacent landside slope along VR-1 has been subjected to heavy erosion. Also, in some areas on the riverside embankment slope, the ungrouted riprap is not visible, because it is either missing or buried beneath soil/debris.
- The maintenance road is failing near the Hwy 33 crossing.
- There are concerns about whether the riprap revetment is adequate to protect VR-1 because of undermining of the levee toe and the potential for direct, high-angled flow impingement at unpredictable future locations.

The Matilija Dam feasibility study and associated reports describe the fluvial geomorphologic characteristics of the Ventura River, including results of the analysis of erosion rates along the river. These reports describe Reach 2 (river mile [RM] 0.6 to RM

5.95) as having experienced the most erosion of any reach of the river. The VR-1 study area is within Reach 2 (RM 0.05 to RM 2.37), as described in these reports. The feasibility study refers to surveys that found that since 1971, the active channel has degraded at RM 3 by as much as 16 feet. This is consistent with the degradation of the channel and the loss of toedown since the construction of VR-1.

Physical Changes to the Watershed. Since the time that VR-1 was first planned (1941) and constructed (1948), there have been changes to the watershed, including the construction of dams and debris basins within the watershed. Although population growth and urban development have occurred in the past 60 years, most of the land within the watershed remains open space.

Large manmade features affecting the watershed include the following dams and debris basins. Structures located throughout the watershed can be seen on Figures 1 and 3.

- Matilija Dam, built in 1948
- Lake Casitas Dam, built in 1959
- Robles Diversion Dam, built in 1958
- McDonald Canyon Detention Basin, built in 1998
- San Antonio Creek Debris Basin, built in 1986
- Stewart Canyon Debris Basin, built in 1963
- Live Oak Creek Diversion Dam, built in 2000
- Rancho Matilija Diversion on Live Oak Creek, built in 1981
- Dent Debris Basin, built in 1950, modified in 1981, modified in 2011

The draft report *Hydrology, Hydraulics, and Sediment Studies for the Matilija Dam Ecosystem Restoration Project, Ventura, California* by the Bureau of Reclamation describes potential causes of erosion within the channel. The listed causes include shift from a dry to wet period since 1969 and trapping of sediment associated with the Matilija and Casitas Dams and the Robles Diversion Dam. The report suggests that the wet cycle is likely the largest factor, but that sediments removed by the dams are also likely contributing to channel degradation, especially in the upstream reaches.

Historical disruption of system-wide sediment continuity has occurred along the Ventura River that, over time, has had a significant impact on the fluvial geomorphology of VR-1. What was historically a braided channel system, created by an over-abundance of sediments emanating from upstream steep-sloped mountainous regions, was abruptly modified by significant downstream sediment depletion initiated after the construction of the Matilija Dam in 1948. This sediment depletion was further exacerbated by the subsequent construction of the Robles Diversion Dam (1958), the Casitas Dam in 1959, and several small debris basins, as well as ongoing watershed urbanization that has occurred in the upstream, contributing watershed areas of the Ventura River during the past 65 years. The downstream depletion of sediment supply, in turn, has led to degradation of the stream

channel, which has created a more pronounced, higher-capacity primary flow channel that conveys ordinary flows more in the center and on the west side of the Ventura River, partly due to flow confinement on the east by VR-1.

In addition, this pronounced, higher-capacity primary flow channel has developed a more defined inner thread (low-flow thalweg) that meanders in a gradual fashion inside the primary flow channel, exacerbating the unanticipated scour problems. Furthermore, the depletion of the upstream sediment supply, which has led to long-term channel degradation (i.e., channel deepening), has also coarsened the in-situ distribution of streambed sediments to some extent, thereby increasing the tendency of the low-flow channel to meander within the primary channel of the Ventura River. In addition, due to a reduction in flood magnitude and sediment supply, created by upstream flood-control impoundments and watershed urbanization, respectively, a significant increase in both in-channel and near-channel riparian growth has occurred, which to some extent has tempered the meandering of the low-flow thalweg.

During both ordinary and extraordinary flow events, a wandering low-flow channel will create a highly non-uniform flow distribution along VR-1, which in turn will increase the potential for the initiation of high-angled flow impingements against the levees at various locations along the system, such as those that occurred in 1945 before the presence of the extensive flood-control works and the current urbanization within the upstream watershed areas. As stated above, these altered flow conditions have, over the past 65 years, undoubtedly led to greater than originally anticipated channel degradation at the toe of VR-1.

