FINAL

Stockton East Water District
Water Management Plan

Prepared for
Stockton East Water District

January 20, 2014

Date of first draft – December 30, 2011
Date of second draft – December 21, 2012
Date of third draft – April 26, 2013
Date of final – January 20, 2014

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United States Department of the Interior

BUREAU OF RECLAMATION
Mid-Pacific Regional Office
2800 Cottage Way
Sacramento, CA 95825-1898

IN REPLY REFER TO:

SEP 4 2014

MP-410
WTR-4.00

Mr. Scot A. Moody
General Manager
Stockton East Water District
P.O. Box 5157
Stockton, California 95205-0157

Subject: Water Management Plan— Stockton East Water District

Dear Mr. Moody:

The Bureau of Reclamation is pleased to inform you that the Stockton East Water District's 5-Year Water Management (Plan), including the latest submitted changes and supplements, meets the requirements contained in the 2011 Standard Criteria for Evaluating Water Management Plans.

Reclamation appreciates the effort committed to preparing the Plan. If you have any questions, please contact Ms. Melissa Crandell, Water Conservation Specialist, at 916-978-5208.

Sincerely,

Richard J. Woodley
Regional Resources Manager

cc: Kristen Coon
Water Conservation Coordinator
Stockton East Water District
P.O. Box 5157
Stockton, CA 95205-0157

CCAO-405 (LSharp)

RECEIVED
SEP 10 2014
STOCKTON EAST WATER DISTRICT
Administration

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Resolution No. 13-14-11

A RESOLUTION OF THE BOARD OF DIRECTORS OF STOCKTON EAST WATER DISTRICT ADOPTING THE STOCKTON EAST WATER DISTRICT WATER MANAGEMENT PLAN FOR THE PURPOSE OF COMPLYING WITH WATER CONSERVATION PROVISIONS OF THE WATER SERVICE CONTRACT BEWTWEEN STOCKTON EAST WATER DISTRICT AND THE UNITED STATES

WHEREAS, Section 210 of the Reclamation Reform Act of 1982 (Public Law 97-293; 43 US § 390jj) requires districts with repayment or water supply contracts to develop and maintain water conservation plans containing definite goals, appropriate water conservation measures, and time schedules for meeting conservation objectives; and

WHEREAS, Section No. 3405(e) of the Central Valley Project Improvement Act of 1992 (Title XXXIV, Public Law 102-575, 106 Stat. 4713) requires the Secretary of the Interior to establish an office to develop criteria for evaluating water conservation plans developed by CVP contractors, and that said plans be updated every five years; and

WHEREAS, Stockton East Water District has a federal water service contract and has, therefore, prepared an updated Water Management Plan; and

WHEREAS, Stockton East Water District's Water Management Plan was approved in 1996 and updated in 2001 and 2006; and

WHEREAS, Stockton East Water District has prepared a 2011 Water Management Plan in accordance with law, which updates the District's 2006 Water Management Plan and which satisfies the criteria for evaluation of water conservation plans developed by the U.S. Bureau of Reclamation;

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Stockton East Water District that the 2011 Water Management Plan is adopted.

PASSED AND ADOPTED at a regular meeting by the Board of Directors of the Stockton East Water District on the 28th day of January 2014 by the following vote of the members thereof:

AYES: Atkins, Cortopassi, McGaughey, McGurk, Panizza, Sanguinetti and Watkins
NAYS:
ABSENT:
ABSTAIN:

Alvin Cortopassi, President

ATTEST:

Scot A. Moody
Secretary of the Board

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Section 1: Description of the District

District Name: Stockton East Water District
Contact Name: Michael Johnson
Title: Assistant General Manager
Telephone: (209) 948-0333
E-mail: mjohnson@sewd.net
Web Address http://www.sewd.net/

A. History

1. Date district formed: 1948 *Date of first Reclamation contract*: 1964
Original size (acres): 79,500 *Current year (last complete calendar year)*: 2010

The Stockton East Water District (SEWD) provides surface water for both agricultural and urban uses. By providing surface water for agricultural irrigation, SEWD supports San Joaquin County's agricultural industry, which is the area's leading economic activity. SEWD also supplies wholesale treated drinking water, which is retailed to Stockton area customers by the California Water Service Company, the City of Stockton, and San Joaquin County.

SEWD owns and operates a water treatment plant (WTP) in Stockton, the Dr. Joe Waidhofer (DJW) WTP, which has a primary intake from Goodwin Reservoir on the Stanislaus River, and a secondary diversion from the Calaveras River at Bellota. The water diversion at Goodwin Dam marks the beginning of the New Melones Conveyance System.

Formation of SEWD

SEWD was formed in 1948 under the 1931 Water Conservation Act of the State of California. SEWD was originally organized as the Stockton and East San Joaquin Water Conservation District, an independent political subdivision of the state government. As such, SEWD is responsible for acquiring a supplemental water supply and developing water use practices that will secure a balance between SEWD's surface and groundwater supplies.

Establishing Water Supply and Financial Structure

From 1948 to 1963, SEWD focused its efforts on water resource planning by evaluating groundwater conditions and determining requirements for supplemental water. These intensive efforts on the part of SEWD and other local agencies resulted in the construction of New Hogan Dam in 1964. SEWD signed a contract for supplemental surface water with the United States Bureau of Reclamation (USBR) in 1970 (see Attachment A). Also in 1970, SEWD and Calaveras County Water District (CCWD) signed a Memorandum of Understanding (MOU) which assigned SEWD 56.5 percent of the yield from New Hogan Reservoir (see Attachment A).

From its inception until 1962, SEWD's financial structure was dependent upon property taxes. In 1963, the Governor of California signed a bill establishing SEWD's right to levy groundwater use fees and surface water charges. SEWD used the additional revenue to contract for New

Hogan Reservoir water. About this time, SEWD began registering wells within the district, while check dams were built on the Calaveras River and Mormon and Mosher Sloughs to control surface irrigation water and promote groundwater recharge. SEWD also became actively involved in the pursuit of projects to mitigate significant groundwater issues, which included declining aquifer levels, pumping depressions under urban Stockton, and the continuing threat of saline intrusion in wells near the Delta.

Boundary Expansion and Drinking Water Treatment Plant Construction

In 1971, SEWD boundaries were expanded from its original 79,500 acres to approximately 114,000 acres to include the entire Stockton urban area. Plans were initiated for a 30 million gallon per day (MGD) drinking water treatment plant. In 1975, a district-wide election resulted in the approval of a $25 million bond to fund the new plant. The DJW WTP, located at 6767 East Main Street, was constructed in 1977 and began operation in 1978. In 1979, the Independent Benefit Commission concluded that the new drinking water treatment plant was a benefit to Stockton's planning areas. In 2005, SEWD annexed an additional 27,000 acres into the district. Today, SEWD's area encompasses approximately 143,300 acres.

Pursuit of Supplemental Water Supplies

SEWD has actively sought supplemental surface water from the American River via the Folsom South Canal and from the New Melones Reservoir. Efforts to obtain the American River supply have been thwarted by the Environmental Defense Fund (EDF), and litigation by the East Bay Municipal Utility District (EBMUD) and the Freeport Regional Diversion Project recently constructed by EBMUD and Sacramento County.

In 1983, SEWD and the Central San Joaquin Water Conservation District (CSJWCD) contracted with USBR for annual allocations of 75,000 and 80,000 acre-feet (ac-ft), respectively, from New Melones Reservoir (see Attachment B). Also in 1983, SEWD expanded its surface water irrigation capabilities by constructing the 12,000 gallons per minute Potter Creek Pump Facility to facilitate diversions from New Melones Reservoir.

Plant Expansion and New Melones Conveyance Construction

In 1991, the DJW WTP was expanded to 40 MGD to accommodate increased demand from Stockton's urban areas. Construction of the New Melones Conveyance System, in anticipation of a new water supply from the New Melones Reservoir, was completed in 1994; however, under the Central Valley Project Improvement Act (CVPIA), USBR did not supply water for the New Melones Reservoir project in 1993-1994. In 1995, SEWD began receiving New Melones Reservoir water, but the amount received was less than the contracted amount. Legal action in this matter is ongoing.

Under the current USBR operation of New Melones Dam, SEWD and CSJWCD are provided with up to 150,000 ac-ft of water from New Melones Reservoir annually. Water allocation amounts are based on the March-September water forecast and the February end of month storage in New Melones each year.

Adoption of AB 3030 Groundwater Management Plan

In 1995, SEWD adopted a Groundwater Management Plan in accordance with Assembly Bill 3030 (AB 3030). The goal of the SEWD AB 3030 Groundwater Management Plan is to continue the district's efforts to protect existing water supplies, to relieve pressure on the local groundwater basin by seeking supplemental surface water supplies for conjunctive use, and to maintain pressure on USBR to meet the contracted delivery amounts for New Melones water.

In 2005, SEWD adopted the Eastern San Joaquin Groundwater Basin Groundwater Management Plan prepared by the Northeastern San Joaquin County Groundwater Banking Authority in compliance with AB 3030 and SB 1938 and pursuant to California Water Code Section 10750 et seq., replacing the 1995 Plan. The comprehensive plan developed by those agencies that overlay the local groundwater basin reviews, enhances, assesses and coordinates existing groundwater management policies and programs in Eastern San Joaquin County and develops new policies and programs to ensure the long-term sustainability of groundwater resources in Eastern San Joaquin County.

