CHAPTER 1 - INTRODUCTION

1.1 STUDY AUTHORITY

This report was prepared under the authority provided by a resolution of the Committee on Public Works, House of Representatives, adopted May 8, 1964, for the Santa Ana River Basin and Area Streams, Orange County, California, which reads as follows:

> *"Resolved by the Committee on Public Works of the House of Representatives, United States, that the Board of Engineers for Rivers and Harbors is hereby requested to review the reports on (a) San Gabriel River and Tributaries, published as House Document No. 838, 76th Congress, 3d Session; (b) Santa Ana River and Tributaries, published as House Document No. 135, 81st Congress, 1st Session; and (c) the project authorized by the Flood Control Act of 1936 for the protection of the metropolitan area in Orange County, with a view to determining the advisability of modification of the authorized projects in the interest of flood control and related purposes."*

1.2 STUDY PURPOSE

The purpose of this feasibility study is to evaluate opportunities for restoring degraded ecosystem function and stream channel stability along the lower Aliso Creek Mainstem in Orange County, California. This study will formulate ecosystem restoration solutions designed to improve the potential for long-term survival of native, aquatic, wetland, and terrestrial complexes as self-regulating, functioning systems.

Specifically, this study focuses on identification of the Federal interest in reducing stream instability; restoring connectivity to the floodplain and tributaries; restoring riverine (aquatic and terrestrial) and estuarine habitat; improving water quality; and enhancing passive recreational opportunities.

1.3 STUDY SCOPE

The scope of the feasibility study includes the identification of problems and needs, objectives and constraints, and a description of the historical, existing, and "most likely" future conditions (collectively known as the "without-project conditions"). Alternative measures are formulated to address the study problems, needs, and objectives. These measures are combined to form alternative plans.

For each alternative plan, the future conditions are forecasted with the plan in place ("with-project conditions"). The most important effects (impacts) of each alternative plan are evaluated on the basis of a without- and with-project condition comparison, and the differences are identified. These differences are then assessed and appraised. The evaluation process continues

by qualifying which plans merit further consideration and which ones to eliminate. This is followed by a comparison of the identified most important effects among all the alternative plans, utilizing a more formal and analytical approach to ensure that the plans are responsive to the needs of the public, and finally a recommended plan is identified.

The scope of this feasibility study includes a review of the U.S Army Corps of Engineers (Corps), Los Angeles District, 2002 Aliso Creek Watershed Management Study. The 2002 study included a preliminary-level plan that encompassed ecosystem restoration and stream stabilization. Current feasibility study efforts will allow a more focused approach than was possible for the broader 2002 effort to include new and more detailed information to support without-project (baseline) conditions, numerical modeling studies, Geographic Information System (GIS) mapping, vegetative and species surveys, cultural resources inventory and field surveys, geomorphology and geotechnical investigations, and utilization of an ecosystem habitat accounting and appraisal methodology (HAB). The plan formulation process for this feasibility study will assess a full range of alternatives to address various levels of ecosystem restoration and stream stabilization that was beyond the scope of the 2002 study.

An Environmental Assessment (EA) and Initial Study/Mitigated Negative Declaration (MND) are being prepared to address the environmental compliance review required by the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). An EA and MND are prepared when significant environmental impacts are not anticipated, or when there is a question as to the extent of the impacts. If there is substantial evidence that a project may have a significant effect on the environment, an Environmental Impact Statement (EIS) and Environmental Impact Report (EIR) must be prepared.

The final feasibility report that will culminate from this effort will serve as a decision document to Congress with recommendations for authorization a new project.