Future Watershed Change. In the future, once the planned removal of Matilija Dam has occurred, the system-wide sediment continuity will again be disrupted because historical rates of sediment supply will be partially restored to the system, and the pronounced single-channel geometry that currently exists along VR-1 will attempt to partially reverse its ongoing degradational trend. In fact, the Ventura River as a whole will likely attempt to return to its historical flow profiles (i.e., more like the braided flow conditions that existed before the Matilija Dam and other flood-retarding structures were constructed in the Ventura River watershed). However, past (and future) manmade “improvements” along the VR-1 levee will likely arrest the tendency of the river to braid to historical proportions. Consequently, the sediments transported from the upstream watershed areas will likely be deposited in the channel. The sediment deposits will both lower the flood-carrying capacity of the channel and create bars and islands that will likely create multiple low-flow thalwegs, like those that existed in 1945, thereby increasing the potential for high-angled flow impingement along VR-1. In order to mitigate this potential condition, it is necessary to predict, with reasonable certainty, site-specific locations where the braiding and high-angled impingements will affect VR-1; however, no one can predict, with any real accuracy, where these problems might occur in the future.

Vegetation and Encroachments. At several areas along the levee, unwanted vegetation and encroachments have been identified within 15 feet of the levee toe, including vegetation on both the riverward and landward sides of the levee and landscaping, fencing, and outbuildings on the landward side. The Ventura County Watershed Protection District (VCWPD) has been unable to implement certain maintenance improvements due to

permitting and environmental constraints. However, these locations need to be repaired or remediated in order for the levee system to meet the levee certification criteria established by the Corps and FEMA and to be in compliance as a fully operational levee system.

Ecosystem Degradation- Ecosystem problems and opportunities are listed in many of the reports referenced in Section 4. The natural environment has been degraded by manmade structures including dams and levees and also by agricultural, industrial and urban development. Stresses induced by this development included loss of habitat, modification of natural processes, pollution, water diversion, etc.

The Matilija Dam Ecosystem Restoration Feasibility Study and associated EIS/EIR (USACE, 2004) describe and map habitat along the Ventura River, including the VR-1 Levee reach. Riverine, wetland, and estuary habitat are described and although they are degraded, continue to support a diverse array of species including several listed threatened and endangered species. Historically, the Ventura River Watershed supported one of the largest runs of endangered southern steelhead trout on the south coast but is now only occasionally found within the river.

While the proposed removal of Matilija Dam will likely affect the downstream habitat values and river function stresses on the ecosystem including invasive species will continue. There are no proposed restoration measures associated with the Matilija project in the lower reach of the Ventura River. Therefore, degradation of the habitat in this reach will likely continue into the future.

Lack of Recreation Opportunities and Access- Recreational opportunities associated with the river are limited. Although there are several trails associated with the river, the public comments in several of the studies listed in Section 4 above indicate that lack of river access for recreation is a public and stakeholder concern. Bicycle and pedestrian trails do parallel the river in some areas but the levee and roads, dense vegetation, and mixed land uses are impediments to recreation access, circulation, and safety. There are no hiking trails with access into the river itself, although the proximity to downtown, beach, and other recreational features lend this area to added recreation potential.

(2) Opportunities

There are opportunities to increase public safety while addressing the issues identified for the levee system in its current condition with minimal toedown. This may result in reduced risk to lives and properties currently protected by the levee.

As part of the levee certification process, the VCWPD compiled estimates of the area protected by the VR-1 levee. This levee protects an area of 2.1 square miles. The daytime population is 19,121 and nighttime population is 3,977. Estimated residential improvement value within the 1% floodplain protected by the levee is \$81,495,212 and non-residential \$51,792,103. Failure of the levee could result in millions of dollars of urban infrastructure and commercial/residential property losses, not to mention the potential for significant loss of life—particularly if a portion of the levee were to collapse suddenly during the night.

Additional opportunities include restoration of ecosystem function and values throughout the study area. This could include invasive species removal, and river, wetland and riparian restoration measures.

In association with modification of the levee system and restoring adjacent river areas, there are opportunities to improve recreational access and community use along the river corridor. This could include multi-use trails and associated features as compatible with the other project features. These opportunities would be compatible with Corps mission areas and local plans for redevelopment and the Ventura River Parkway Vision Plan as long as they account for protecting and minimizing impacts to habitat and endangered species.

d. Planning Objectives

The national objectives of National Economic Development and National Ecosystem Restoration are general statements and not specific enough for direct use in plan formulation. The water and related land resource problems and opportunities identified in this study are stated as specific planning objectives to provide focus for the formulation of alternatives. These planning objectives reflect the problems and opportunities and represent desired positive changes in the without project conditions.