OID/SSJID Water Transfer Agreement

In 1997, SEWD entered into a water transfer agreement with Oakdale Irrigation District and South San Joaquin Irrigation District (OID/SSJID) (see Attachment C). This agreement allocated to SEWD 8,000 to 30,000 ac-ft per year (ac-ft/yr), based on New Melones Reservoir storage and inflow as of April 1 of each year. The contract period for the allocation ended in 2009, with a possible 10-year renewal, pending further studies. A one-year temporary water transfer agreement was entered into for the 2009-2010 water year. The agreement allows for a sale of up to 15,000 ac-ft/yr from each irrigation district. The total transfer amount to SEWD for the 2010 calendar year was 26,900 ac-ft.

Peters Pipeline Project

In 2003, SEWD applied for and received a Proposition 13 Groundwater Recharge Storage Construction Grant for the Peters Pipeline portion of the Farmington Project. The New Melones Conveyance System, which supplies water to the Dr. Joe Waidhofer WTP, consists, sequentially, of a diversion structure at Goodwin Dam, the Goodwin Tunnel, the Upper Farmington Canal, Shirley Creek, Hoods Creek, Rock Creek, the Lower Farmington Canal, and Peters Pipeline to the existing 54-inch-diameter Bellota Pipeline, or to the 6-mile Peters Pipeline extension. A 78-inch-diameter section of Peters Pipeline extends 3 miles from the terminus of the Lower Farmington Canal to the existing 54-inch-diameter pipeline from Bellota to the WTP. Under this Groundwater Recharge Storage Project, SEWD built a 6-mile long, 60-inch diameter extension to the Peters Pipeline. This extension provides water for agricultural irrigation, groundwater recharge, and drinking water treatment. In dry years, well water resulting from wet year recharge is pumped into the pipeline for use in the Stockton urban area. Construction on the Peters Pipeline Project was completed in 2006. The availability of both the Bellota Pipeline and the Peters Pipeline extension gives SEWD redundancy and flexibility in supplying water to the Dr. Joe Waidhofer WTP. This conjunctive use project enables the treatment of a greater

percentage of available surface water, and benefits the groundwater basin by banking water in-lieu of pumping it by the construction of the 6-mile extension to the Peters Pipeline.

Efficiency Enhancement Project

In 2005, SEWD implemented a $7.1 million Efficiency Enhancement Project, which improved the water treatment plant's chemical mixing and settling efficiency and provided delivery of 11 percent more drinking water to the Stockton urban area.

In 2006, SEWD implemented a $3.8 million upgrade and modernization of its water treatment plant high service pump station. This upgrade allows SEWD to meet the various pumping requirements of its retail customers and increased pump capacity from the Efficiency Enhancement Project. In 2006 SEWD upgraded the WTP to include a parallel 27.6-million gallons per day (MGD) process train north of the existing pretreatment complex for a total treatment capacity of 60 MGD.

2. Current size, population, and irrigated acres

	2010
Size (acres)	143,000
Population served	300,000
Irrigated acres	50,981

3. Water supplies received in current year (2010)

Water Source	*acre-feet*
Federal urban water[a] (Tbl 1)	39,776
Federal agricultural water (Tbl 1)	51,540
State water (Tbl 1)	0
Other Wholesaler (define) (Tbl 1)	0
Local surface water (Tbl 1)	0
Upslope drain water (Tbl 1)	0
District ground water (Tbl 2)	0
Banked water (Tbl 1)	0
Transferred water (Tbl 6)	0
Recycled water (Tbl 3)	0
Other (transfer) (Tbl 1)	26,900
Total	118,216

Source: SEWD spreadsheets: New Melones 2010 Water Use, October 2011; New Hogan Flows, Calendar Year 2010, October 2011.

[a] SEWD provides surface water for both agricultural and urban uses. SEWD supplies wholesale treated drinking water that is retailed to Stockton area customers by the California Water Service Company, the City of Stockton, and San Joaquin County. SEWD does not own or operate an urban distribution system. The urban water source is both the New Melones and New Hogan Reservoirs.

4. Annual entitlement under each right and/or contract

	acre-feet/year	*Source*	*Contract #*	*Availability period(s)*
Reclamation Urban, ac-ft/yr	56.5% of yield[a]	New Hogan	14-06-200-5057A	March-April
Reclamation Agriculture and M&I, ac-ft/yr	75,000	New Melones	4-07-20-WO329	January-December
OID/SSJID Transfer	30,000[b]	New Melones	Agreements	October-September

[a] The contract between SEWD and Reclamation entitles SEWD to take 56.5 percent of New Hogan Project water.

[b] One year agreements made in 2009 with OID and SSJID allowed transfers of up to 15 TAF from each irrigation district from October 1, 2009 through September 30, 2010.

5. Anticipated land-use changes

There are no estimated changes in District agricultural acres. SEWD boundaries increase as the City of Stockton's incorporated boundaries increase. Thus, as the urban area grows, SEWD boundaries expand. Agricultural acres are not expected to change significantly.

6. Cropping patterns (Agricultural only) (List of current crops (crops with 5% or less of total acreage) can be combined in the 'Other' category.)

Original Plan (1995)		*Previous Plan (2007)*		*Current Plan (2010)*	
Crop Name	*Acres*	*Crop Name*	*Acres*	*Crop Name*	*Acres*
Walnuts	15,876	Walnuts	19,423	Walnuts	22,743
Cherries	6,711	Cherries	9,422	Cherries	10,290
Tomatoes	3,759	Tomatoes	3,652	Vineyard	4,264
Beans	5,782	Vineyard	2,882		
Other (<5%)	22,821	*Other (<5%)*	9,810	*Other (<5%)*	13,684
Total	54,549	*Total*	45,189	*Total*	50,981

Source: SEWD 2010 Crop Report, October 2011.

SEWD was fully developed agriculturally when formed in 1948. Cropping patterns have not changed significantly since that time. District expansion in 1970 included additional urban Stockton area, and approximately 10,000 acres of fully developed agricultural lands. District expansion in 2005 added 27,000 additional agricultural acres, most of which are range land. Cropping patterns are not expected to change significantly through 2030, although a small, but not significant, reduction in irrigated agricultural acres is anticipated because of planned urban growth.

7. Major irrigation methods (by acreage) (Agricultural only)

Original Plan (1995)		*Previous Plan (2007)*		*Current Plan (2010)*	
Irrigation Method	*Acres*	*Irrigation Method*	*Acres*	*Irrigation Method*	*Acres*
Not available		Flood	5,192	Flood	4,021
		Furrow	6,069	Furrow	3,785
		Sprinkler	26,630	Sprinkler	31,350
		Drip	5,255	Drip	9,994
				Micro-sprinklers	1,814
Other		*Other*	2,000	*Other*	16
Total		*Total*	45,146	*Total*	50,981

Source: SEWD 2010 Irrigation Report, October 2011.

There is little historic information on irrigation practices within SEWD, although it is generally known that local irrigation practices have followed statewide trends which have evolved from flood to sprinklers, and more recently, to micro-sprinklers and drip. Nevertheless, all forms of irrigation continue to be practiced in SEWD.

B. Location and Facilities

SEWD receives surface water from both the Stanislaus and Calaveras Rivers.

1. Incoming flow locations and measurement methods

New Melones Dam is on the Stanislaus River and forms New Melones Reservoir which has a capacity of 2,400,000 ac-ft. The 625-foot-tall rockfill dam's primary purpose is to provide water for irrigation. The reservoir, owned and operated by USBR, is multipurpose, providing flood control, recreation, drinking water supply, irrigation supply, and hydroelectric power. SEWD diverts the New Melones Reservoir water supply from the Stanislaus River below Tulloch Reservoir, at the Goodwin Tunnel diversion structure.

New Hogan Reservoir is the main water storage facility on the Calaveras River. The U.S. Army Corps of Engineers (USACE) operates the reservoir for multiple uses, including flood control, municipal and industrial water supply, agricultural irrigation, and recreation. The reservoir stores 317,100 ac-ft at maximum flood stage; the 10-year average storage in the reservoir is 152,662 ac-ft. USACE, the California Department of Water Resources, and the U.S. Bureau of Reclamation jointly developed the operational plan for New Hogan Reservoir. USACE ensures that the reservoir storage capacity is operated to provide flood control. SEWD coordinates daily water releases, other than for flood control, with the USACE manager.

There are 27 removable check dams (unlined natural channels) on the Calaveras River, Mormon Slough, Mosher Slough, Potter Creek, and Diverting Canal from which surface water irrigators pump water. Irrigation also occurs from the Lower Farmington Canal, a District unlined canal and Peters Pipeline, a distribution pipeline providing water to agriculture and the DJW WTP. SEWD also diverts water at the Bellota Weir on the Calaveras River into a 13-mile pipeline to

the 60 MGD DJW WTP. Four regulating reservoirs are located at the treatment plant with a capacity of approximately 120 ac-ft.