1.4 STUDY AND REPORT PROCESS

The Corps Los Angeles District completed the reconnaissance phase of the General Investigation study process in May 2001. The reconnaissance phase 905(b) study determined that there was Federal interest in participating in a cost-shared feasibility phase study to evaluate ecosystem restoration opportunities and improvements along potentially 13 miles of the Aliso Creek Mainstem extending upstream from the Pacific Ocean, including selected affected tributaries. In addition, the reconnaissance study concluded that there was Federal interest in other related outputs including incidental flood risk management benefits, incidental enhancement of water supply, incidental water quality improvement (for environmental improvement purposes), and recreation associated with implementation of a Federal project. The reconnaissance phase effort included the development of a feasibility-level Project Management Plan (PMP) and the execution of a Feasibility Cost Sharing Agreement (FCSA) between the Los Angeles District and the County of Orange. By request of the local sponsor, the study limits were subsequently revised to focus on the lower portion of Aliso Creek Mainstem, including the confluence area of

the tributary Wood Canyon Creek. This portion of the Aliso Creek system is the most degraded in the watershed and offers the most opportunities for ecosystem restoration efforts.

This report is an interim document, called the Feasibility Scoping Meeting (FSM) Documentation, prepared as part of a series of deliverables leading to the Final Aliso Creek Mainstem Ecosystem Restoration Feasibility Study Report.

This FSM document has been prepared to summarize (1) the findings, results and data collected for historic and existing conditions in the study area and to forecast future without-project conditions, pertaining to physical and biological resources, cultural resources, socioeconomics and recreation; (2) identified problems, opportunities, objectives and constraints for the study area; and (3) formulation of preliminary alternative plans. Technical appendices include hydrology, hydraulics and sediment transport, geotechnical, and economics analysis. The accompanying Baseline Environmental Conditions and Future Without- Project Conditions Report is considered an interim document. Included as sub-appendices are HTRW database search results, biological resources, cultural resources, and public comments received during the Initial Public Scoping Meeting.

Future documents that will be released during the course of the feasibility study will include a report summarizing alternatives formulation, evaluation and identification of a tentatively recommended plan; draft feasibility report for public review; pre-final feasibility report; and final feasibility report. Environmental compliance documentation (EA/MND or EIS/EIR) will accompany each report product.

1.5 STUDY PARTICIPANTS AND COORDINATION

The Corps Los Angeles District and the County of Orange, OC Watersheds are responsible for conducting and coordinating this feasibility study. OC Watersheds is the local sponsor.

OC Watersheds has provided invaluable in-kind services, contributing to mapping and surveying, GIS mapping, associated biology and invasive species surveys, stakeholder meeting coordination, dissemination of information to interested parties, and aspects of project and program management.

Other organizations that have participated in the study process to date include the following agencies and groups:

Table 1.1 Study Participants

Federal Agencies	State Agencies
National Marine Fisheries Service	California Coastal Conservancy
U.S. Fish and Wildlife Service	California Department of Fish and Game
USACE Engineer Research and Development Center	California State Water Resources Control Board

Table 1.1 Study Participants	
County of Orange Agencies	**City Governments**
County Board of Supervisors	Aliso Viejo
County Executive Office	Laguna Beach
OC Public Works	Laguna Niguel
OC Watersheds	Laguna Woods
County Property Permits	Laguna City Council
Geomatics and Land Information Systems	Laguna Hills
OC Engineering	Lake Forest
OC Planning	Mission Viejo
OC Operations and Maintenance	
OC Community Resources	
OC Parks	
Local Committees/Groups	**Water Districts**
CDM	Moulton Niguel Water District
Clean Water Now! Coalition	South Coast Water District
Friends of Harbors, Beaches, and Parks	South Orange County Wastewater Authority
Sierra Club	
Friends of the Aliso Creek Steelhead	
Laguna Greenbelt	
National Audubon Society, Laguna Hills Chapter	
Nature Reserve of Orange County	
Northwest Habitat Institute	
Orange County Coastkeeper	
Permaculture Institute of Southern California	
Philip Williams & Associates	
RECON Environmental	
South Laguna Civic Association	
Surfrider Foundation	
Tetratech	
Village Laguna Board	