The planning objectives are specified as follows:

- (1) Reduce flood risks by addressing issues identified along the VR-1 Levee system.
- (2) Improve aquatic and riparian habitat along the Ventura River to benefit native fish and wildlife species.
- (3) Restore river processes (hydrologic and sediment transport) within the study area to maintain a natural channel and reduce impacts to constructed infrastructure.
- (4) Remove invasive species throughout the study area.
- (5) Create recreational opportunities consistent with the river environment (protect and minimize impacts to habitat and endangered species) and compatible with local land use plans.

e. Planning Constraints

Unlike planning objectives that represent desired positive changes, planning constraints represent restrictions that should not be violated. The planning constraints identified in this study are as follows:

- (1) Protect or minimize impacts to existing habitat and listed species, including the estuary.
- (2) Maintain the current level of flood protection with any restoration opportunities investigated.
- (3) Compliance with local land use plans, such as the Westside Area plan, currently being updated.

(4) Compliance with local, state and Federal laws and regulations.

f. Measures to Address Identified Planning Objectives

A management measure is a feature or activity at a site, which addresses one or more of the planning objectives. A variety of measures can be considered to achieve the objectives identified above. Each measure will be assessed and a determination made regarding whether it should be retained in the formulation of alternative plans.

(1) *Flood Risk Management*

- Grouted riprap toedown extension
- Reinforced concrete lining
- Sheet pile
- Grade control structures

(2) *Ecosystem Restoration*

- Remove invasive species (Arundo)
- Modify channel to more natural conditions; wetlands, pools, and riverine reaches
- Revegetate floodplain and channel with native species
- Reconfigure channel to open second mouth at the estuary

(3) *Recreation*

- All recreation improvements to be coordinated with water quality TMDLs
- Connect multi-use trails and provide access adjacent to the river/levee
- Add multi use trails and associated amenities to restored river

g. Preliminary Screening

Four levee design alternatives have been developed to remediate the current deficiencies and protect against long-term channel degradation and scouring found with the VR-1 levee. Rough order of magnitude cost estimates were developed for comparison purposes. These alternatives all include common measures to remediate other levee deficiencies found in the hydraulic analysis and levee inspections including raising top elevations, sediment removal, vegetation removal, etc.

Alternative	Cost Estimate
1 Grouted Riprap Toedown Extension	\$ 25,593,400
2 Reinforced Concrete Lining	\$ 25,131,600
3 Sheet Pile	\$ 34,942,500
4 Grade Control Structures	\$ 26,599,800

Preliminary screening indicates there is potential for implementation of alternatives that address the conditions of the VR-1 Levee. Also, based on the existing conditions and review of previous reports there is potential for implementation of alternatives that address public concerns of habitat degradation and recreation in the associated study area.

The VR-1 Levee protects nearly \$130 million of property and structures, and alternatives that would be implemented would maintain the protection that was originally intended. The environmental effects of levee repair alternatives would mostly be within the existing levee footprint and negative impacts could be avoided or minimized through mitigation measures. Any ecosystem restoration or associated recreation alternatives would also provide benefits in the form of increased ecosystem values and added recreational opportunities. Based on this information, alternatives to address the planning objectives appear viable.

h. Establishment of a Plan Formulation Rationale

The conclusions from the preliminary screening form the basis for the next iteration of the planning steps that would be conducted in the feasibility phase. The likely array of alternatives that would be considered in the next iteration includes some combination of the measures outlined in section “f” above, as well as a No Action alternative. Future screening and formulation of alternatives would be carried out in a feasibility study.

It is assumed that the primary purpose of the study is to evaluate changes that need to be made to the VR-1 Levee to continue operation and providing flood risk reduction. Additional benefits may be provided by addressing ecosystem degradation and availability of recreation opportunities within the study area.

6. FEDERAL INTEREST

TBD: USACE

7. PRELIMINARY FINANCIAL ANALYSIS

As the local sponsor, _____ will be required to provide 50 percent of the cost of the feasibility phase. The local sponsor is also aware of the cost sharing requirements for potential project implementation. A letter of intent from the local sponsor stating a willingness to pursue the feasibility study and to share in its cost, and an understanding of the cost sharing that is required for project construction is included as Attachment _____ .