Incoming Flow Location Name	*Physical Location*	*Type of Measurement Device*	*Accuracy*
Goodwin Tunnel Outlets	Goodwin Reservoir	ultra sonic	+/- 6%[a]
Farmington Dam Diversion	Farmington Dam	ultra sonic	+/- 6%[b]
treatment plant influent	Dr. Joe Waidhofer WTP	venturi	+/- 6%[c]
New Hogan Reservoir	New Hogan Reservoir	stilling well calculations	adjusted per stream flow measurements[d]

[a] The Goodwin Reservoir measurement device is calibrated four times a year, and maintained monthly.
[b] The Farmington Dam Diversion measurement device is calibrated and maintained four times a year.
[c] The Dr. Joe Waidhofer WTP measurement device is calibrated annually.
[d] Owned and maintained by USACOE

Maps of District facilities show points of delivery, turnouts (internal flow), outflow (spill) points, conveyance system, storage facilities, and operational loss recovery system (see Attachment D).

2. Current Year Agricultural Conveyance System (2010)

Miles Unlined - Canal	*Miles Lined – Canal*	*Miles Piped*	*Miles - Other*
17.5	0	19	64 miles natural waterways and flood control channels

3. Current Year Urban Distribution System (2010)

Miles AC Pipe	*Miles Steel Pipe*	*Miles Cast Iron Pipe*	*Miles - Other*
0	0	0	0

4. Storage facilities (tanks, reservoirs, regulating reservoirs)

Name	*Type*	*Capacity (ac-ft)*	*Distribution or Spill*
New Hogan Reservoir	reservoir	317,000	
New Melones Reservoir	reservoir	2,400,000	
Dr. Joe Waidhofer WTP	ponds	368	

Water for SEWD is stored at New Hogan Reservoir, which was completed in 1964. The water conservation storage capacity is 317,000 ac-ft. New Hogan Reservoir receives its water supply primarily from rain runoff. SEWD is the water master and controls dam releases for irrigation and municipal use for SEWD and Calaveras County Water District during non-flood control

periods. The USACE operates the dam for flood control. New Hogan Reservoir is also used for recreation, offering camping, fishing, boating, etc. New Hogan Reservoir is located approximately 30 miles east of Stockton, south of State Highway 26 in Calaveras County.

Water is also stored at New Melones Reservoir which has a capacity of 2.4 million ac-ft. New Melones Reservoir receives its water from rain and snowmelt runoff. The USBR operates the dam. There are a number of recreational activities offered including camping, fishing, boating, etc. New Melones Reservoir is located approximately 40 miles east of Stockton, north of State Highway 120 in Stanislaus County.

The ponds at the DJWWTP were initially constructed to provide groundwater recharge. The ponds also serve as a buffer to settle out stormwater. There are three ponds: a 19-acre storage and recharge deep pond, a 15-acre flat bottom recharge pond, and a 14-acre ridged recharge pond.

5. Description of the agricultural spill recovery system

Most of the irrigation water in SEWD is provided from New Hogan Reservoir. Scheduling of irrigation water is handled with a voluntary 24-hour notice. Irrigation water is provided on demand to the best of SEWD's ability. End loss is closely monitored. In an average or below average water year, SEWD operates the irrigation water to minimize or prevent any end loss. SEWD's voluntary on-demand call-in system has prevented spills from over-releases, as well as tailwater from over-irrigation. Due to the SCADA system, there are no losses of SEWD water that is under district control. In above average water years, the irrigation system is operated to ensure maximum recharge opportunities and minimize end of year releases required to evacuate flood control storage space in New Hogan. Wetter years, such as 2005 and 2006, result in higher system end loss.

SEWD has no formal agricultural spill recovery system, but with grant funding through a USBR 2025 Challenge Grant, is implementing a Supervisory Control and Data Acquisition (SCADA) system in the agricultural distribution system to help recover spills and minimize the limited system losses. SEWD is improving its monitoring system to reduce spillage and increase efficiency on the Calaveras River, Mormon Slough, Mosher Slough, Potter Creek, and Diverting Canal. It is estimated these improvements will ultimately conserve up to 3,600 ac-ft/yr of water in an average or below average water year, which would be available for agriculture, municipal and industrial (M&I), or recharge uses. The Project will enhance water supply reliability for SEWD and improve conditions in the Eastern San Joaquin County Groundwater Basin, which is designated as being in a state of critical overdraft (DWR B-118-80) and is subject to saline intrusion.

The SCADA system remotely monitors twelve sites in key locations within the water distribution system and provides off-site water gate control at three locations. The system includes one flow monitoring site and eleven pool level monitoring sites, and calls for the modification of existing flashboard dams with rectangular weirs to allow calculation of flow data. Additional tasks include the retrofit of two existing flow monitoring stations to transmit data to the SCADA system, and the automation of five water control gates at three locations, allowing off-site control. Acquisition of this "real time" data and automation of the gates will enhance operation

and management of SEWD's agricultural water delivery system, which consists of approximately 64 miles of natural waterways and flood control channels.

6. Agricultural delivery system operation (check all that apply)

On-demand	*Scheduled*	*Rotation*	*Other (describe)*
X			

Agricultural water is delivered from New Hogan and New Melones Reservoirs on an as needed basis. Individual irrigators call in with their order 24 hours prior to irrigating on a voluntary basis. Those who provide no notice are penalized during drought (water shortage) periods.

7. Restrictions on water source(s)

Source	*Restriction*	*Cause of Restriction*	*Effect on Operations*
New Hogan	Per MOU any water not used by CCWD is available for SEWD use. Typically CCWD uses between 3,500 and 3,700 ac-ft per year.	Contractual	Provides additional water supply for SEWD.
New Melones	USBR water year is Jan. 1 - Dec. 31.	Contractual	Provides challenge to the annual water use plan.[a]
New Melones transfer water	Water year is Oct. 1 - Sept. 30.	Contractual	Provides challenge to the annual water use plan.[a]

[a] The water years specified in the New Melones agreements, in particular, the transfer water agreement, make it difficult to schedule water use at the needed times.

8. Proposed changes or additions to facilities and operations for the next 5 years

SEWD's permit amendment to the California Department of Public Health to increase plant capacity from 60 MGD to 65 MGD was recently approved. Expansion will allow SEWD to distribute more surface water to the urban area. In 2013, SEWD constructed a 10 million gallon finished water reservoir.

In addition, SEWD is considering adding 4 filters, additional sludge ponds and taste and odor control to the DJW WTP. These additions would provide greater reliability and increase the treatment plant capacity to 72 MGD. These enhancements are still in the planning stages. Funding would be through State Revolving Fund loans.

Additional project components of the Peters Pipeline project include 30 planned irrigation outlets for delivery of surface water to farmland adjacent to the pipeline (currently, 4-6 outlets are constructed).

The Farmington Groundwater Recharge Program, a long-term banked surface water infrastructure project described in Section 3, is ongoing, and will be expanded if the demonstration scale testing is successful. Approximately 25 additional well site locations and associated water pipelines are planned for this project.

C. Topography and Soils

1. Topography of the district and its impact on water operations and management

SEWD is located on the floor of the San Joaquin Valley with the City of Stockton lying at its western end. The City of Stockton is located at the confluence of the San Joaquin and Calaveras Rivers on the eastern edge of the Sacramento-San Joaquin Delta. Westerly portions of the City of Stockton are slightly above sea level. SEWD extends 15 miles into the adjoining easterly foothills along the alignment of the Calaveras River.

The land slopes gently upward as it extends to the east, comprised of basin soils, recent alluvial fans, and flood plain soils to an elevation of approximately 100 feet at the edge of the foothills of the Sierra Nevada. The eastern boundaries of SEWD are bordered by the adjoining foothills, which rapidly narrow the width of the district to the extent of the irrigable land lying along the Calaveras River within the foothills. SEWD extends along the Calaveras River for approximately 8 to 9 additional miles to the County line, between Calaveras, Stanislaus, and San Joaquin Counties, rising in elevation to approximately 170 feet.

2. District soil association map (Agricultural only)

See Attachment E, District Soils Map.

3. Agricultural limitations resulting from soil problems (Agricultural only)

SEWD does not have soil problems that affect water operations or management.

Soil Problem	*Estimated Acres*	*Effect on Water Operations and Management*
Salinity	0	
High-water table	0	
High or low infiltration rates	0	
Other (define)	0	

D. Climate

1. General climate of the district service area

SEWD has a semi-arid climate featuring hot, dry summers and mild winters. Average monthly temperatures in Stockton range from 46.8 degrees F in January to 76.4 degrees F in July, with a mean annual temperature of 62.2 degrees F. The average annual precipitation is 17.8 inches, consisting entirely of rainfall.

	Jan	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Annual*
Avg Precip. [a]	3.41	3.1	2.68	1.41	0.56	0.10	0.00	0.02	0.29	0.99	2.16	3.05	17.77
Avg Temp. [a]	46.8	52.1	56.5	60.7	67.3	72.7	76.4	75.5	72.6	64.9	54.2	46.9	62.2
Max. Temp. [a]	55.8	63.0	68.4	74.2	81.8	88.7	93.6	92.9	89.5	80.3	66.4	56.5	76.0
Min. Temp [a]	37.8	41.2	44.5	47.3	52.7	56.8	59.1	58.1	55.7	49.5	41.9	37.3	48.5
Eto[b]	0.85	1.64	3.33	5.11	6.52	7.53	7.95	6.98	5.15	3.31	1.57	0.81	50.73

[a] Source: Stockton Fire Station #4 (048560), Western Regional Climate Center.
[b] Source: Average of Manteca (#70) and Lodi West (#166) CIMIS stations.