1.6 PRIOR STUDIES AND REPORTS

The following reports were reviewed as part of this study:

1.6.1 Federal – Corps of Engineers

a. *San Juan and Aliso Creeks Watershed Management Study, Reconnaissance Report (February 1997)*

The Aliso Creek watershed has experienced a variety of natural and human-induced changes during recent decades. These changes have contributed to a decline in the quality and extent of environmental resources and an increase in economic damages. Increased concern for the long-term survival of the watershed ecosystem grew through the 1990s, leading to Congressional direction to conduct the San Juan and Aliso Creeks Watershed Management Reconnaissance Study in 1995. The reconnaissance study report, published in February 1997, identified Federal

interest in conducting a feasibility level watershed management study for the Aliso Creek watershed.

b. *Aliso Creek Watershed Management Study/Plan (October 2002)*

In 2002, the Corps in conjunction with the County of Orange, and coordination with various municipalities, water districts, educational institutions, interest groups and private citizens within the Aliso Creek watershed, completed the *Aliso Creek Watershed Management Feasibility Study*. This comprehensive study performed a general review of existing conditions, and identified problems and opportunities within the watershed as a whole. Identified problems included instability of Aliso Creek channel and associated erosion damage, poor water quality, environmental degradation, and flooding damages. A range of structural and non-structural solutions (measures) were identified as potential means to address the identified problems, followed by an evaluation and screening process to arrive at recommendations. The study also included an assessment of a preliminary-level ecosystem restoration and stream stabilization effort for the Mainstem Aliso Creek utilizing a hydrology, hydraulics and sediment transport model, and a habitat assessment numerical classification.

With the completion of the watershed management study, a decision-making framework was available for local, state, and Federal agencies involved in management and regulatory decisions to address numerous water- and land-related problems in the watershed and to promote positive trends in maintaining a healthy system. The recommended actions to be undertaken by various partners and stakeholders in order to achieve the needs and opportunities identified in the study were presented in the *Aliso Creek Watershed Management Plan.*

The watershed management plan identified "spin-off" feasibility studies to pursue under specific Corps project authorization programs tailored for the size and complexity of a potential project. The product of each "spin-off" study effort, developed in accordance with the Corps planning process, policy, and environmental compliance requirements, would serve as a decision document which is necessary for any project seeking Congressional authorization and implementation with Federal participation. The largest and most complex element would be the restoration objectives for the Aliso Creek Mainstem. This level of effort requires the study to be conducted under the two-phase (reconnaissance and feasibility) General Investigation study process in accordance with the Water Resources and Development Act of 1986.

The remaining identified spin-off studies were smaller in scope and were recommended to be pursued under the Corps' Continuing Authorities Program (CAP). These CAP studies included the South Orange County Wastewater Authority (SOCWA) Coastal Treatment Plant (CTP) Bridge Emergency Streambank Protection (Section 14) in partnership with the SOCWA and three separate Aquatic Ecosystem Restoration Studies (Section 206), in partnership with the County of Orange, for the tributaries Wood Canyon Creek, Sulphur Creek, and English Canyon Creek. Of these four CAP studies, the SOCWA Section 14 and Sulphur Creek Section 206 have been constructed as of 2009. The Wood Canyon 206 Study has not received any program

funding since 2003, and upon request of the local sponsor the study was terminated in 2008. Further possible pursuit of restoration opportunities in the Wood Canyon Creek tributary that are outside of the scope of this current feasibility study would be possible in the future under the CAP program if the sponsor wishes to pursue reinitiation. The English Canyon Creek 206 Study is in the process of producing a draft interim report.

Regarding flood damage issues, the watershed study concluded that Federal interest was not economically justified and warranted. While the watershed is heavily urbanized, most development is safely out of the reach of the Aliso Creek floodplain. Flood damages were found to be concentrated in the lowest reach of Aliso Creek Mainstem, and only a very limited number of structures, which included utility facilities and the Aliso Creek Inn and Golf Course, were found to be susceptible. Recommendations were made in the study to consider pursuit of a Flood Risk Management Study under the CAP Section 205 program to identify Federal interest should the flooding situation in that vicinity worsen.

