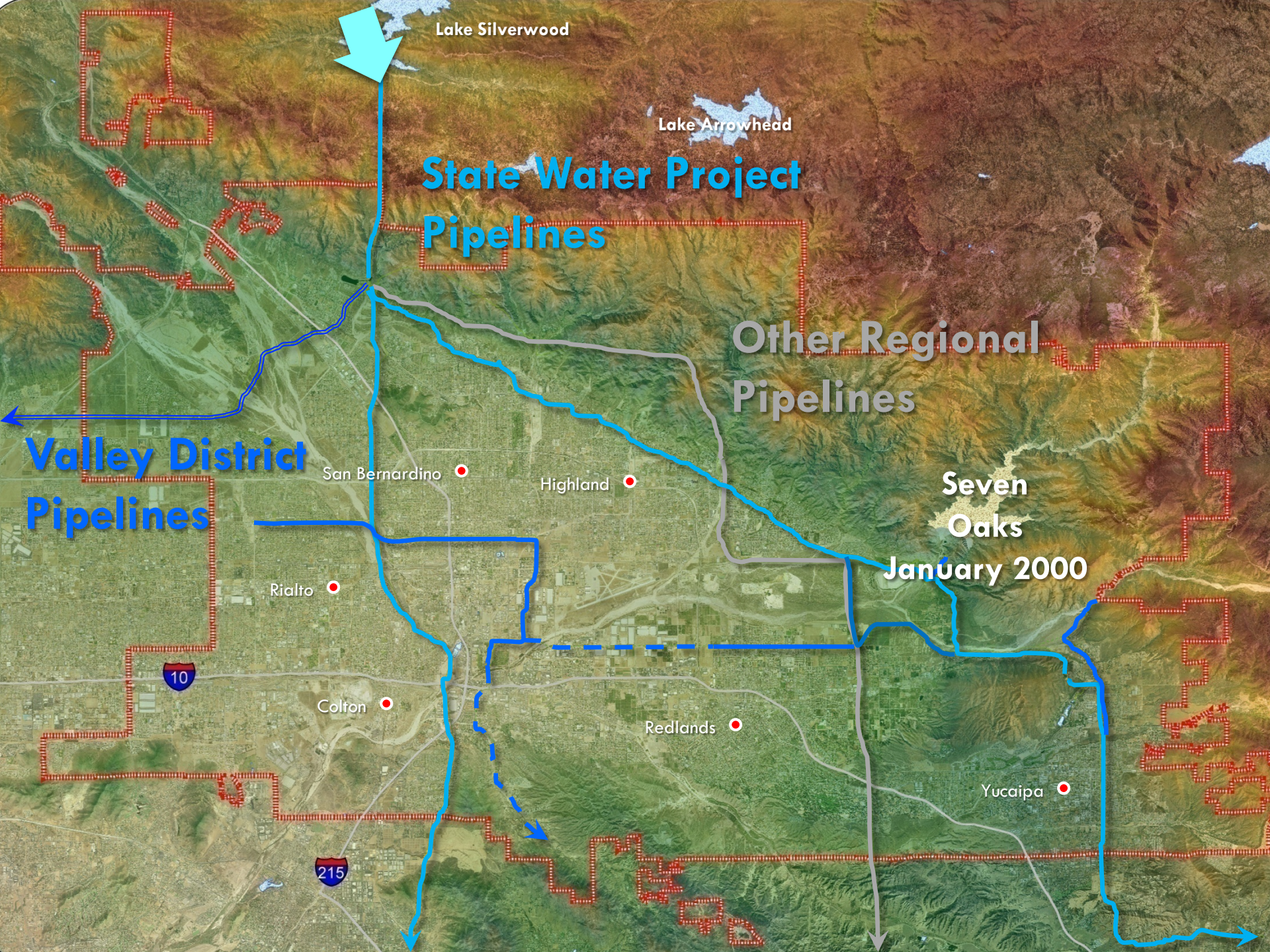
Using Seven Oaks Dam for Water Supply

WESTERN MUNICIPAL WATER DISTRICT

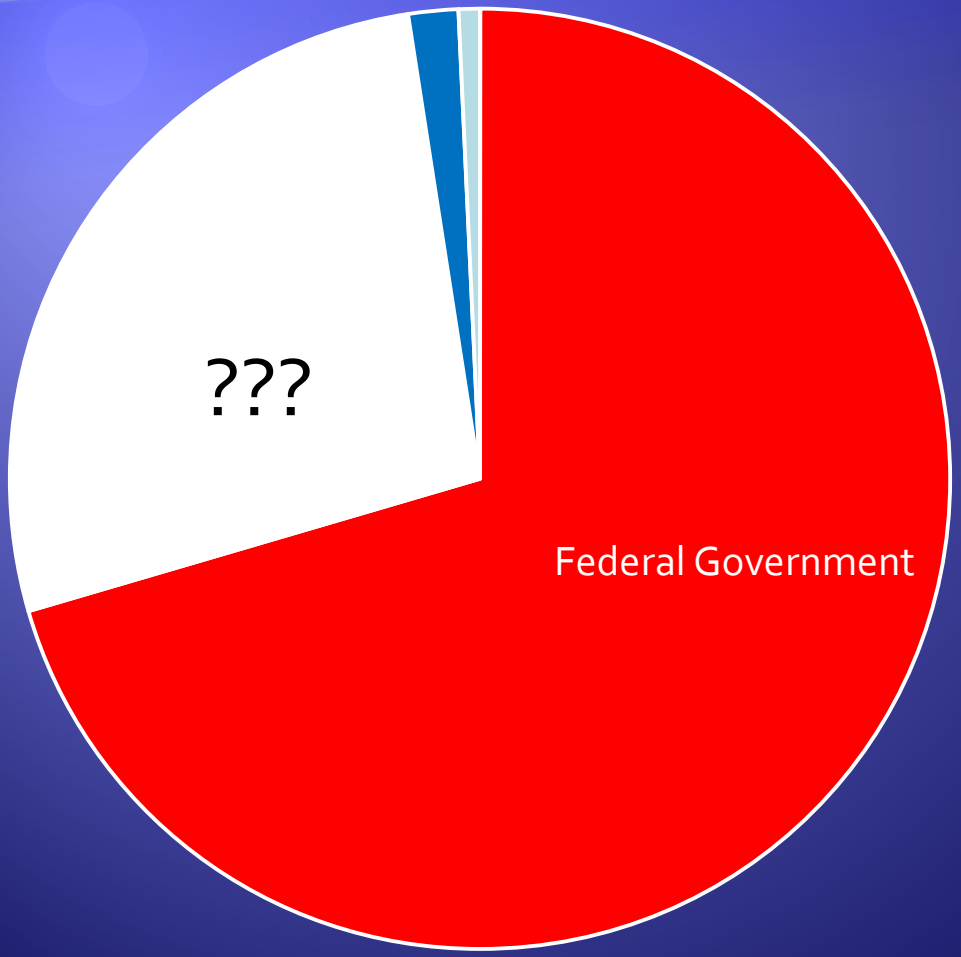
WATER | ENERGY | LIFE
CITY OF RIVERSIDE
PUBLIC UTILITIES

SBV WATER CONSERVATION DISTRICT
OUR NAME IS OUR MISSION


Lake Silverwood
Lake Arrowhead
State Water Project Pipelines
Other Regional Pipelines
Valley District Pipelines
San Bernardino
Highland
Seven Oaks January 2000
Rialto
10
Colton
Redlands
Yucaipa
215

Santa Ana River Mainstem Project

Who Paid for it?