Weather station ID Stockton Fire Station #4 (048560) *Data period: Year* 1981 *to Year* 2010
Average wind velocity 7.5[c] *Average annual frost-free days:* 345[c]

[c] Source: Stockton airport station (048558), Western Regional Climate Center. Period of record: September 1996 to December 2008

2. Impact of microclimates on water management within the service area

The primary difference between the microclimates of the Calaveras River and Stanislaus River watersheds is their elevation. Most of the Stanislaus River watershed lies in the upper elevations (over 7000 ft mean sea level (msl)) of the Sierra Nevada, where there is abundant snow melt. The headwater elevations in the Calaveras River watershed are about 5000 ft msl, and precipitation throughout most of the watershed is rarely in the form of snow. Because of the lack of snow storage in the Calaveras River watershed, New Hogan dam operations are more difficult because releases often need to be made for flood control purposes, which are not replenished by spring snowmelt. Water that would otherwise be stored is released downstream even in very dry water years.

Because most of the Stanislaus River watershed lies in the upper elevations, the Stanislaus River flows are derived largely from snowmelt. Any decrease in snow storage resulting from climate change would have a significant impact on New Melones Dam storage. The Calaveras River flows are derived entirely from rainfall; therefore, the Calaveras River water supply would not be affected by a decrease in snow storage. Nevertheless, other climate changes (e.g., less rainfall) would affect both water supply sources.

E. Natural and Cultural Resources

1. Natural resource areas within the service area

Name	*Estimated Acres*	*Description*
Farmington Canal Wetland Mitigation Area	9.9	wetland habitat
Giant Garter Snake Mitigation Area	1.0	giant garter snake habitat
Calaveras River Habitat Conservation Plan (under preparation)	531	Calaveras River and Mormon Slough, Central Valley steelhead critical habitat

2. Description of district management of these resources in the past or present

The Farmington Canal and Giant Garter Snake mitigation areas were designed to offset the impacts of the New Melones Conveyance project to wetlands and the giant garter snake habitat. Both sites are outside of SEWD, but on district property. The sites were constructed at a 2:1 ratio of wetland habitat created to wetland impacted. The giant garter snake site uses one-third of an acre-foot of flood control water. The site drains into the CSJWCD.

In March 1998, the National Marine Fisheries Service (NMFS) (now the National Oceanic and Atmospheric Administration or, NOAA Fisheries) listed the Central Valley steelhead as a threatened species evolutionarily significant unit (ESU) under the Endangered Species Act. In March 2000, NOAA Fisheries designated the Calaveras River and Mormon Slough as critical habitat for the Central Valley steelhead ESU. Any actions that might harm the Central Valley steelhead or its habitat are restricted. Because this brought the entire management of the Calaveras River under review, SEWD immediately entered into a pre-informal consultation with federal and state regulators to begin discussing possible changes in the operation of New Hogan Dam and the Calaveras River water supply system.

To improve conditions for salmonids in the Calaveras River, SEWD and CCWD are working cooperatively with NOAA Fisheries through an Endangered Species Act Section 10 consultation. Conservation measures and an adaptive management plan are being developed as part of a Calaveras River Habitat Conservation Plan. The Calaveras River Habitat Conservation Plan will provide SEWD and CCWD and their water users with legal permission to continue using the water resources of the Calaveras River for agricultural, municipal, and industrial purposes. SEWD recently submitted the environmental documents to NOAA Fisheries in order to move forward with next steps to publish the Draft Calaveras River Habitat Conservation Plan.

Since 2001, SEWD has voluntarily implemented several temporary fish passage improvements, including placing sandbags at road crossings to provide better depths and velocities for passage at these structures; installing a temporary Denil fish ladder at the Bellota Weir to allow fish access above the weir; installing a temporary barrier (i.e., net) at the head of the Old Calaveras River channel to prevent juveniles from entering and becoming stranded in the channel; and creating a sandbag wall on the Bellota Weir apron to direct flow into a lower fish ladder so that it would operate more effectively.

SEWD has participated with the California Department of Water Resources (DWR) for a fish passage study with CH2M Hill that followed a CALFED-funded fish screen feasibility study that was completed in 2005. By 2013, fish passage improvements were completed at Budiselich Dam and Caprini Crossing. Two other fish passage improvements are planned for subsequent years; both of these projects may be completed pending additional funding.

SEWD will continue to implement interim fish passage improvements until long-term fish passage and screening solutions are identified and put into operation. All of these studies have been, or are currently being, conducted to collect information that will aid in the design and

management of the long-term conservation measures and adaptive management processes that will be incorporated into the Calaveras River Habitat Conservation Plan.

SEWD also supports various research projects funded by the CALFED Bay-Delta Program and the U.S. Fish and Wildlife Service to help learn more about rainbow and steelhead trout in the river. At the request of SEWD, DWR is studying ways to improve fish passage in Mormon Slough and the Old Calaveras River. SEWD has concluded a CALFED Bay-Delta funded study to evaluate fish screen alternatives for water diversions on the Calaveras River. SEWD is dedicated to creating a balance between environmental and water supply needs.

3. Recreational and/or cultural resources areas within the service area

The City of Stockton has many neighborhood and community parks within the city limits, the largest of which are listed below. The larger regional parks, such as Oak Grove and Micke Grove, are outside of the city limits as well as the SEWD boundaries.

Name	*Estimated Acres*	*Description*
Louis Park	74	Located on the San Joaquin River, this city park offers boat ramps and baseball and softball fields, as well as the Pixie Woods Amusement Park which features a carousel, train rides, and children's theater
Oak Park	61	Located in central Stockton, this city park offers a large tennis complex, an ice arena, baseball and softball fields, pool, and senior citizen center.
Buckley Cove Park	53	Located on the San Joaquin River, this city park offers a boat launch.
Kennedy Memorial Park	18	Located just west of Highway 99 in southern Stockton, this county park features baseball fields, a basketball court and pool.
Giannone County Park	15	Located just west of Highway 99 in central Stockton, this county park features baseball and soccer fields, and a basketball court.

Source: City of Stockton General Plan, 2007.

The City of Stockton has 10 State Historic Landmarks, two State Historical Points of Interest, 48 City Historic Landmarks/Sites, several historic bridges, two Historic Preservation Districts—the Magnolia Historic District and Doctor's Row District—and an area designated the "Old City," that is bounded by Harding Way, Wilson Way, Charter Way, and Pershing Avenue (City of Stockton 2007). There are no additional landmarks within SEWD boundaries, outside of the City of Stockton (County of San Joaquin 1992).

Most prehistoric settlement in San Joaquin County was focused along the San Joaquin, Cosumnes, and Mokelumne Rivers, and along the banks on high ground above marshy areas. Much of the historically significant resources are clustered around the City of Stockton

downtown area. The evidence from previous survey work and site investigations in the area indicates that the prehistoric site types encompass the following:

- Surface scatters of lithic artifacts and debitage resulting from short-term occupation, and/or specialized economic activities, or long-term occupation.
- Bedrock milling stations, including mortar holes and metate slicks, in areas where suitable bedrock outcrops are present.
- Petroglyphs and/or pictographs.
- Isolated finds of cultural origin, such as lithic flakes and projectile points (City of Stockton, 2007).

F. Operating Rules and Regulations

1. Operating rules and regulations

See Attachment F, District Rules and Regulations (water related).

2. Water allocation policy (Agricultural only)

Riparian right users have first call on water from New Hogan Reservoir. Through contract, the urban area is guaranteed 20,000 ac-ft. Water is then allocated to all other surface water users. The agricultural water shortage plan for dry year or drought conditions is described below.

As Water Master of New Hogan Reservoir, SEWD assesses the water supply by April of each year. A sufficient volume to supply enough water for a full irrigation season is 152 TAF. SEWD generally has sufficient water to withstand two to three dry years. If a water year has been identified as a dry year, SEWD asks its customers for voluntary reductions in use. If a second subsequent year is identified as a dry year, SEWD still requests voluntary reductions, but identifies these reductions as critical. A third subsequent dry year may result in continued voluntary reductions, or may require mandatory reductions—SEWD makes this determination at the beginning of the water year. The district informs its customers of the available water supply, and any need for reductions, through its newsletter, as well as postcard reminders and the SEWD website. A final option is to allow diversions only by riparian users and the water treatment plant.

In all water years, SEWD requests that its customers call the district in advance of diverting water, so that SEWD can adjust releases at the dam. Customers are asked to provide the following information 24 hours in advance of the diversion: location of diversion, name of owner or operator, beginning diversion time, pumping rate, and ending diversion time. In non-dry years, this request is voluntary. In dry years, the advance notice is mandatory, and the district may enforce penalties on customers who do not advise the district prior to their water use. The postcard reminds customers of this penalty.