8. ASSUMPTIONS AND EXCEPTIONS

a. Feasibility Phase Assumptions

The following critical assumptions provide a basis for the Feasibility Study:

- (1) The Project was constructed prior to the Water Resource Development Act of 1986. It is understood that any feasibility study or resulting construction would be carried out under current cost share requirements. NEPA documentation would not be prepared as part of the watershed studies beyond the programmatic level.
- (2) There are several potential partnering options to proceed into a feasibility study.
 - i. Section 216, River and Harbor and Flood Control Act of 1970- This draft 905(b) has been drafted for a Section 216 study. This would require a new start Appropriation to be implemented.
 - ii. Section 205, Flood Control Act of 1948- A small flood control project such as Section 205 could be considered for the VR-1 Levee; however, the current estimate indicates that this project would exceed the program limit.
 - iii. Matilija Dam Ecosystem Restoration Study- This is an ongoing Authorized project currently in the Preconstruction Engineering and Design (PED) phase. It is upstream of the study area on the Ventura River, and additional purpose and scope could be added to the current project.
 - iv. Levee Safety Action Classification- The funding for this federal program is still being determined and it is likely that the initial funding will go to federally owned and operated levees. Based on the Periodic Inspection of the VR-1 Levee it received a Minimally Acceptable rating, which would not likely receive funding in the near future.

b. Policy Exceptions and Streamlining Initiatives

The study would be conducted in accordance with the Principles and Guidelines and Corps of Engineers regulations. Exceptions to established guidance have been identified that will streamline the feasibility study process that will not adversely impact the quality of the feasibility study. Approval of the Section 905(b) Analysis by HQUSACE results in the approval of the following policy exceptions and streamlining initiatives:

None known, this is a placeholder for policy discussion with USACE.

c. Other Approvals Required

Unknown at this time.

9. FEASIBILITY PHASE MILESTONES

Milestone	Description	Duration (months)	Cumulative (months)
Milestone F1	Initiate Study		
Milestone F2	Public Workshop/Scoping		
Milestone F3	Feasibility Scoping Meeting		
Milestone F5	Draft Watershed Management Plan		
Milestone F6	Final Public Meeting		
Milestone F8	Final Report to SPD		
Milestone F9	DE's Public Notice		
-	Chief's Report		
-	Project Authorization		

10. FEASIBILITY PHASE COST ESTIMATE

WBS#	Description	Cost
JAA00	Feas - Surveys and Mapping except Real Estate	
JAB00	Feas - Hydrology and Hydraulics Studies/Report (Coastal)	
JAC00	Feas - Geotechnical Studies/Report	
JAE00	Feas - Engineering and Design Analysis Report	
JB000	Feas - Socioeconomic Studies	
JC000	Feas - Real Estate Analysis/Report	
JD000	Feas - Environmental Studies/Report (Except USF&WL)	
JE000	Feas - Fish and Wildlife Coordination Act Report	
JF000	Feas - HTRW Studies/Report	
JG000	Feas - Cultural Resources Studies/Report	
JH000	Feas - Cost Estimates	
JI000	Feas - Public Involvement Documents	
JJ000	Feas - Plan Formulation and Evaluation	
JL000	Feas - Final Report Documentation	
JLD00	Feas - Technical Review Documents	
JM000	Feas - Washington Level Report Approval (Review Support)	
JPA00	Project Management and Budget Documents	
JPB00	Supervision and Administration	
JPC00	Contingencies	
L0000	Project Management Plan (PMP)	
Q0000	PED Cost Sharing Agreement	
Total		\$0

11. VIEWS OF OTHER RESOURCE AGENCIES

Because of the funding and time constraints of the reconnaissance phase, only limited and informal coordination has been conducted with other resource agencies. Views that have been expressed are as follows:

12. POTENTIAL ISSUES AFFECTING INITIATION OF FEASIBILITY PHASE

Continuation of this study into the cost-shared feasibility phase is contingent upon an executed Feasibility Cost Sharing Agreement (FCSA). Failure to achieve an executed FCSA within 18 months of the approval date of the Section 905(b) Analysis will result in termination of the study. Issues that could impact the initiation of the feasibility phase include **Explain any issues related to the signing of the FCSA.**

The schedule for signing the FCSA is Month/Year. Based on the schedule of milestones in Paragraph 9, completion of the feasibility report would be in Month/Year, with a potential Congressional Authorization in a WRDA year.

13. LOCATION/PROJECT AREA MAPS

Maps of the Study area and watershed are included as Figures 1–3.

14. RECOMMENDATIONS

I recommend that the Ventura River Feasibility Study proceed into the feasibility phase.

Date

Name of District Commander
Colonel
Corps of Engineers
District Engineer



Figure 1: Study Area is identified at the Bottom/Center. Source (Matilija Dam Feasibility Report, USACE)



Figure 2: Location Map for Ventura River (VR-1) Levee



Figure 3: Dams and Debris Basins within the Ventura River Watershed

ENCLOSURE C
LETTER OF INTENT