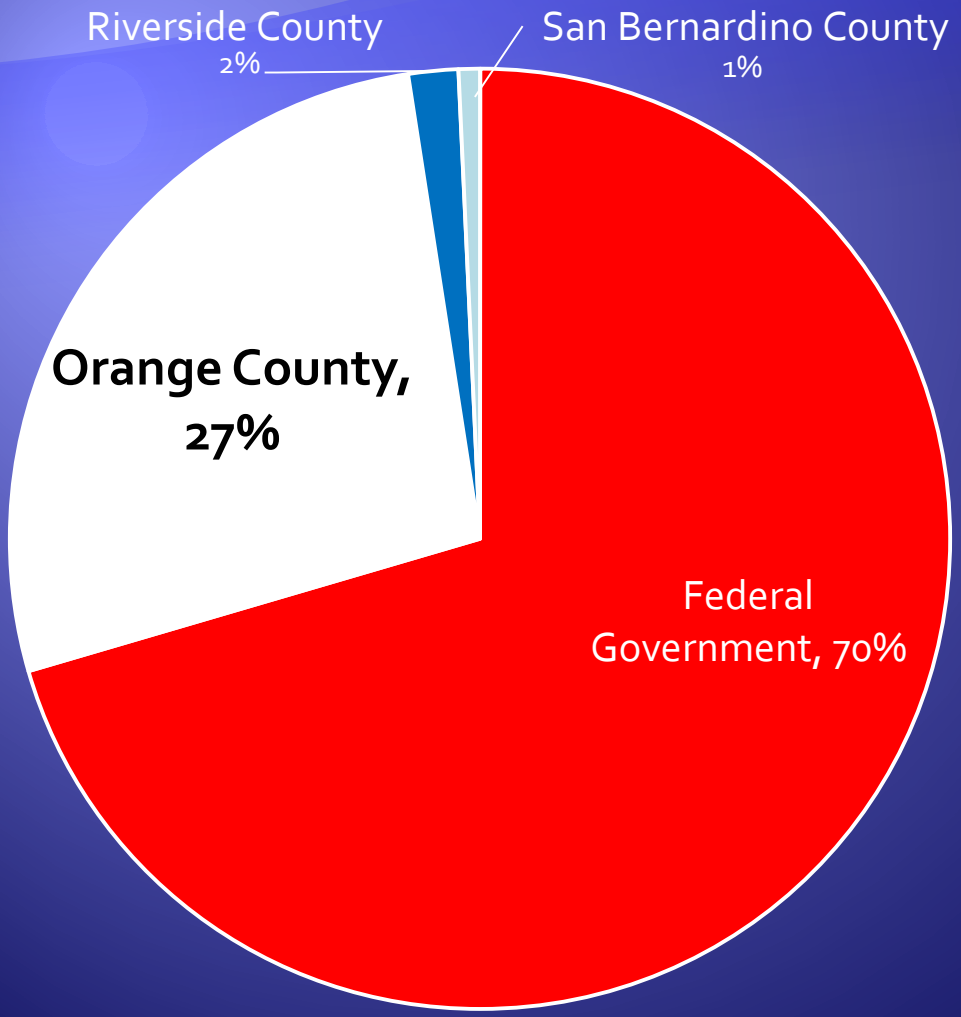
<u>Local Sponsors:</u>

Orange County

Riverside County

San Bernardino County

Who Paid for it?



Local Sponsors:

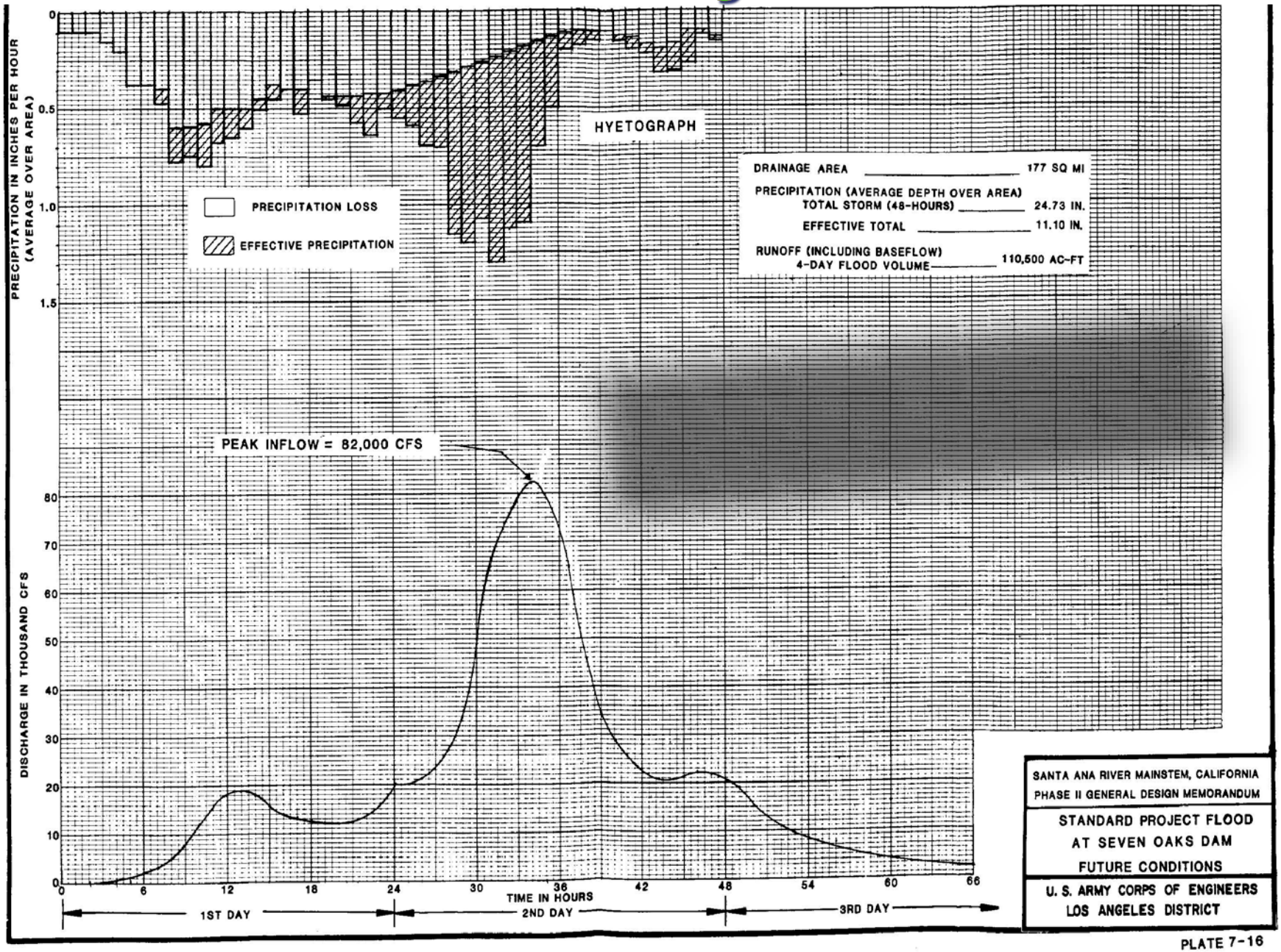
Orange County

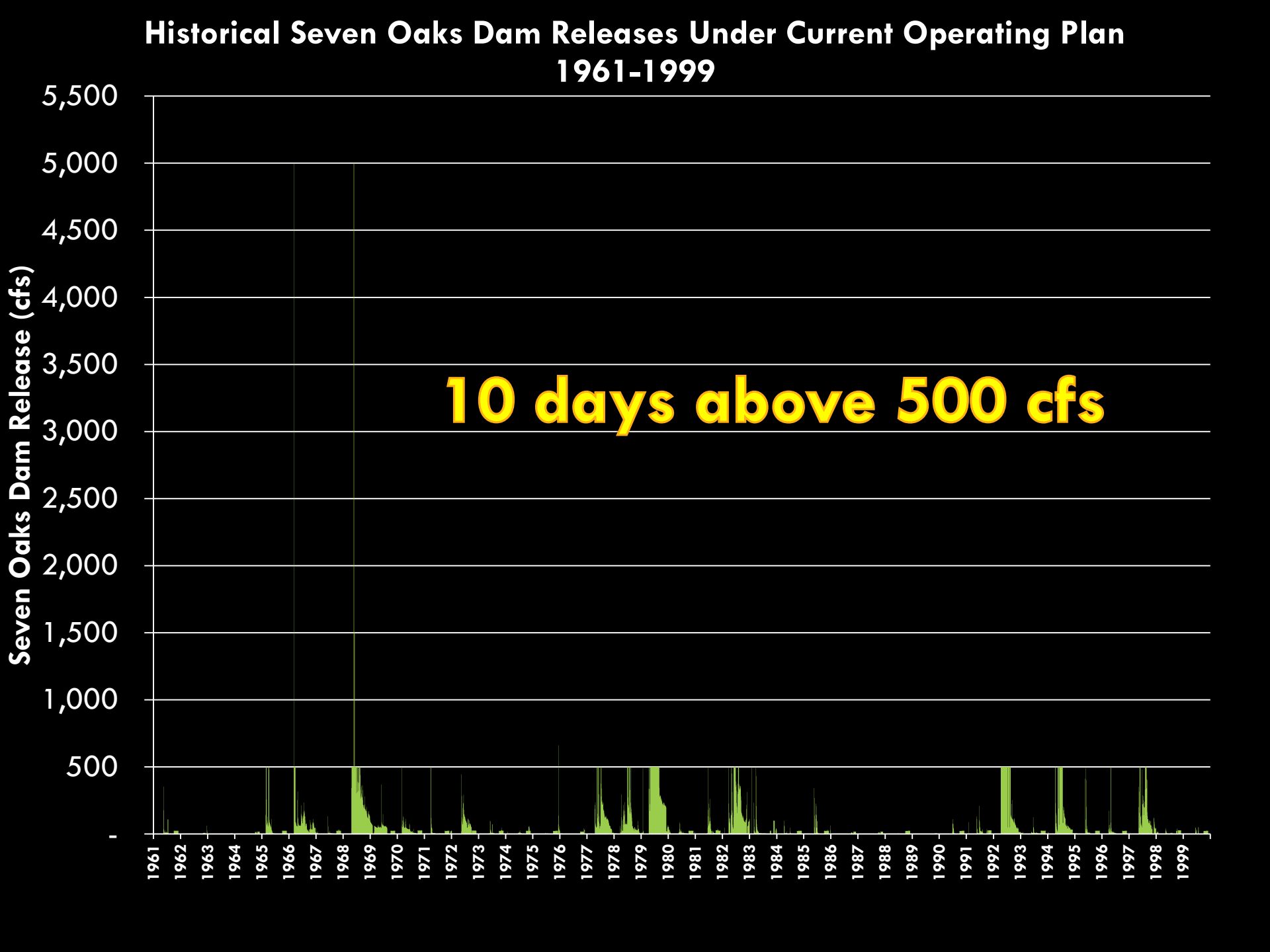
Riverside County

San Bernardino County


SAN BERNARDINO
RIVERSIDE
ONTARIO
CHINO
PRADO DAM
ORANGE
ANGEL STADIUM
SANTA ANA
JOHN WAYNE AIRPORT
DISNEYLAND
GARDEN GROVE
KNOTT'S BERRY FARM
BUENA PARK
FOUINTAIN VALLEY
SAN DIEGO FWY — 405
SANTA ANA FWY — 5
HUNTINGTON BEACH
CYPRESS
LONG BEACH
LONG BEACH HARBOR
SAR Mainstem

Standard Project Flood (SPF)




Historical Seven Oaks Dam Releases Under Current Operating Plan
1961-1999
Seven Oaks Dam Release (cfs)
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
-
10 days above 500 cfs
1961
1962
1963
1964
1965
1966
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999

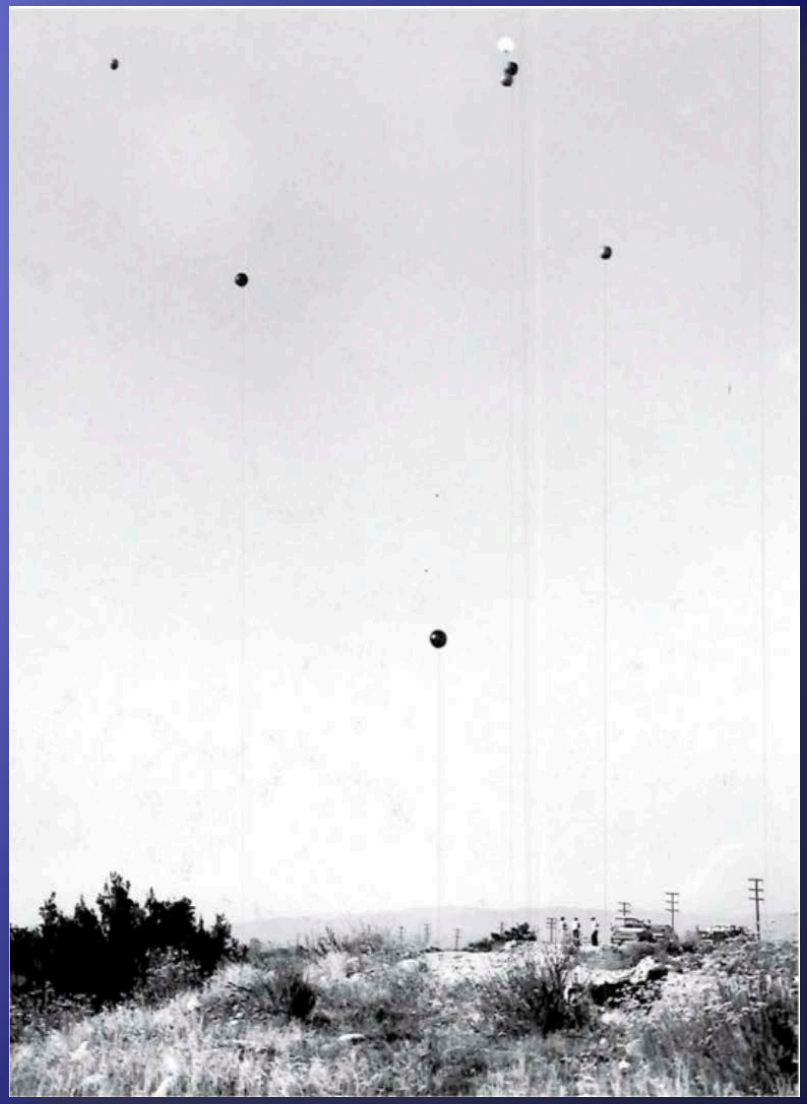
Valley District Has Been Involved Since the 1980s

Valley District has a long history with Seven Oaks Dam dating back to the early 1980s

The first dam proposed by the Corps of Engineers was 3.5 miles long, 250 feet tall and covered a large portion of Mentone. Valley District argued:

- Eyesore for the valley
- Covered prime recharge location

Valley District lobbied congress which led to the dam being moved to its current location



Investment in Seven Oaks

Date	Description	Cost
11/2/93	Seven Oaks Dam Water Conservation Feasibility Study (Completed October 1997)	$1,023,000
6/11/97	Pay for "blanket drain" improvements to Seven Oaks Dam	$3,200,000
10/18/06	Participation in Updated Seven Oaks Dam Water Conservation Feasibility Report	
8/3/2007	Payment for updated Seven Oaks Dam Water Conservation Feasibility Study	$400,000
8/09	Payment for updated Seven Oaks Dam Water Conservation Feasibility Study	$400,000
6/2010	Participation in "Expanded Scope" for Seven Oaks Dam Water Conservation Feasibility Study	$1,445,000
	TOTAL	**$6,468,000**