See Attachment F for more detailed information.

3. Official and actual lead times necessary for water orders and shut-off (Agricultural only)

SEWD has a voluntary call-in program for water orders. The district asks for a 48-hour notice. Only during drought does the call-in program become mandatory and penalties may be assessed. See Attachment F for more detailed information.

4. Policies regarding return flows (surface and subsurface drainage from farms) and outflow (Agricultural only)

Soils within SEWD boundaries are permeable, so most irrigation tail water penetrates rapidly beyond the root zone of the crops and presents no problems during the irrigation season. Some drainage water collects in open farm ditches and flows to natural waterways where it is reused for irrigation. Present drainage practices present no problems to agriculture. See Attachment F for more detailed information.

5. Policies on water transfers by the district and its customers

Transfer water policy is in the SEWD Act under Section 6. The policy specifies that SEWD can sell water outside the district, as long as the SEWD water users' needs are met first, and water is available. See Attachment F for more detailed information.

Customers are not allowed to transfer water to other users.

G. Water Measurement, Pricing, and Billing

1. Agricultural Customers

a. Number of farms 178
b. Number of delivery points (turnouts and connections) 178
c. Number of delivery points serving more than one farm 0
d. Number of measured delivery points (meters and measurement devices) 173*
e. Percentage of delivered water that was measured at a delivery point 95 (estimate)

*There are 5 unmeasured delivery points. Recent field investigations have concluded that meters can be installed on these delivery points. Meters will be installed on these delivery points in 2013.

f. Delivery point measurement device table (Agricultural only)

Measurement Type	*Number*	*Accuracy (+/- %)* [a]	*Reading Frequency (Days)*	*Calibration Frequency (Months)*	*Maintenance Frequency (Months)*
Orifices					
Propeller meter	164	+/- 6%	30	As needed	As needed
Weirs					

Flumes					
Venturi					
Metered gates					
Acoustic doppler					
Other : Hour meters	9[b]	+/- 50%	30	As needed	As needed
Total	173				

[a] New meter technology ensures accuracy +/-6% without the need for field calibration. See example of factory certification in Attachment G.

[b] There are 9 PG&E or hour meters that have recently been determined to be well above +/- 6% in accuracy. SEWD will replace three meters a year over the next 3 years (by 2015).

2. Urban Customers

City of Stockton/California Water Service Company/County of San Joaquin

- ✓ *Total number of connections* 3
- ✓ *Total number of metered connections* 3
- ✓ *Total number of connections not billed by quantity* 0
- ✓ *Percentage of water that was measured at delivery point* 100
- ✓ *Percentage of delivered water that was billed by quantity* 100
- ✓ *Measurement device table*

Meter Size and Type	*Number*	*Accuracy (+/-percentage)*	*Reading Frequency (Days)*	*Calibration Frequency (Months)*	*Maintenance Frequency (Months)*
5/8-3/4"					
1"					
1 ½"					
2"					
3"					
4"					
6"					
8"					
10"					
Compound					
Turbo					
Other[a]	3	+/- 6%	annual	annual	annual
Total	3				

[a] Two pipelines (24-inch and 42-inch) deliver water to south Stockton measured by one meter, and a second pipeline (48-inch) delivers water to north Stockton measured by a second meter. A 42-inch pipeline delivers water to California Water Service Company and is measured by a third meter. The City of Stockton wheels water to the County of San Joaquin.

3. Agriculture and Urban Customers

a. Current year agriculture and /or urban water charges - including rate structures and billing frequency

See Attachment H, page 1 of 1, Sections 1-4, for current year rate ordinance

b. Annual charges collected from customers (current year data)

Fixed Charges			
Charges ($ unit)	*Charge units ($/acre), ($/customer)*	*Units billed during year (acres or customers)*	*$ collected ($ times units)*
Urban			
Domestic groundwater	$37.50/domestic well[b]	5,042 wells	218,549[c]
Agricultural			
Surface water	$20.00/ac-ft	4,150 ac-ft[a]	$83,008
Agricultural groundwater	$4.58[d]	117,424 ac-ft[a,e]	$537,806

Volumetric charges			
Charges ($ unit)	*Charge units ($/ac-ft)*	*Units billed during year (ac-ft)*	*$ collected ($ times units)*
Urban			
Municipal groundwater	$164.31	16,122[c]	$2,506,012
Agricultural			
Metered surface water	$20.00/ac-ft	18,965 ac-ft[a]	$379,304 [c]

[a] Source: Crop Report. These numbers total to 23,116 in Water Inventory Table 6 due to rounding.
[b] Additional domestic units on the same property are charged at $12.50 each.
[c] Actual per general ledger.
[d] Groundwater assessments calculated based on 2.8 ac-ft/ac of irrigated land.
[e] SEWD does not sell agricultural groundwater to its customers; SEWD assesses the use of the wells, based on acreage, as part of their mandate to protect the groundwater supply.

See Attachment I, District Sample Bill

c. Water-use data accounting procedures

See Attachment I, District Sample Bill. Crop types, method of irrigation, acres fallowed/not irrigated, acres on well water, acres on surface water, and a statement of non-agricultural irrigation use are requested as part of the bill in order to prepare the District's Annual Crop Report. This information is submitted by the owner under penalty of perjury.

H. Water Shortage Allocation Policies

1. *Current year water shortage policies or shortage response plan - specifying how reduced water supplies are allocated*

See Attachment J, District Water Shortage Plan, for SEWD's Urban Water Shortage Plan, and Section 1.F, No. 2, of this Water Management Plan for SEWD's agricultural water shortage plan.

2. *Current year policies that address wasteful use of water and enforcement methods*

SEWD's Rule 139 discusses waste of surface water, and establishes penalties for customers who do not request water 24 hours in advance, or do not inform the district of their cessation of use. A penalty of $100 is assessed for the first failure to notify; $200 for the second; and $500 for each subsequent failure. (See Appendix F, District Rules and Regulations.)

No procedures have been established for wasting water once the customer diverts the water, as customers pay for water received, and would not be expected to waste it.

Section 2: Inventory of Water Resources

A. Surface Water Supply

1. Acre-foot amounts of surface water delivered to the water purveyor by each of the purveyor's sources

See Water Inventory Tables, Table 1

Note: On Table 1 - The source of "Federal Ag Water" and "Federal non-Ag water" is New Hogan and New Melones Reservoirs. The source of "Other Water" is transfer water from Oakdale and South San Joaquin Irrigation District.

2. Amount of water delivered to the district by each of the district sources for the last 10 years

See Water Inventory Tables, Table 8

B. Ground Water Supply

1. Acre-foot amounts of ground water pumped and delivered by the district

See Water Inventory Tables, Table 2

2. Ground water basin(s) that underlies the service area

Name	*Size (Square Miles)*	*Usable Capacity (ac-ft)*	*Safe Yield (ac-ft/yr)*
Eastern San Joaquin Groundwater Basin	938	See Groundwater Management Plan, Attachment K	689,920

3. Map of district-operated wells and managed ground water recharge areas

SEWD owns two wells; all others are privately owned. See Attachment D, map 6 of 10, and Attachment L, District Map of Groundwater Facilities.

4. Description of conjunctive use of surface and ground water

At present, recharge to the groundwater within SEWD is furnished by regulated releases from New Hogan Reservoir down the channel of the Calaveras River. These releases are regulated by SEWD to obtain the greatest beneficial use for the district. Recharge of the groundwater occurs from percolation in both the Calaveras River and Mormon Slough. Measurements made by Murray, Burns & Kienlen for a water rights study of the Calaveras River system indicate that there is an average percolation between New Hogan Dam and Jenny Lind of 6 cfs and between Jenny Lind and Bellota of >7 cfs (MBK 1969). Without the check dams in place, below Bellota the percolation is 13 cfs each in Mormon Slough and the old Calaveras River; with the check

dams in place, the percolation rates increase to 19 cfs and 31 cfs, respectively. Current recharge operations verify all but the Mormon Slough percolation quantities.

Assuming that the check dams are in place and full for the maximum period permitted (213 days) and that sufficient water is flowing in the channels, the maximum annual percolation for the remainder of the year (152 days) to permit maximum infiltration is 34,000 ac-ft, of which approximately 29,000 ac-ft percolates below Bellota. Water is not available for recharge at the maximum period during average years. Recharge for an average year is estimated at 26,000 ac-ft of which approximately 21,000 ac-ft percolates below Bellota.

Groundwater overdraft in Eastern San Joaquin County has been a growing problem over the past fifty years and is projected to worsen in the future. Groundwater levels below SEWD and the CSJWCD are declining at the long-term rate of about 1.7 feet per year (San Joaquin County, 1985). In the deepest portion of the overdraft area, groundwater levels reached nearly 100 feet below predevelopment conditions. The October 1996 update to DWR's 1990 California Water Plan, which reviews, analyzes and provides recommendations for managing and long-term planning of the state's water supply, noted that groundwater basins in the San Joaquin River region were in overdraft and predicted that without action continued use would exacerbate the situation. The 1990 California Water Plan had identified the annual groundwater overdraft in San Joaquin County at 70,000 acre-feet/year. The 2003 update to the 2000 California Water Plan identified the overdraft to Eastern San Joaquin County at 113,000 af/year.