The watershed management plan also developed recommendations for activities, such as the Aliso Creek system water quality monitoring and pursuit of water quality improvement projects, exotic species eradication, watershed education programs, and Best Management Practices (BMPs) that could be pursued at the local level and through the assistance from granting agencies.

c. *Flood Plain Information, Aliso Creek, Orange County, California (March 1973)*

The report includes a history of the past flooding in the area, and identifies areas subject to possible future floods. Though the report does not offer solutions to flood problems, it furnishes a basis for land use controls to guide floodplain development.

1.6.2 Local Agencies

a. *Final Resource Management Plan (RMP) for the Aliso and Wood Canyons Wilderness Park (2009)*

The RMP, prepared by OC Parks, provides a comprehensive, long-term management plan for the Aliso and Wood Canyons Wilderness Park. The fundamental objective for the RMP is to identify the best way to manage, protect, and enhance the natural resource values of the Wilderness Park while balancing the needs of the local community for safe recreational and education opportunities. Major plan objectives include enhancement of wildlife habitats, development of vegetation management practices, and availability of recreational opportunities and public access that have minimal impacts on resources.

b. *Aliso Creek Concept Plan Report (2007)*

This is a conceptual plan developed by the County of Orange and water/wastewater agencies to provide a potential solution addressing stream stability and water quality improvements,

protection of infrastructure, and restoration of degraded habitat. A significant part of the plan would focus on the segment of Aliso Creek passing through the Wilderness Park. This effort has been identified as the Aliso SUPER (**S**tabilization, **U**tility **P**rotection, and **E**nvironmental **R**estoration) Project. The stream stabilization and ecosystem restoration components were based on a solution assessed in the 2002 Watershed Management Study. The concept plan also considers a surface water treatment facility near the mouth of Aliso Creek to improve the quality of dry weather flow draining to the ocean.

c. *South Orange County Integrated Regional Water Management (IRWM) Plan (2006)*

The IRWM Plan focused primarily on the projects and plans of the member agencies, with an emphasis on water supply and water quality. The plan identified potential projects to improve water quality and water supply, to review feasibility of the potential projects, to engage in long range water planning, to establish priorities among the proposals, and to obtain potential funding to implement the projects. Potential projects identified for Aliso Creek include protecting the existing utilities along the creek, invasive species removal, and a storm drain bacterial mitigation program to reduce bacterial loading and improve water quality.

1.7 EXISTING PROJECTS

Local improvements within the Aliso Creek watershed are quite extensive and include projects for flood risk management, bank protection, recreation, groundwater recharge, recreation, and transportation and other infrastructure.

The first major flood risk management feature within the Aliso Creek watershed is a flood-detention basin along English Canyon Creek formed by the Trabuco Road embankment. Aliso Creek has a modified channel between Second Street and Interstate 5. Another tributary, Munger Creek, joins Aliso Creek adjacent to the Lake Forest Golf and Practice Center. This is also the site of another major flood control feature, the El Toro Retention Basin, just upstream of the railroad crossing. At Paseo de Valencia, Aliso Creek enters the privately owned community of Leisure World. Continuing downstream, there is a 6-foot drop structure at the crossing of Laguna Hills Drive.

Just after crossing under Moulton Parkway, Aliso Creek is joined by the tributary of Dairy Fork. A detention basin is located on Dairy Fork at the crossing of Laguna Hills Drive. Another detention basin, Pacific Park Detention Basin, is located just upstream of Moulton Parkway and crosses under the San Joaquin Hills Transportation Corridor Bridge. Aliso Creek has an improved channel from the Chet Holifield Federal Building to just upstream of the confluence with Sulphur Creek (approximately 2,000 feet downstream of Aliso Creek Road). A series of concrete drop structures have been constructed to provide grade control, primarily to protect bridges from undermining. Two 10-foot high drop structures are located 700 feet south and 1,000 feet north of Aliso Creek Road. These structures were built to maintain the original slope when Aliso Creek was channelized through this reach in the 1960s.