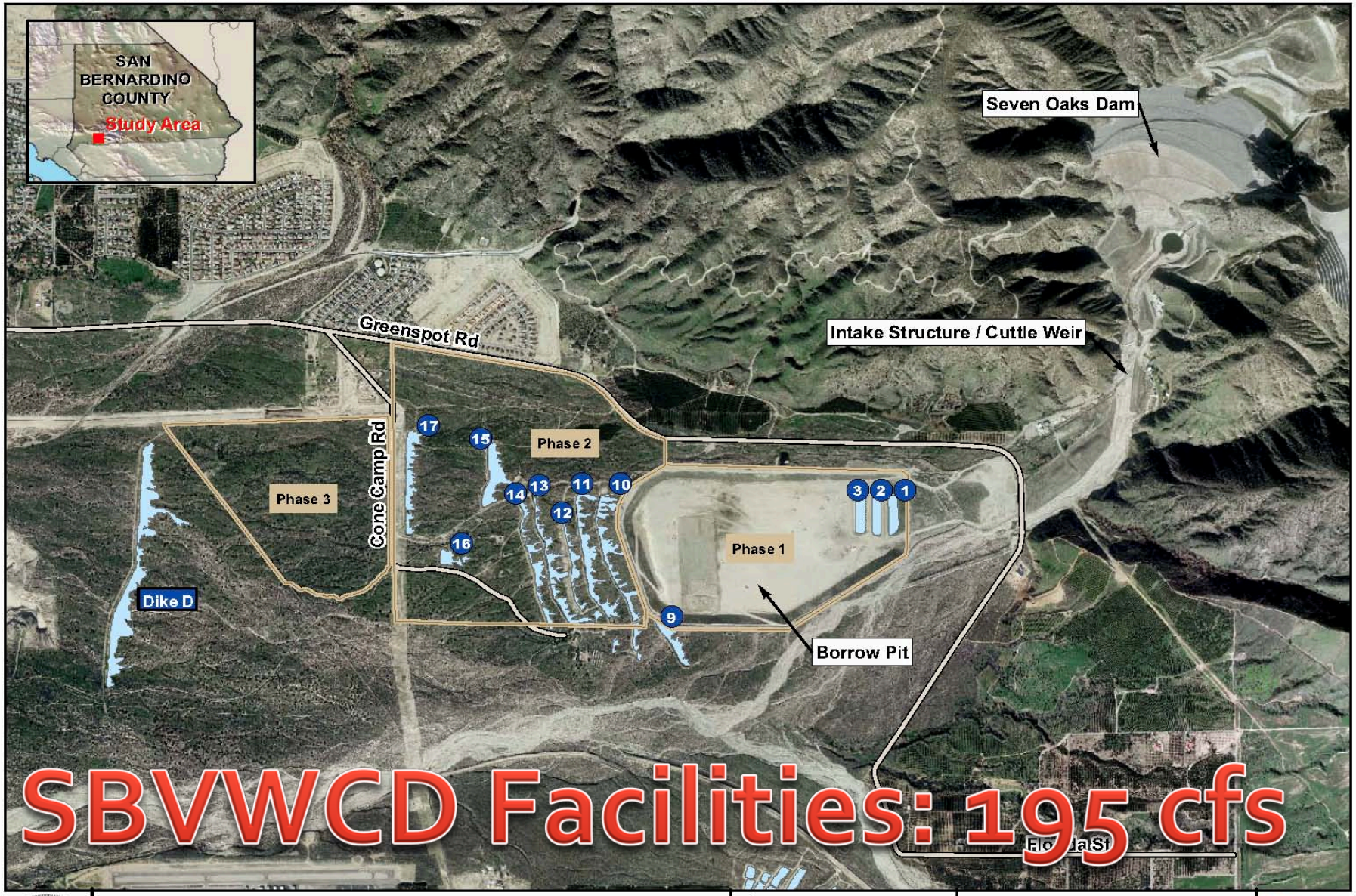
USING SEVEN OAKS FOR WATER SUPPLY

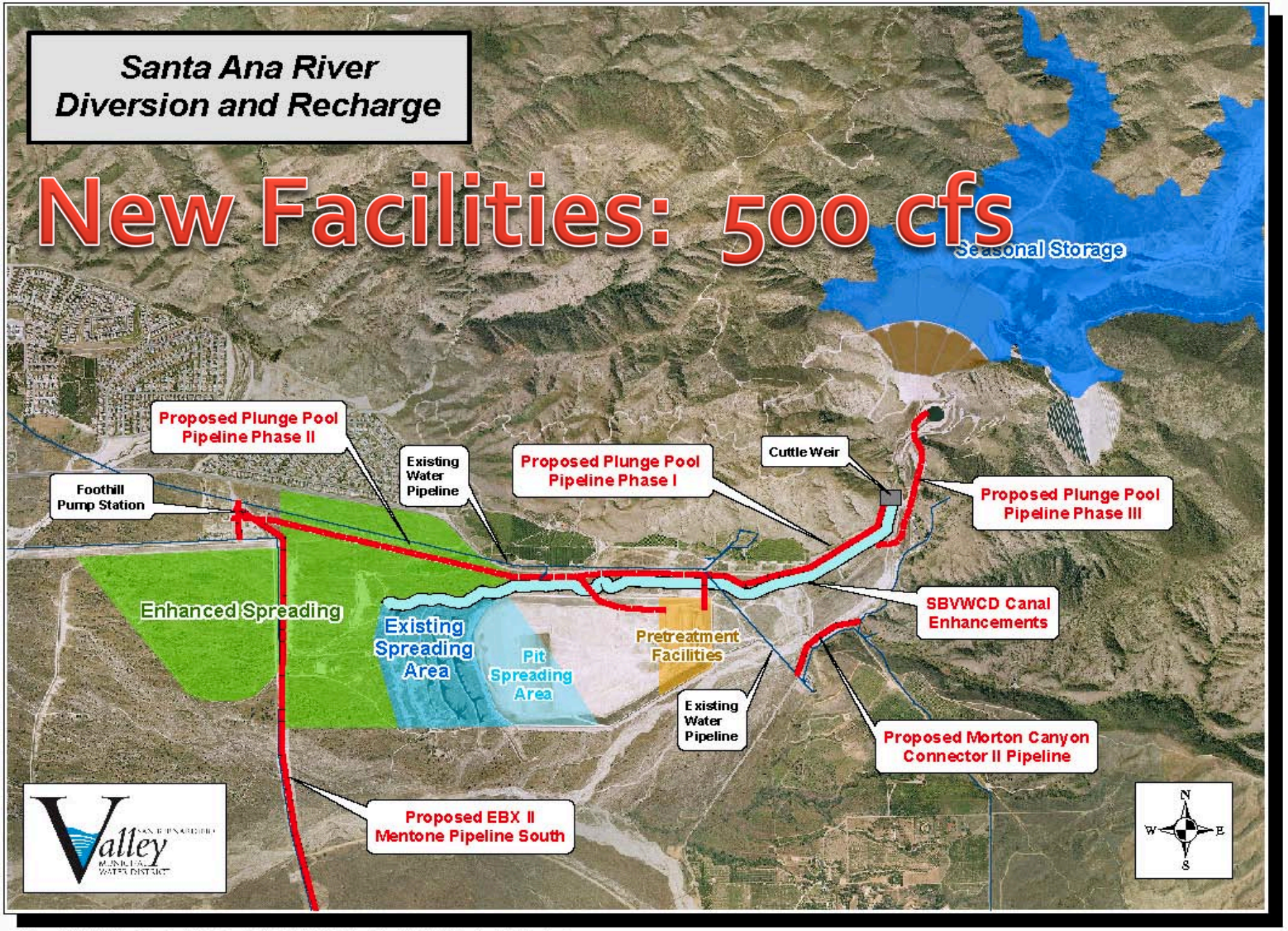
USING SEVEN OAKS FOR WATER SUPPLY

WATER RIGHTS DEVELOPMENT PROJECT TIMELINE

Date	Description
1991	SBVMWD submitted application to appropriate Santa Ana River water based on construction of Seven Oaks Dam.
1995	SBVMWD/WMWD submitted joint application and petition for reconsideration of "fully appropriated" stream status for Santa Ana River.
1999	State Water Resources Control Board Hearing on fully appropriated stream status for the Santa Ana River
2002	SBVMWD/WMWD applied for water rights on the Santa Ana River
2007	Economic Analysis
2008	Santa Ana River Groundwater Recharge Optimization Study (SBVMWD/SBVWCD)
2009	Improvements to Cuttle Weir
2010	Enhanced Recharge of the Santa Ana River Basins (SARER) Environmental Documents **Water rights permit for WMWD and SBVMWD**
2017	Began Construction of SARER – Phase 1A Project
2019	Completed Construction of the SARER – Phase 1A Project
2021	Target Completion of the Environmental permitting for SARER – Phase 1B Project
2022	Target Start of Construction of SARER 1B is early 2022