The reduction in groundwater levels in eastern San Joaquin County has allowed the eastern migration of saline water from below the Delta area to the western portion of the aquifer. In some areas below the City of Stockton, salinity concentrations in groundwater exceed drinking water standards. Several studies that evaluate saltwater intrusion and other related water supply problems in eastern San Joaquin County have recommended conjunctive use and groundwater recharge/banking to reduce overdraft conditions. Recharge for conjunctive use and groundwater storage can be accomplished through injection, percolation, and delivery of surface water supplies in-lieu of groundwater pumping.

The Farmington Groundwater Recharge Program was initiated after a series of studies that identified groundwater overdraft as a problem in Eastern San Joaquin County. The Farmington Dam and Reservoir Conjunctive Use Study, completed in 1998, evaluated potential structural and operational changes at Farmington Dam and found that long-term storage at Farmington Reservoir does not appear to be cost-effective. However, operations modifications to Farmington Dam and construction of groundwater recharge facilities appear to be cost-effective. The Conjunctive Use Study recommended that the feasibility of groundwater recharge with integrated seasonal waterfowl habitat areas in eastern San Joaquin County be evaluated.

The 2001 Farmington Groundwater Recharge and Seasonal Habitat Study, prepared by SEWD in conjunction with the USACE and other local agencies, resulted from these concerns. This feasibility-level study was developed to determine the potential for development of integrated groundwater recharge and seasonal habitat improvements in Eastern San Joaquin County. Conclusions of the study became the outline for the first phase of the subsequent Farmington Groundwater Recharge Program, launched in 2003, which includes implementing the flooded-

field groundwater recharge technique on up to 1,200 acres for an average water recharge of approximately 35,000 acre-feet per year

5. Ground Water Management Plan

See Attachment K, Groundwater Management Plan

6. Ground Water Banking Plan

The Farmington Groundwater Recharge Program is led by SEWD, in partnership with the Sacramento division of the USACE. SEWD and the USACE, in a cost-share agreement, created the Farmington Groundwater Recharge Program with the intent of replenishing the aquifer to help ensure future groundwater supply and protect against further saltwater intrusion. The program will primarily benefit the regional aquifer, or groundwater basin, known as the Eastern San Joaquin County Basin, a groundwater basin generally bound by Highway 99, Jack Tone Road, Mokelumne River and Temple Creek. As the program is implemented, local groundwater availability and quality will also improve as aquifer levels stabilize. Water quality and abundance will also improve in the Calaveras River with the recharging of the groundwater aquifer.

The goal of the program is to recharge an average of 35,000 acre-feet of water annually into the Eastern San Joaquin Basin by (1) directly recharging surface water to the groundwater aquifer on 800 to 1,200 acres of land and, (2) increasing surface water deliveries in-lieu of groundwater pumping to reduce overdraft and establish a barrier to saline water intrusion. Spreading water on agricultural fields and other recharge basins provides seasonal migratory waterfowl habitat.

A network of agricultural wells is needed to pump stored surface water from recharge efforts and assure reliability of water supply in years when ample surface water is not available. Based on the hydrologic history of the region, more average to wet years occur than below average to critically dry years. Therefore, over the long-term, if the aquifer is recharged during all average to wet years, and groundwater pumping reliance is limited to below average to critically dry years, aquifer levels are expected to rise and stabilize.

The Farmington Groundwater Recharge Program identifies areas suitable for recharge and seasonal habitat development, evaluates recharge techniques, and conducts pilot recharge tests. SEWD is continuing to identify and develop new recharge sites for this phased program. Available surplus water from SEWD's conveyance systems is diverted into recharge cells at the project site. Stored surface water would be pumped from the aquifer for agricultural, municipal, and industrial use.

The recharge method of choice is field-flooding, a practice where a small perimeter levee is built at the parcel, then flooded to a depth of up to 18 inches. Because many lands in the region have a gradual slope for drainage, typical 40 to 100 acre parcels will have varying water depths ideal for a wide range of migratory waterfowl. By applying this shallow-water recharge process, lands can be rotated in and out of the program quickly and economically. Construction inputs for field-flooding do not require specialized heavy equipment and, therefore, can be completed easily by the landowner.

Once a site has been identified, the four stages of the program are initiated: Stage 1, Initial Site Screening; Stage 2, Pilot-Scale Recharge Testing; Stage 3, Demonstration-Scale Recharge

Testing; and Stage 4, Long-Term Operation and Maintenance. Data collected and evaluated during each of the first three stages are used to support a decision about whether a site advances to the next stage, is archived for evaluation at a future time, or is eliminated from further consideration for artificial groundwater recharge.

In 2003, SEWD completed the Pilot Phase of the Farmington Groundwater Recharge Program, which consisted of 60 acres of recharge ponds and fields adjacent to the DJW WTP. This project was awarded the American Society of Civil Engineers Water/Environmental Project of the Year in 2003 and the San Joaquin Council of Government's Regional Excellence award in 2004.

The Demonstration Phase, which began in 2003, aims to obtain 25 to 30 parcels of land, totaling 1,200 acres, for directly recharging surface water to the groundwater aquifer. District construction of an additional 35 acres of recharge ponds at the DJW WTP is in the planning stages. It is anticipated recharge rates will be slightly more than the existing 60-acre site, which currently averages over 0.5 feet per day. The development of 1,200 acres into recharge areas is anticipated to return an estimated 35,000 ac-ft/yr of water into the overdrafted groundwater basin in eastern San Joaquin County. This represents approximately 15 percent of the surface water needed for groundwater recharge on an annual basis to assure the long-term sustainability of groundwater resources for the region.

As part of the Farmington Groundwater Recharge Program, a Demonstration-Scale Banked Surface Water Infrastructure Project is proposed to recover surface water stored in the ground to agricultural customers and the DJW WTP. This project will include approximately 25 well site locations and associated water pipelines located adjacent to existing SEWD conveyance facilities that may be used as a long-term banked surface water infrastructure project if the demonstration scale testing is successful. The project sites are located at various sites generally east of, but within 13 miles of, the DJW WTP site noted above. The well sites are all relatively small (less than 2,000 square-feet for construction purposes, and less than 200 square-feet as a final footprint).

See Attachment M, Farmington Groundwater Recharge Program, for a program brochure and the most recent newsletter, which gives an overview of the program.

C. Other Water Supplies

1. "Other" water used as part of the water supply

See the Water Inventory Tables, Table 1

D. Source Water Quality Monitoring Practices

1. Potable Water Quality (Urban only)

See Attachment N – 2010 Irrigation Water Quality Results

2. Agricultural water quality concerns: *Yes* _____ *No* X
(If yes, describe)

There are no current surface water quality problems that limit the surface water as a potable water supply. However, *Phytophthora* fungus has been identified in the Calaveras River water and is of concern to some irrigators (Attachment N). The fungus is on the land and is spread by water. *Phytophthora* can cause root rot, crown rot and the decline and death of fruit and nut trees. There is concern by growers on the use of surface water for their crops and orchards. *Phytophthora* could be a limiting factor regarding the use of surface water for irrigation for affected permanent crops.

There are two groundwater quality problems within SEWD that limit the use of groundwater—saline intrusion and agricultural chemical contamination. Extensive groundwater pumping has caused movement of the saline waters eastward from under the Delta. Poor quality groundwater in the south Stockton area is barely adequate for some agricultural activities and would not be acceptable for urban uses. The saline front is projected to move beyond State Highway 99 by the year 2020. It is expected that additional surface water from New Melones Reservoir and other sources used in groundwater recharge efforts will stabilize the movement of the saline water.

After detecting dibromochloropropane (DBCP) in groundwater, SEWD conducted a study to investigate groundwater contamination as a result of normal irrigation practices. The 1986 study found that no major or extensive water quality problems exist within SEWD, with the exception of three pesticides, DBCP/ 1,2-D (12,2 dichloropropane), a contaminant of Telone II, and EDB (ethylene dibromide), which were identified as being of concern. On the borders of SEWD to the north (south of the City of Lodi) is an area where soil and groundwater are contaminated with DBCP and 1,2-D. Groundwater in both of these areas is expected to enter the SEWD boundaries by the year 2020 and result in the degradation of district groundwater.

3. Description of the agricultural water quality testing program and the role of each participant, including the district, in the program

SEWD began irrigation water quality monitoring for surface water at seven key points in the irrigation distribution system in 1997. The results are displayed on SEWD's web site

www.sewd.net and Water Conservation Information table at the SEWD office. See Attachment N.

