



**US Army Corps  
of Engineers®**

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# **WATER CONTROL MANUAL**

**SEVEN OAKS DAM & RESERVOIR  
SANTA ANA RIVER, SAN BERNARDINO COUNTY,  
CALIFORNIA**



**September 2003**

**Seven Oaks Dam  
Santa Ana River Basin, California  
September 2003**

**Pertinent Data**

Construction Completed.....	September 1999
Stream System.....	Santa Ana River
Drainage Area.....	sq. mi..... 177
<b>Dam</b>	
Type.....	Earth and Rock Fill
Height above Original Streambed.....	feet..... 550
Crest Length.....	feet..... 2,760
Design Freeboard.....	feet..... 5.3
<b>Reservoir</b>	
<b>Elevation</b>	
Streambed.....	feet, NGVD..... 2,060
Debris Pool.....	feet, NGVD..... 2,200*
Top of Flood Control.....	feet, NGVD..... 2,580
Top of Spillway.....	feet, NGVD..... 2,580
Top of Dam.....	feet, NGVD..... 2,610
<b>Area - (Based on year 1999 survey)</b>	
Debris Pool.....	acres..... 79.2
Top of Flood Control.....	acres..... 801.6
Top of Spillway.....	acres..... 801.6
Top of Dam.....	acres..... 1,066.8
<b>Capacity - (Based on year 1999 survey)</b>	
Debris Pool.....	acre-feet..... 3,127.66
Top of Flood Control.....	acre-feet..... 147,969.67
Top of Spillway.....	acre-feet..... 147,969.67
Top of Dam.....	acre-feet..... 174,609.23
<b>Spillway</b>	
Type.....	Trapezoidal Rockcut w/ Concrete Sill
Total Width.....	feet..... 500
<b>Outlet Works - Multi-level Intake Structure (MLS)</b>	
<b>Controlled Outlet Gates</b>	
Regulating Outlet (RO) Gate type.....	Vertical Lift
Number and size.....	2 - 5'W x 8.5'H
Emergency RO Gate type.....	Vertical Lift
Number and size.....	2 - 5'W x 8.5'H
Low Flow (LF) Gate type.....	Vertical Lift
Number and size.....	1 - 2'W x 3.5'H
Emergency LF Gate type.....	Vertical Lift
Number and size.....	1 - 2'W x 3.5'H
<b>Conduits</b>	
Pressure Conduit.....	1 - 7'W x 13.5'H / 18' Diameter
Conduit Length.....	feet..... 60 / 875
Horseshoe Section.....	1 - 23'W x 18'H
Conduit Length.....	feet..... 45
Downstream of RO Gates.....	1 - 24'W x 10'H / 18'W x 9'H
Conduit Length.....	feet..... 120 / 540
<b>Exit Channel</b>	
Channel Length.....	feet..... 220
High Level Intake Elevation.....	feet, NGVD..... 2,265
Diversion Intake Elevation.....	feet, NGVD..... 2,100
<b>Outlet Works - Minimum Discharge Line (MDL)</b>	
<b>Controlled Outlet Valves</b>	
Minimum Discharge Line (MDL) Gate type.....	Cone / Ball Valves
Number and size.....	1 - 24" Ball Valve
Number and size.....	1 - 14" Cone Valve
Number and size.....	1 - 8" Cone Valve
Minimum Discharge Line Extension (MDLE) Gate type.....	Ball Valve
Number and size.....	1 - 24" Ball Valve
<b>Reservoir Design Flood (General Storm)</b>	
Total Volume (4-day).....	acre-feet..... 115,000
Peak Inflow.....	ft <sup>3</sup> /s..... 85,000
Peak Outflow.....	ft <sup>3</sup> /s..... 7,000
Peak Water Surface Elevation.....	feet, NGVD..... 2,580
<b>Probable Maximum Flood (General Storm)</b>	
Total Volume.....	acre-feet..... 326,000
Peak Inflow.....	ft <sup>3</sup> /s..... 185,000
Peak Outflow.....	ft <sup>3</sup> /s..... 180,000
Peak Water Surface Elevation.....	feet, NGVD..... 2,604.7

\* Debris pool elevation at start of project life. It will be adjusted gradually to elevation 2,300 feet, NGVD as sediment deposition occurs throughout the life of the project.



REPLY TO  
ATTENTION OF:

**DEPARTMENT OF THE ARMY**  
**SOUTH PACIFIC DIVISION, CORPS OF ENGINEERS**

333 Market Street, Room 923  
San Francisco, California 94105-2195

CESPD-MT-E

**16 DEC 2003**

MEMORANDUM FOR Commander, Los Angeles District, ATTN: CESPL-ED-HR

SUBJECT: Seven Oaks Dam Water Control Manual

1. Reference CESPL-ED-HR, memorandum, dated 1 December 2003, SAB.
2. The subject document submitted in the referenced memo for review is approved
3. Please provide this office with one copy of the final document.

FOR THE COMMANDER:

A handwritten signature in black ink that reads "Marda Q. Stothers".

MARDA Q. STOTHERS  
Chief, Engineering & Construction Division

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**SEVEN OAKS DAM AND RESERVOIR  
SANTA ANA RIVER, CALIFORNIA**

**U.S. ARMY CORPS OF ENGINEERS  
LOS ANGELES DISTRICT**

**SEPTEMBER 2003**

**Prepared by:**

**U.S. ARMY CORPS OF ENGINEERS  
LOS ANGELES DISTRICT**

**Reservoir Regulation Section  
CESPL-ED-HR**



**Aerial Photograph of Seven Oaks Dam and Reservoir**