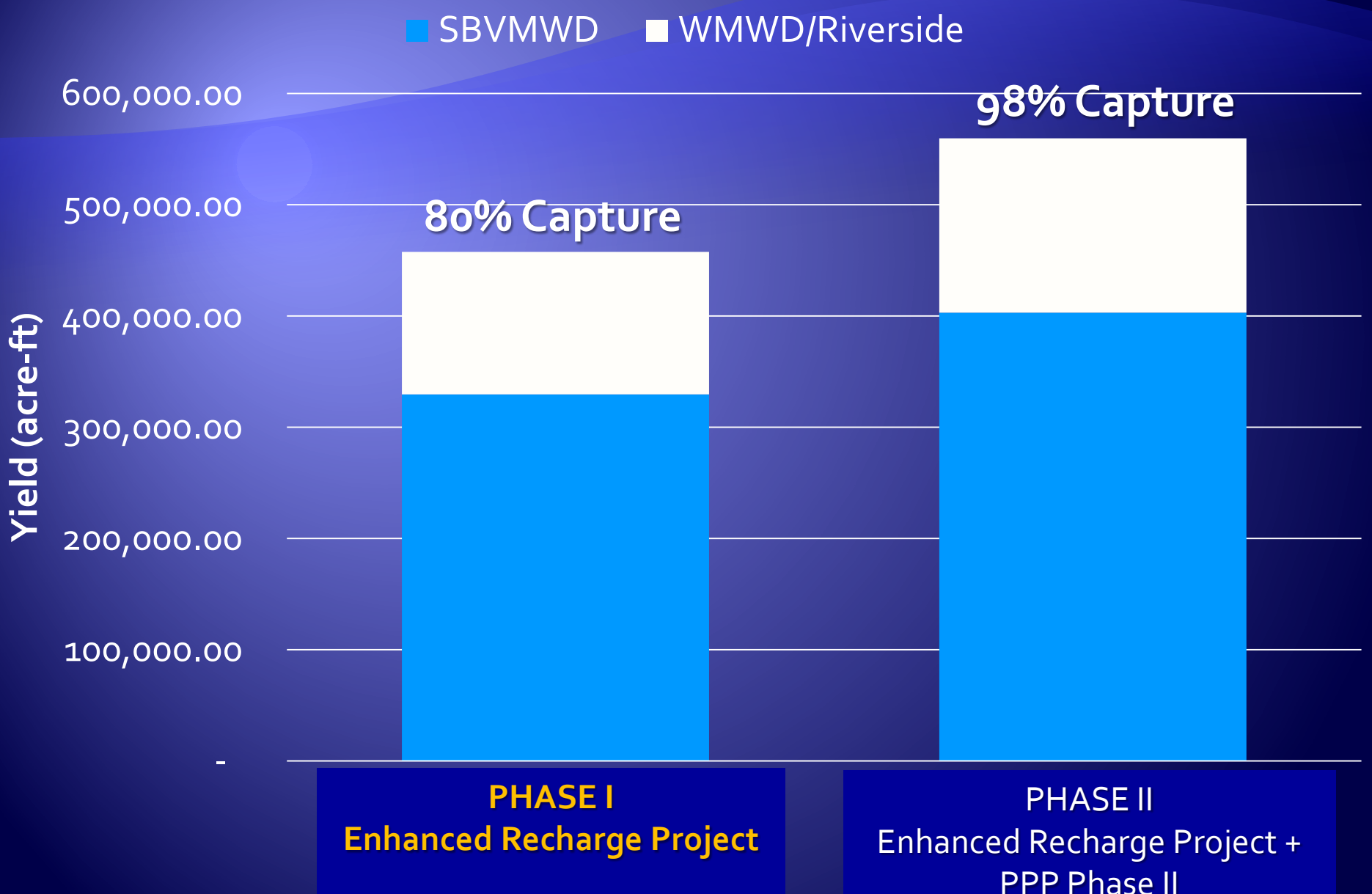
USING SEVEN OAKS FOR WATER SUPPLY


SAN BERNARDINO COUNTY
Study Area
Seven Oaks Dam
Greenspot Rd
Intake Structure / Cuttle Weir
Cone Camp Rd
Phase 1
Phase 2
Phase 3
Dike D
Borrow Pit
17
15
14
13
12
11
10
16
9
3
2
1
SBVWCD Facilities: 195 cfs
Key to Existing Features
Spreading Pond Number
Spreading Ponds
Water Conservation Facilities Evaluation Phase Areas
0 500 1,000 2,000 Feet
Location Map
Document: SBVWCD_LocationMap.mxd
Figure 1-1
Date: April 24, 2009
Santa Ana River Groundwater Recharge Optimization Study
MWH
GEI



Map Document: J:\Y2009\858 Enhanced Recharge Facilities for Santa Ara River Water Diverted by Valley District and Western Under Water Rights Permit\Seven Oaks\SevenOaksProjects.mxd)
2/3/2009 – 11:19:43 AM

Seven Oaks Dam Stormwater Capture Facilities Proposed Phasing



PHASE 1B:

A & B Basins

Main Channel Improvements to accept 500cfs flow rate

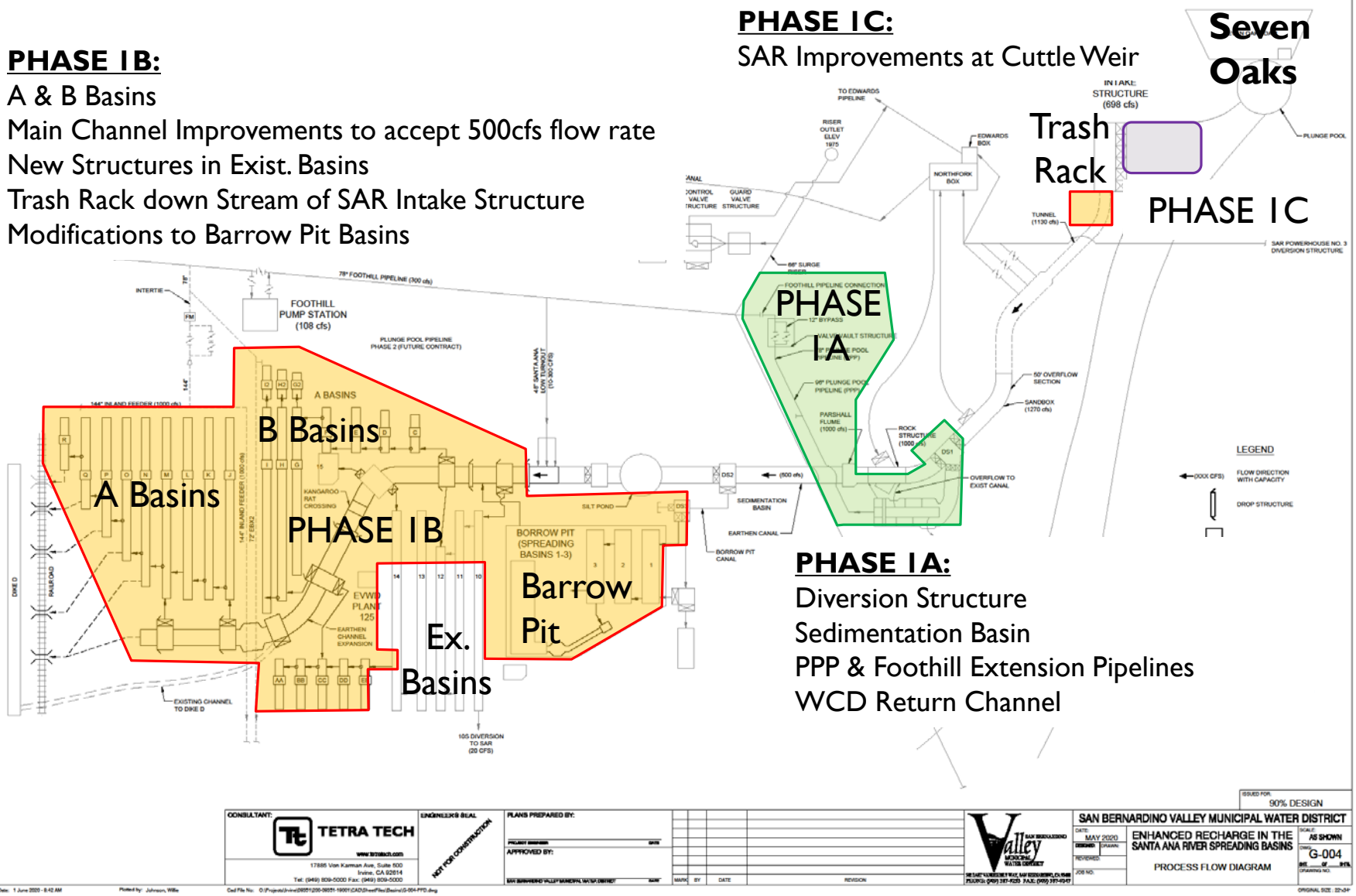
New Structures in Exist. Basins

Trash Rack down Stream of SAR Intake Structure

Modifications to Barrow Pit Basins

PHASE 1C:

SAR Improvements at Cuttle Weir



PHASE 1A:

Diversion Structure

Sedimentation Basin

PPP & Foothill Extension Pipelines

WCD Return Channel

SARER - PHASE 1C


12/03/2009

SARER - PHASE 1A

PROJECT INDEX MAP

SCALE: 1"=200'

LEGEND

LIMITS OF WORK AND ENVIRONMENTAL BOUNDARY

ENVIRONMENTALLY SENSITIVE AREA (TYP.)