4. Current water quality monitoring programs for surface water by source (Agricultural only)

Analyses Performed	*Frequency*	*Concentration Range*	*Average*
Domestic Water Quality and Monitoring Regulations California Code Chapter 15, Title 22	As required by code	Attachment N	
Ag Irrigation Suitability Test	Annual	Attachment N	

Current water quality monitoring programs for groundwater by source (Agricultural only)

Analyses Performed	*Frequency*	*Concentration Range*	*Average*
Specific Conductivity	As requested by well owner in the French Camp only. A high salinity area within SEWD.	600-2500 µmhos/cm	1000 µmhos/cm
Domestic Water Quality and Monitoring Regulations California Code Chapter 15, Title 22, District wells 74-01 & 74-02 (M&I use only)	As required by code	Attachment N	

E. Water Uses within the District

1. Agricultural

See Water Inventory Tables, Table 5 - Crop Water Needs

2. Types of irrigation systems used for each crop in current year

Crop name	*Total Acres*	*Level Basin - acres*	*Furrow - acres*	*Sprinkler - acres*	*Low Volume - acres*	*Multiple methods -acres*
Alfalfa	821	586	29	206	0	0
Apples	934	42	6	0	156	0
Apricots	6	4	0	1	1	0
Asparagus	127	19	108	0	0	0
Beans	768	27	582	102	56	0
Berries	30	0	0	0	30	0

Crop name	*Total Acres*	*Level Basin - acres*	*Furrow - acres*	*Sprinkler - acres*	*Low Volume - acres*	*Multiple methods -acres*
Blueberry	26	4	0	22	0	0
Cherries	10,287	414	35	8,902	936	0
Chestnuts	46	0	0	41	5	0
Corn	922	64	705	7	146	0
Cucumbers	50	0	0	50	0	0
Eggplant	27	0	27	0	0	0
Grapes/Vineyard	4,264	6	0	190	4,068	0
Grass	69	62	0	7	0	0
Landscaping	6	0	0	6	0	0
Lilac	5	0	4	1	0	0
Melons	211	0	0	42	170	0
Nectarines	3	2	0	1	1	0
Nursery stock	368	0	0	26	343	0
Oats	29	0	0	29	0	0
Olives	385	0	0	16	369	0
Onions	179	5	2	173	0	0
Orchard	1,384	31	3	1,061	288	0
Pasture	1,444	1,141	0	276	27	0
Peaches	782	161	104	117	401	0
Pears	339	26	0	313	0	0
Pecans	25	16	0	0	9	0
Peppers	78	4	29	43	2	0
Persimmons	11	0	0	10	1	0
Pistachios	17	0	0	17	0	0
Plums	19	0	0	4	15	0
Pomegranates	26	23	0	1	2	0
Pumpkins	205	0	10	80	115	0
Squash	351	35	154	80	82	0
Strawberries	15	0	5	10	0	0
Tomatoes	2,193	128	1,113	47	905	0
Vegetables	450	9	112	259	68	0
Walnuts	22,743	531	238	18,484	3,474	16[a]
Wheat	1,196	731	465	0	0	0

[a] Unknown

3. Urban use by customer type in current year

City of Stockton

Customer Type	*Number of Connections*	*acre-feet*
Single-family	41,070	18,644
Multi-family	3,643	3,049
Commercial	1,415	4,473
Industrial	5	623
Institutional	[a]	[a]
Landscape irrigation	872	3,392
Wholesale	NA	1,922
Recycled	0	0
Other: Const/hydrants/fireflow	NA	52
Unaccounted for		3,107
Total	47,005	35,262

Source: City of Stockton, October, 2011.
[a] Included in commercial connections.
Note: The City of Stockton submitted their 2010 Urban Water Management Plan on December 6, 2011.

California Water Service Company

Customer Type	*Number of Connections*	*acre-feet*
Single-family	37,200	16,577
Multi-family	389	2,437
Commercial	3,919	6,235
Industrial	84	2,821
Institutional	327	3,120
Landscape irrigation	25	88
Wholesale	0	0
Recycled	0	0
Other (specify)	0	0
Unaccounted for		1,815
Total	41,942	33,091

Source: California Water Service Company, October, 2011.
Note: The California Water Service Company submitted their 2010 Urban Water Management Plan for Stockton on September 30, 2011.

County of San Joaquin

Customer Type	*Number of Connections*	*acre-feet*
Single-family		
Multi-family		
Commercial	25	126.4
Industrial		
Institutional	2	1.5
Landscape irrigation	1	12.5
Wholesale		
Recycled		
Other (specify)	Assessed: 2,310	1805.1
Unaccounted for		
Total	2,338	1945.5

Source: San Joaquin County Utilities Operations Department of Public Works
Note: Until water use is at or above 2000 AF annually, San Joaquin County is not subject to the Urban Water Management Planning process.

4. Urban Wastewater Collection/Treatment Systems serving the service area – current year

Treatment Plant	*Treatment Level (1, 2, 3)*	*acre-feet*	*Disposal to / uses*
Stockton Regional Control Facility	3	29,950	San Joaquin River
	Total		
Total discharged to ocean and/or saline sink			

Source: Personal Communication, Mr. Larry Parlin, 2011.

5. Ground water recharge/management in current year (Table 6)

Recharge Area	*Method of Recharge*	*acre-feet*	*Method of Retrieval*
	Farmington Groundwater Recharge Program ponds	4,960	Groundwater pumping
1,698 ac	natural creeks/rivers and canals	48,279	Groundwater pumping
	Total	53,239	

Sources: SEWD spreadsheet: New Melones 2010 Water Use, October 2011.
Calaveras River Water Rights Study, Murray, Burns & Kienlen, 1969

6. Transfers and exchanges into or out of the service area in current year (Table 6)

From Whom	*To Whom*	*acre-feet*	*Use*
OID and SSJID	SEWD and CSJWCD	26,900	M&I

Notes: Transfer water from OID/SSJID was accounted for in Water Inventory Table 1.

7. Trades, wheeling, wet/dry year exchanges, banking or other transactions in current year (Table 6)

From Whom	*To Whom*	*acre-feet*	*Use*
SEWD	CSJWCD	32,127	agricultural

8. Other uses of water in current year

Other Uses	*acre-feet*
NA	

F. Outflow from the District (Agricultural only)

See Attachment D, District Facilities Map, for the location of surface and subsurface outflow points, outflow measurement points, outflow water-quality testing locations

1. Surface and subsurface drain/outflow in current year

Outflow point	*Location description*	*acre-feet*	*Type of measurement*	*Accuracy (%)*	*% of total outflow*	*Acres drained*
	Main Street, McAllen on Calaveras, and Leffler on Mosher		SCADA		80%[a]	[a]

[a] Percent of total outflow is estimated, and acres drained is not known. There are no accurate measurements at this time. Over the next five years, SEWD will be installing measuring devices to determine how much water leaves the district.

Outflow point	*Where the outflow goes (drain, river or other location)*	*Type Reuse (if known)*
	Calaveras River	

2. Description of the Outflow (surface and subsurface) water quality testing program and the role of each participant in the program

NA

3. Outflow (surface drainage and spill) Quality Testing Program

Analyses Performed	*Frequency*	*Concentration Range*	*Average*	*Reuse limitation?*
NA				

Outflow (subsurface drainage) Quality Testing Program

Analyses Performed	*Frequency*	*Concentration Range*	*Average*	*Reuse limitation?*
NA				

4. *Provide a brief discussion of the District's involvement in Central Valley Regional Water Quality Control Board programs or requirements for remediating or monitoring any contaminants that would significantly degrade water quality in the receiving surface waters.*

SEWD is not currently involved in a remediation or monitoring program in conjunction with the Central Valley Regional Water Quality Control Board.

G. Water Accounting (Inventory)

1. *Water Supplies Quantified*

    a. *Surface water supplies, imported and originating within the service area, by month (Table 1)*
    b. *Ground water extracted by the district, by month (Table 2)*
    c. *Effective precipitation by crop (Table 5)*
    d. *Estimated annual ground water extracted by non-district parties (Table 2)*
    e. *Recycled urban wastewater, by month (Table 3)*
    f. *Other supplies, by month (Table 1)*

2. *Water Used Quantified*

    a. *Agricultural conveyance losses, including seepage, evaporation, and operational spills in canal systems (Table 4) or*
    Urban leaks, breaks and flushing/fire uses in piped systems (Table 4)

The source for the precipitation data presented in Table 4 is the Stockton airport station (048558), Western Regional Climate Center (period of record: September 1996 to December 2008).

The source for the evaporation data presented in Table 4 is the New Melones Dam HQ station (period of record: 1992-2005).

    b. *Consumptive use by riparian vegetation or environmental use (Table 6)*
    c. *Applied irrigation water - crop ET, water used for leaching/cultural practices (e.g., frost protection, soil reclamation, etc.) (Table 5)*
    d. *Urban water use (Table 6)*
    e. *Ground water recharge (Table 6)*
    f. *Water exchanges and transfers and out-of-district banking (Table 6)*
    g. *Estimated deep percolation within the service area (Table 6)*
    h. *Flows to perched water table or saline sink (Table 7)*
    i. *Outflow water leaving the district (Table 6)*
    j. *Other*

3. *Overall Water Inventory*

    a. *Table 6*

H. Assess Quantifiable Objectives:

Identify the Quantifiable Objectives that apply to the District (Planner, chapter 10) and provide a short narrative describing past, present and future plans that address the CALFED Water Use Efficiency Program goals identified for the District.

The following five (5) quantifiable objectives (QOs) have been identified by SEWD to apply to the district:

1. Reduce native constituents (selenium, boron, molybdenum, organic carbon) to enhance and maintain beneficial use of water.
2. Reduce nutrients to enhance and maintain beneficial use of water.
3. Reduce pesticides to enhance and maintain beneficial use of water.
4. Reduce salinity to enhance and maintain beneficial use of water.
5. Reduce temperatures to enhance and maintain beneficial use of water.