Sulphur Creek, a major tributary, flows southward parallel to Crown Valley Parkway until it makes a sharp northward bend about ½ miles downstream of La Paz Road. Downstream of the bend, the creek is dammed to form Laguna Niguel Lake (a.k.a. Sulphur Creek Reservoir). The Lake is located within Laguna Niguel Regional Park. This manmade, 44-acre lake has experienced problems with silt, algae, and other water quality problems. The lake receives runoff from the surrounding hillsides in the cities of Laguna Niguel and Mission Viejo. Water leaves the lake through the headgate of the dam then flows through the park and into Aliso Creek.

One of the most ambitious environmental restoration/mitigation projects undertaken in the watershed is the Aliso Creek Wildlife Habitat Enhancement Project (ACWHEP), which was constructed along a stretch of Aliso Creek in the Aliso and Wood Canyons Wilderness Park. The ACWHEP includes constructed headworks on Aliso Creek for distributing water to downstream mitigation areas along both sides of the creek. The ACWHEP structure currently acts as the largest drop structure along Aliso Creek.

1.8 MITIGATION SITES

There are several compensatory mitigation sites within the Wilderness Park. Together, the active compensatory mitigation sites include planting of over 1.4 acres of native grassland and coastal sage scrub vegetation and the restoration of more than 2 acres of freshwater marsh and riparian willow and mulefat scrub habitat.

- *Wood Canyon Creek*: Habitat restoration was conducted at four mitigation sites for a project that established access road crossings for OC Parks at Wood Canyon Creek. The mitigation sites are located within and immediately adjacent to the creek crossings. These sites are upstream of the feasibility study limits.

- *SOCWA Bridge Protection at Coastal Treatment Plant*: A bridge protection project constructed under the CAP Section 14 for the SOCWA access bridge over Aliso Creek included implementation of a grade control structure with low flow channel immediately up and downstream of the bridge, and restoration of riparian/upland habitat immediately upstream and downstream of the bridge. Plantings have not yet been completed.

- *SOCWA Road Alignment*: Realignment of a 1,000-foot long segment of the paved SOCWA access road and trail included revegetation of 1.42 acres of native grassland and coastal sage scrub on the west side of the creek. First annual monitoring report from SOCWA was provided to OC Parks in Oct 2006. Updated project review is pending.

- *Southwestern Pond Turtle Habitat*: Mitigation for the City of Laguna Hills' Community Center included the creation of southwestern pond turtle habitat approximately 0.5 miles north of the SOCWA treatment plant on the east side of Aliso creek beginning in 2002. The program included creation of a turtle pond and associated wetland and upland habitat, implementation of a predator control plan, and introduction of 39 pond turtles. The pond has

been dry since August 2005 and currently supports no aquatic habitat. The turtles likely migrated to Aliso Creek.

- *Aliso Creek Wildlife Habitat Enhancement Project*: The ACWHEP was constructed as part of a mitigation bank by the Mission Viejo Company and Orange County in 1990 to direct water through irrigation lines to planted riparian terraces. Since 1995, ownership, maintenance, and operation have been the responsibility of the County. Due to storm damage, the structure no longer functions as intended and severe erosion and incision of the stream is occurring downstream of the headworks structure. The irrigation lines are currently broken and no longer convey water to the terraces. The ACWHEP mitigation bank did not achieve its goals and credits are no longer sold.

The status and commitments relative to compensatory mitigation sites within the study area will be reviewed by Corps Regulatory Division. Pursuant discussions to include the Corps, Sponsor, signatories to the mitigation agreements, and other regulatory entities will be needed to make a determination of outstanding commitments and necessary actions.