NOTES:

1. CONTRACTORS ACCESS ROAD: THIS ROAD SHALL BE THE CONTRACTOR ACCESS TO THE FIELD OFFICE, STAGING AREAS AND ALL SEDIMENTATION BASIN WORK. CONTRACTOR SHALL PREPARE ROAD BY CLEARING, GRUBBING AND GRADING.
2. SANTA ANA CANYON ROAD IS OPERATED BY THE ARMY CORP OF ENGINEERS. THIS ROAD WILL BE SHARED WITH OTHER PERSONNEL, US ARMY CORP, DOE SITE OPS, & VALLEY DISTRICT. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF PROPERTY AS OUTLINED IN THE GENERAL CONDITIONS 2.11
3. SECURITY GATE WILL BE OPERATED BY ARMY CORPS.
4. CONTRACTOR SHALL DESIGN TRUCK WASHOUT AREA TO ENSURE NO MATERIAL CAN RUNOFF TO STREAMS OR PERCOLATE INTO THE GROUNDWATER.
5. CONTRACTOR SHALL PROTECT IN PLACE ALL CITRUS TREES WITHIN ARNDT PROPERTY EXCEPT WHERE NOTED ON DRAWINGS.

ISSUED FOR: CONFORMED SET

CONSULTANT:	ENGINEER'S SEAL	PLANS PREPARED BY:				
GHD Inc 175 Technology Drive Suite 200 Irvine California 92618 USA T 1 949 585 0255 F 1 949 585 0259 W www.ghd.com		COVER SHEET HAS BEEN SIGNED AND DATED XX/XX/XXXX PROJECT ENGINEER DATE APPROVED BY: COVER SHEET HAS BEEN SIGNED AND DATED XX/XX/XXXX SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT DATE	MARK	BY	DATE	REVISION
			△	GW	6/28/17	CONFORMED SET

Valley Municipal Water District — 380 EAST VANDENBERG WAY, SAN BERNARDINO, CA 92408 PHONE: (909) 387-9253 FAX: (909) 387-9247

SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT

ENHANCED RECHARGE IN THE SANTA ANA RIVER BASIN PROJECT

SPECIFICATION NO. 14-01

PROJECT INDEX MAP

DATE: XX/XX/XXXX | DESIGNED: CR | DRAWN: AK | REVIEWED: | JOB NO: GW

SCALE: 1" = 200'

DWG NO. G-005

INT. 5 OF 68 SHTS.

ORIGINAL SIZE: 22x34

SARER - PHASE 1B

LEGEND

- WORK LIMITS
- PROPOSED PIPE AND CULVERT
- PROPOSED DROP STRUCTURE
- UNDISTURBED AREA NO CONSTRUCTION ACTIVITY ALLOWED
- ENVIRONMENTALLY PROTECTED AREA
- RESTRICTED ACCESS AREA

Design Phase

N

0 200' 400' 800'
SCALE: 1" = 400'

ISSUED FOR: 90% DESIGN

CONSULTANT: TETRA TECH
www.tetratech.com
17885 Von Karman Ave, Suite 500
Irvine, CA 92614
Tel: (949) 809-5000 Fax: (949) 809-5000

ENGINEER'S SEAL
NOT FOR CONSTRUCTION

PLANS PREPARED BY:
PROJECT MANAGER DATE
APPROVED BY:
SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT DATE

MARK	BY	DATE	REVISION

SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT
380 EAST VANDENBERG WAY, SAN BERNARDINO, CA 92408
PHONE (909) 387-9220 FAX: (909) 387-9247

SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT

DATE: MAY 2020
DESIGNED: DRAWN:
REVIEWED:
JOB NO.:

ENHANCED RECHARGE IN THE SANTA ANA RIVER SPREADING BASINS

SITE ACCESS AND WORK AREA LIMITS

SCALE: AS SHOWN
DWG. NO.: G-006
SHT. OF SHTS.
DRAWING NO.

Plot Date: 1 June 2020 - 8:42 AM Plotted by: Johnson, Willie Cad File No: O:\Projects\Irvine\08031200-08031-19001\CAD\SheetFiles\Basins\G-006-SiteAccess-Staging.dwg

ORIGINAL SIZE : 22x34

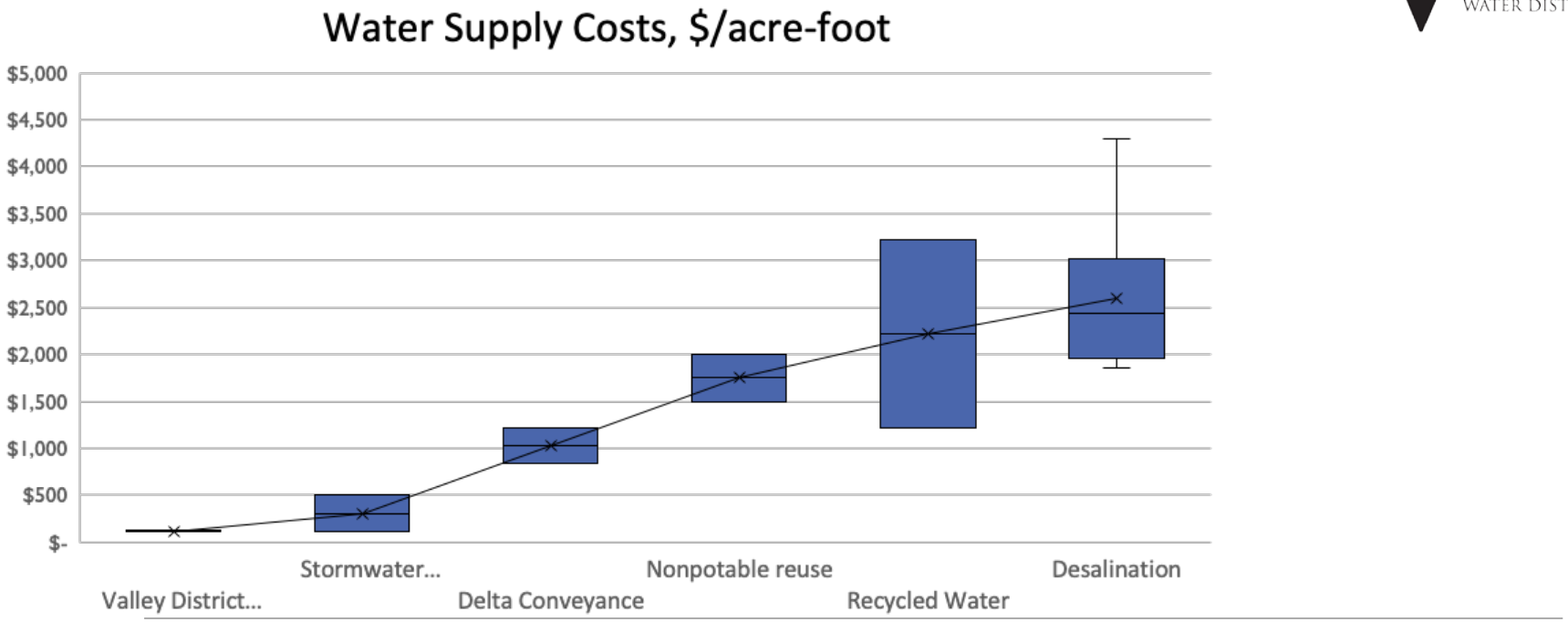
ESTIMATED CONSTRUCTION & MAINTENANCE COSTS, Phase 1B

