I - INTRODUCTION

1-01. Background. Authorization for the modification of Prado Dam is contained in the Water Resources Development Act of 1986, (P.L. 99-662). The purpose of this modification is to provide additional capacity for storage of floodwaters and sediment by enlarging the existing Prado Dam and Reservoir and to take advantage of increased downstream channel capacity by increasing the release capacity of the outlet works. The modification authorized by Congress is based on the plan recommended by the Los Angeles District of the U.S. Army Corps of Engineers, as described in a document entitled, Design Memorandum No. 1, Phase II GDM on the Santa Ana River Mainstem including Santiago Creek, Volume 2 - Prado Dam, dated August 1988. The environmental justification for this modification is provided within the report entitled, "Supplemental EIS and Project EIR for Prado Basin including Stabilization of the Bluff Toe at Norco Bluffs," dated December 2001.

This proposed flood control improvement includes (a) raising the top of the existing Prado Dam from elevation 566 to 594.4 feet, NGVD; (b) construction of a new intake structure and outlet conduits; (c) modification of the spillway by raising its crest elevation to 563 feet, NGVD; (d) construction of a new auxiliary PMF dike along the Santa Fe Railway from the existing spillway to Serfas Club Drive; (e) modification of a portion of the existing Highway 71 (Corona Expressway) and construction of a dike to elevation 594.4 feet, NGVD; (f) construction of ring dikes to prevent flooding of the Corona Sewage Treatment Plant, the Alcoa Aluminum Plant, the Corona National Housing Tract, the Prado Petroleum Tank Farm, and the California Institution for Women; the construction of floodwalls and levees for River Road and the Yorba Slaughter Adobe; and (g) acquisition of rights-of-way or easements between the existing reservoir taking line and to the new taking line elevation of 566 feet, NGVD.

This report, entitled "Prado Dam Interim Water Control Plan During Construction" documents the water control plan necessary to ensure that Prado Dam will perform safely and effectively while it is undergoing modification. The dam will be

operated to provide water conservation and flood control benefits, while at the same time protecting the construction area.

At the time this Interim Water Control Plan was prepared there were uncertainties concerning the condition of the lower Santa Ana River during the Prado Dam construction, which could affect the implementation of the Prado Interim Water Control Plan. The remaining construction on the Santa Ana River channel (Reach 9) may overlap the Prado Dam construction. Furthermore, a four-mile segment of the Orange County Sanitation District's Santa Ana River Interceptor (SARI) Line constructed under the Santa Ana River starting from the Green River Golf Course to the SAVI Ranch just upstream of Weir Canyon Road, reportedly could be exposed and damaged by flows that exceed 5,000 cfs. There are currently alternative plans to improve and realign this pipeline. Section 4-02.c. contains information about the SARI line and its possible realignment. Other improvement projects proposed during Prado Dam construction is the joint project between the Orange County Water District and the Orange County Sanitation District to install a groundwater replenishment (GWR) pipeline along a segment of the Santa Ana River channel. Details about the GWR project are contained in section 4-02.e. The Interim Water Control Plan contained in this document was developed with provisions for possible overlaps in the construction schedules. In addition, adjustments due to any other unforeseen conditions will be made as necessary, in order to operate Prado Dam effectively. Once the new outlet works are complete, this document will be modified to utilize these new features of Prado Dam. Other documents to be prepared subsequent to this manual are the Preliminary Water Control Plan (prepared at least 60 days prior to the completion of the modification project), and the Final Water Control Plan and Manual (prepared within 1 year after operation of the completed project begins).

1-02. <u>Purpose.</u> The purpose of this document is to provide a detailed plan for the safe and effective operation of Prado Dam during the construction period. The current Prado Dam Water Control Manual, dated September 1994 contains all the pertinent information about the existing Prado Dam, and shall be used to complement this document. There are two basic plans necessary during the entire construction period, namely: 1) Plan A -

Using the Existing Outlet Works, which will be implemented at the start of construction of the new outlet works; and 2) Plan B - Using the New Outlet Works, which will be implemented when the new outlet works are operational. Once implemented, Plan B is to remain in force until the modification project is completed and formally accepted for full-scale normal operation. This document currently contains Plan A, and will be updated to contain Plan B once the new outlet works are ready for operation.

1-03. Project Features. Chapter III of this document describes the Prado Dam construction schedule. During construction stages 1, 2A, 2B, and 2C, Prado Dam will be operated with the existing outlet works (Plan A). The dam's features that are pertinent to the implementation of Plan A are described as follows:

a. Dam Embankment and Cofferdam. The existing Prado Dam embankment is a compacted multi-zoned earth-filled embankment with a crest length of approximately 2,200 feet and a height of about 106 feet above the original streambed. During construction stages 1, 2A, 2B and 2C, excavation of the existing embankment will take place for the construction of the new outlet works. During this time, the construction area will be protected by a cofferdam, which will be constructed to a maximum elevation of 525 feet, NGVD. The cofferdam will provide protection for events up to the 40-year frequency flood.

b. Existing Outlet Works. The existing outlet works are located in the west abutment of the dam and consist of (1) an approach channel, 2) a 195-foot long intake structure, 3) a 591-foot long double box conduit, and 4) a 366-foot long rectangular concrete outlet channel. The intake structure is formed by two gravity-type concrete walls and a reinforced concrete invert (invert elevation is 460 feet, NGVD). The center portion of the intake structure is divided into six bays by five concrete piers. A 7-foot wide by 12-foot high cable operated tractor gate is located at the downstream end of each bay. A 90-foot long transition section joins the six-gated bays with the double box conduit. The double box conduit consists of two box conduits, each 13.5-foot high by 13.5 foot wide. The maximum capacity of each conduit is 8,500 cfs with reservoir pool

level at spillway crest (543 feet, NGVD).

c. Stilling Basin. The stilling basin is 120 feet long, with a tapered cross section, which increases in width from 70 feet to approximately 76 feet. Two staggered rows of baffle piers, 8 feet long by 3.5 feet wide and 5-feet high are spaced at 3.5-foot intervals across the basin at elevation 439.0 feet, NGVD. The baffle piers insure the formation of a hydraulic jump in the basin. The last 50 feet of the basin floor is covered with derrick stone, the voids of which have been grouted. The design capacity of the stilling basin is 10,000 cfs.

d. Spillway. The detached spillway is constructed through a bluff forming the east abutment. The spillway control section is a reinforced concrete ogee with a crest length of 1,000 feet and a crest elevation of 543.0 feet, NGVD.