- 7 Existing Basins, 21 New Basins
- More Than 100 New Structures, Pipes and Features
- Approx. 100 Acres of Cleaning Area
- Estimated Construction Cost: **$53,951,000**
- Estimated Annual Maintenance Cost: = **$480,000** (Not Included: Specialty Items, SCADA, Flow Meters, Trash Rack, Vegetation, Habitat, Wells, Vandalism)

ESTIMATED COST OF PHASE 1A & 1B:

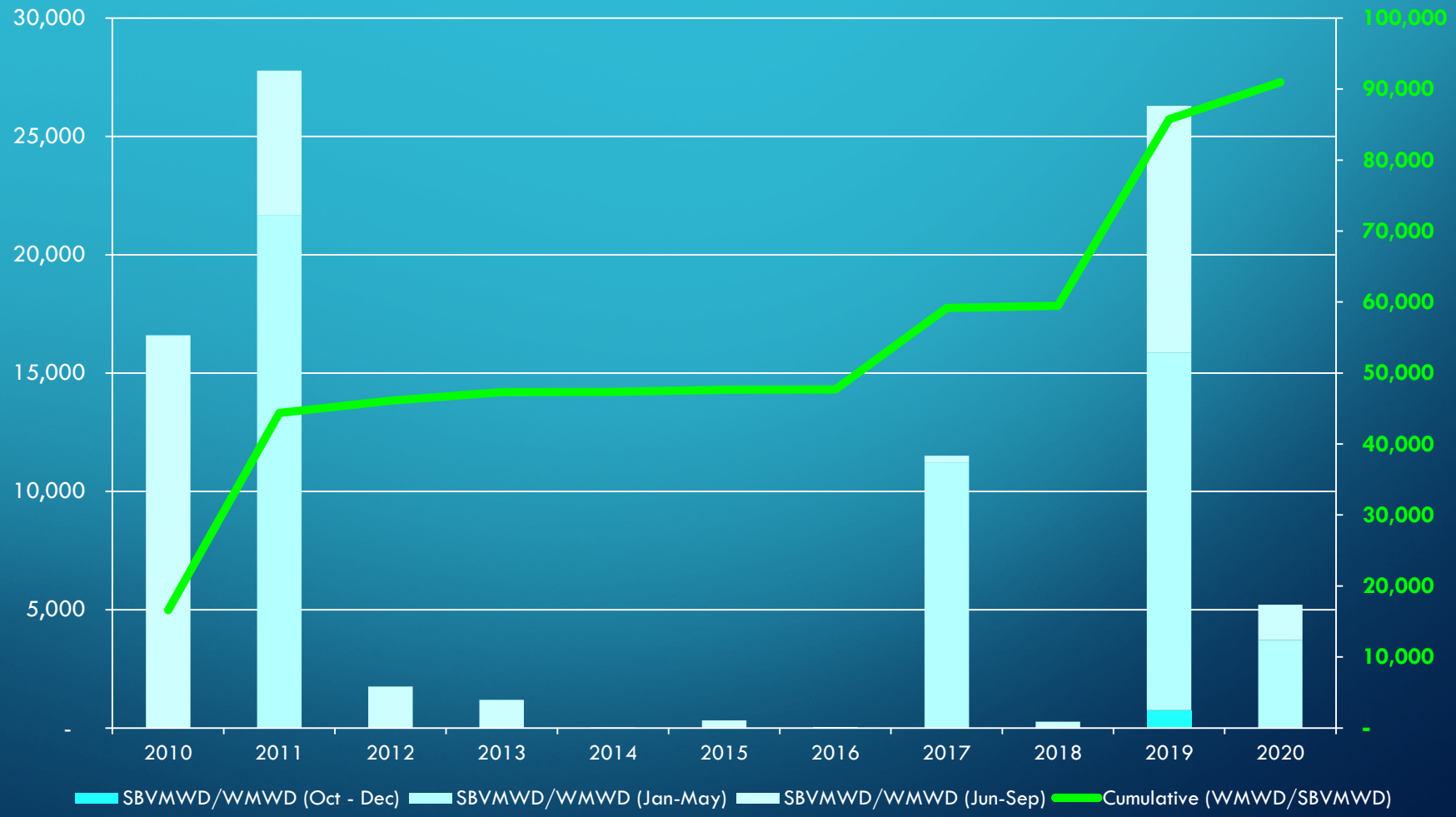
• Water Rights Application:	$20,000,000
• Phase 1A incl. design and CM:	$20,000,000
• Phase 1B incl. design and CM:	$60,000,000
	$100,000,000

The Project yields an average of **10,807 AFY**. The estimate cost of the water benefit over 75 years is **$123/AF** ($90/AF for capital and $30/AF for O&M)



CA Water Fix vs. Alternative Supplies, Metropolitan Water District of Southern California, 8/10/17
Executive Summary The Cost of Alternative Water Supply and Efficiency Options in California, Pacific Institute, October 2016

DIVERSIONS, TO DATE



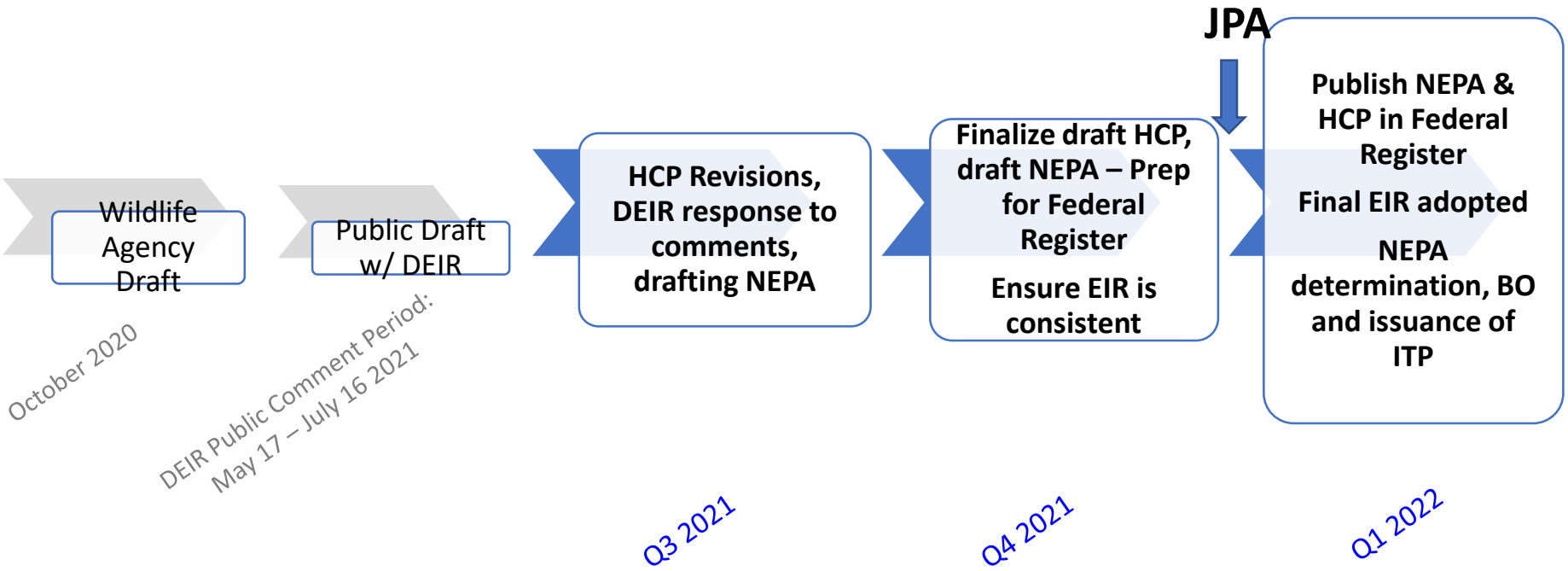
USING SEVEN OAKS FOR WATER SUPPLY

Environmental

- Environmental Review
  - Seven Oaks Dam
  - Water Right
  - Project-specific
- Permitting
  - Upper Santa Ana River Watershed Habitat Conservation Plan – Aquatic and terrestrial (HCP)
  - Upper Santa Ana River Wash Habitat Conservation Plan – terrestrial (Wash Plan) – ITP issued July 2020

HCP SCHEDULE

Upper SAR HCP & CEQA
NEPA, BO and Incidental Take Permit

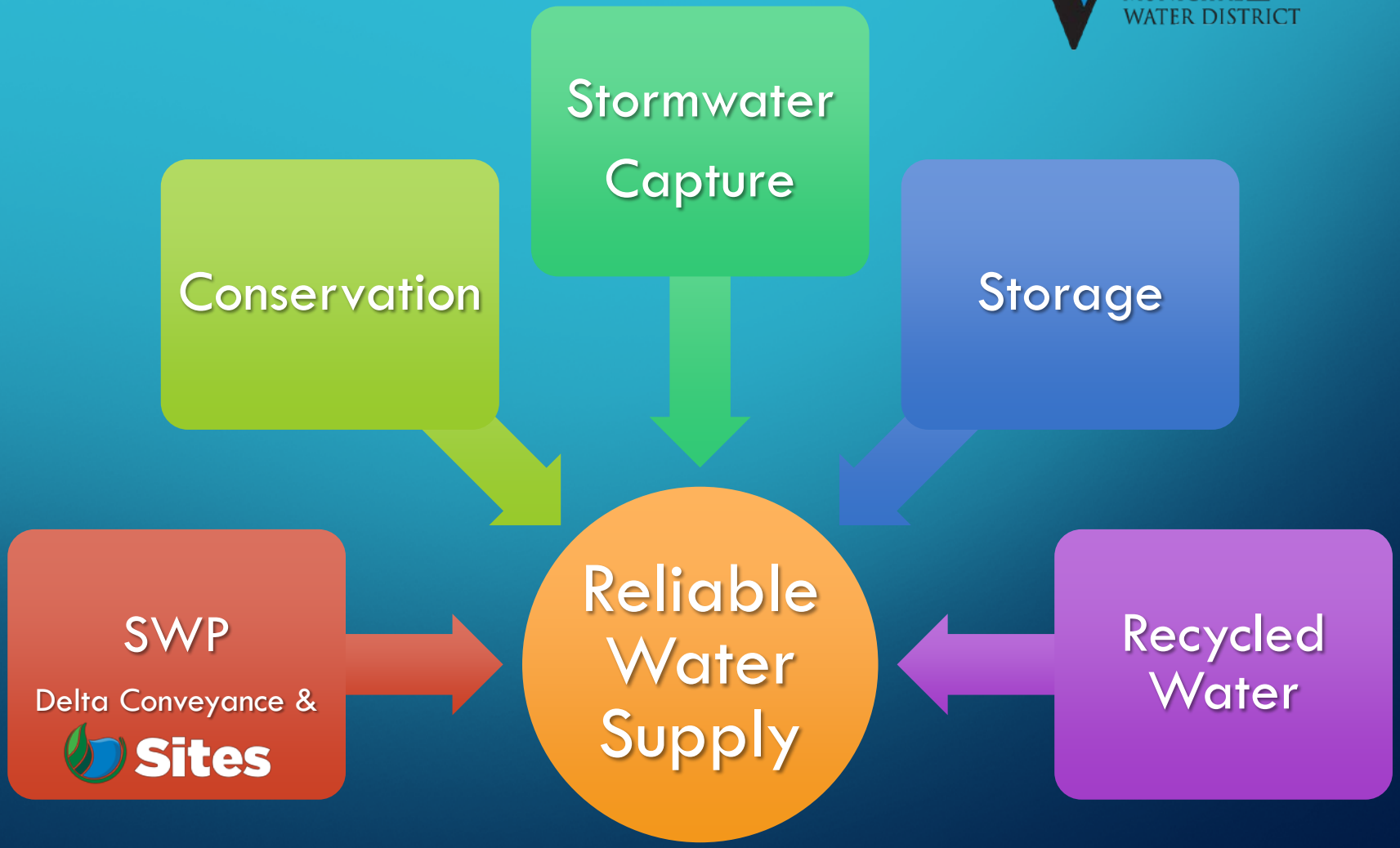


Next Steps

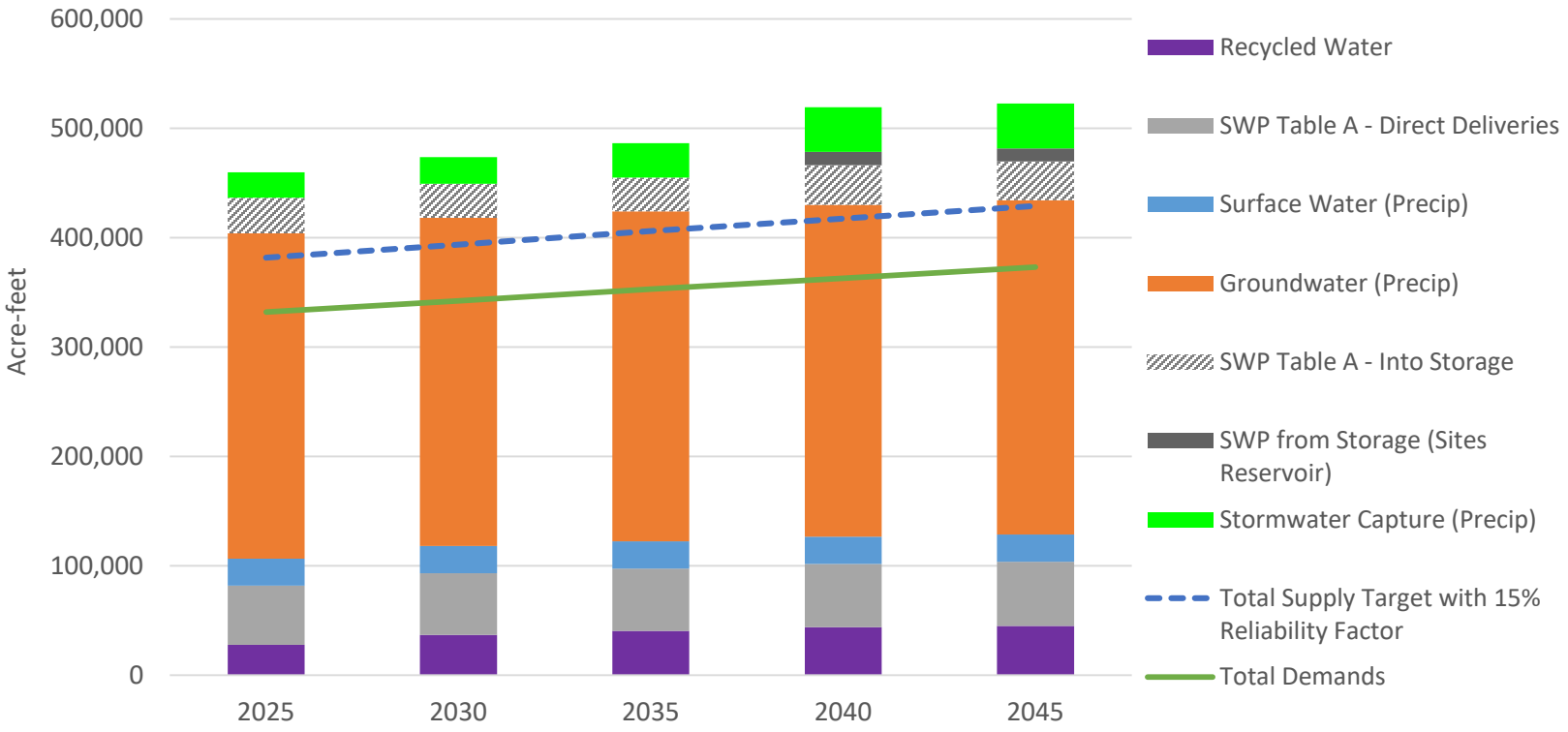
Obtain Congressional authorization for water conservation behind Seven Oaks Dam

Sponsor the Center for Western Weather and Water Extremes (CW3E) Water Affiliates Group (WAG)

- Research "…to advance understanding of atmospheric rivers and droughts and improve water management, mitigate flood risk, and increase water supply reliability"
- Develop Forecast Informed Reservoir Operations (FIRO) at Seven Dam


Stormwater Capture
Conservation
Storage
SWP
Delta Conveyance &
Sites
Reliable Water Supply
Recycled Water

Water Supply Portfolio




Questions?
03/01/2011