SEWD is a member of the San Joaquin County and Delta Water Quality Coalition (Coalition). This Coalition was formed to address the Agricultural Waiver Program through the RWQCB. Many constituents are being monitored by the Coalition. The Coalition seeks funding for its efforts from all possible sources.

QO #	*QO Description*	*Past, Present & Future Plans*
1	Reduce native constituents (selenium, boron, molybdenum, organic carbon) to enhance and maintain beneficial uses of water.	Currently SEWD has not detected a level of these constituents (selenium, boron, molybdenum, organic carbon) that is of concern.
2	Reduce nutrients to enhance and maintain beneficial uses of water.	Nutrients are among the constituents being monitored by the Coalition.
3	Reduce pesticides to enhance and maintain beneficial uses of water.	Pesticides are among the constituents being monitored by the Coalition.
4	Reduce salinity to enhance and maintain beneficial uses of water.	SEWD is concerned about saline waters contaminating fresh groundwater due to groundwater overdraft. SEWD currently seeks Federal, State and local funding to support its Farmington Groundwater Recharge and Seasonal Habitat Program. SEWD is also active in efforts to reduce saline contamination to surface waters upstream of Vernalis on the San Joaquin River.
5	Reduce temperatures to enhance and maintain aquatic species populations.	Temperature is one of the constituents being monitored by the Coalition.

Section 3: Best Management Practices (BMPs) for Agricultural Contractors

A. Critical Agricultural BMPs

1. *Measure the volume of water delivered by the district to each turnout with devices that are operated and maintained to a reasonable degree of accuracy, under most conditions, to +/- 6%*

Number of turnouts that are unmeasured or do not meet the standards listed above: 5[a]
Number of measurement devices installed last year: 6
Number of measurement devices installed this year: 5
Number of measurement devices to be installed next year: 7[b]

[a] Recent field investigations have concluded that meters can be installed on these 5 delivery points. SEWD will install meters on these delivery points in 2013.
[b] In 2012, five measurement devices were installed on new turnouts, and two meters were installed on previously unmeasured turnouts.

Types of Measurement Devices Being Installed	*Accuracy*	*Total Installed During Current Year*
McCrometer or Water Specialties propeller meter	+/- 6%[a]	5

[a] The water meters will henceforth be tested in accordance with the manufacturer's recommendations. A budget and schedule is provided in Attachment O, Efficient Water Management Practices. By 2015, the district will have collected sufficient data to refine this budget and schedule.

2. *Designate a water conservation coordinator to develop and implement the Plan and develop progress reports*

Name: Kristin Coon *Title:* Water Conservation Coordinator
Address: 6767 East Main Street, Stockton, CA 95207
Telephone: (209) 948-0333 *E-mail:* kcoon@sewd.net

3. *Provide or support the availability of water management services to water users*

a. On-Farm Evaluations

1) On farm irrigation and drainage system evaluations using a mobile lab type assessment

	Total in district	*# surveyed last year*	*# surveyed in current year*	*# projected for next year*	*# projected 2nd yr in future*
Irrigated acres	45,511	12	285	70	100
Number of farms	179	3	3	3	3

Using grant funding from USBR, SEWD has provided irrigation evaluations free to its customers since 1999. The evaluations have been promoted through SEWD's annual newsletter, the District Advisory Committee (comprised of stakeholders representing the urban and agricultural areas of

SEWD), and through District field personnel. The irrigation evaluation program is voluntary, but is encouraged and supported by SEWD. SEWD will continue to offer this service free to its customers.

The actual cost of an irrigation evaluation is $2500. Offering this evaluation free to customers represents greater than a 25 percent discount on the cost of the evaluation, thereby complying with the USBR's example of an adequate program per the USBR Water Management Plan 2008 Guidebook: Offer to district water users a rebate/discount of 25 percent off the fair market price of an evaluation.

2) Timely field and crop-specific water delivery information to the water user

Meter readings are collected monthly. SEWD prepares an Annual Crop Report on water use per crop, method of irrigation, estimated water use and metered use. This report is posted at the SEWD office.

b. Real-time and normal irrigation scheduling and crop evapotranspiration (ET) information

SEWD provided daily and seven-day-average ET information from the Lodi West Station 166 and Manteca Station 70 through its CIMIS Hotline (209-942-4647) beginning in January 1998. From 1998 to 2004 there were no inquiries; therefore, the hotline was discontinued.

Subsequently, for customers to obtain ET information, SEWD provided a link to the CIMIS web site on the home page of SEWD's web site, and had signage at SEWD's office directing customers to the California Irrigation Management Information System (CIMIS) web site. (CIMIS is a program of the Office of Water Use Efficiency, California Department of Water Resources. CIMIS was developed in 1982 by DWR and the University of California, Davis, to assist irrigators in managing their water resources efficiently.) SEWD's spring and fall newsletters, which are delivered to all of SEWD's customers, also provided the link to the CIMIS website. However, although growers could calculate the ET for their crop based on information available on the CIMIS website, including applying crop coefficients for the particular crop, and entering the age of their crop, the CIMIS website did not provide crop-specific information.

Consequently, the Irrigation Training and Research Center (ITRC) at California Polytechnic State University, San Luis Obispo, working under a technical services agreement with the U.S. Bureau of Reclamation Mid-Pacific Region, undertook a review of the procedure and materials used to create estimates for Irrigation Allowance Index evaluations and Crop Water Requirements for the growers in SEWD. These values can be used to create a real-time irrigation scheduling tool for the growers as well as a simple evaluation of total water use at the end of the irrigation season. A list of crops and Crop Evapotranspiration (ETc) values was compiled specifically for SEWD to provide growers with a resource for irrigation management. A complete explanation of the methodology, as well as the irrigation allowance values and the irrigation allowance index developed for SEWD growers, is provided in Attachment P.

c. Surface, ground, and drainage water quantity and quality data provided to water users

SEWD began irrigation water quality monitoring for surface water at seven key points in the irrigation distribution system in 1997. The results are displayed on SEWD's web site and Water Conservation Information table at the SEWD office. Results for 2010 are presented in Attachment N.

d. Agricultural water management educational programs and materials for farmers, staff, and the public

Program	*Co-Funders (If Any)*	*Yearly Targets*
Ag Water Report	SEWD Advisory Committee	6,500 accounts
Chamber of Commerce State of the City	City of Stockton/San Joaquin County	2,000 attendees

e. Other

Agricultural BMPs are incorporated into SEWD's daily operations.

4. Pricing structure - based at least in part on quantity delivered
Describe the quantity-based water pricing structure, the cost per acre-foot, and when it became effective.

SEWD's surface water pricing structure is based on the quantity of water delivered and is charged at a rate of $23.00/ac-ft. In most cases quantity of water delivered is based on water meters. In cases where installation of a water meter would require capital improvements to the private owner's water pumping system, water quantity is determined using pump tests and hour meters.

Groundwater users are charged a flat rate of $41.50 for a private domestic well. There is no water conservation pricing structure because SEWD is not selling the water, but assessing for the use of a well.

Municipal groundwater users are assessed on the quantity of water used at $3.60/ac-ft, with a rate equalization charge of $196.43/ac-ft.

Agricultural groundwater users are assessed $4.90/ac-ft.

5. Evaluate and describe the need for changes in policies of the institutions to which the district is subject

SEWD has three water contracts all with different contract years. For ease of scheduling and providing the most economical water for our customers, SEWD continues to negotiate for a standard contract year. Staff hours and money spent has not been determined at this time.

6. *Evaluate and improve efficiencies of district pumps*
   Describe the program to evaluate and improve the efficiencies of the contractor's pumps.

SEWD owns two pumps which can pump water from the Calaveras River into Potter Creek for irrigation. In 2001, modifications were made to SEWD's Bellota Pipeline, which allowed for gravity flow from the SEWD pipeline to Potter Creek. Since no SEWD pumping has been required to supply irrigation water to Potter Creek since 2001, the cost savings realized are comparable to those of 2001 expenses, approximately $30,000. This practice can only be used when there is an adequate water supply from both the New Melones and New Hogan water contracts. The pipeline is dedicated to M&I use only when SEWD is relying 100 percent on the New Hogan water supply.

B. Exemptible BMPs for Agricultural Contractors

1. *Facilitate alternative land use*

Drainage Characteristic	*Acreage*	*Potential Alternative Uses*
High water table (<5 feet)	0	
Poor drainage	0	
Groundwater selenium concentration > 50 ppb	0	
Poor productivity	[a]	

[a] SEWD is not aware of significant acreage within the district that is subject to poor productivity.

Describe how the contractor encourages customers to participate in these programs.

No programs have been developed to encourage alternative land uses because SEWD does not include lands that have these chronic issues.

2. *Facilitate use of available recycled urban wastewater that otherwise would not be used beneficially, meets all health and safety criteria, and does not cause harm to crops or soils*

Sources of Recycled Urban Waste Water	*Wastewater Available, acre-feet/year*	*Recycled Urban Waste Water Currently Used in District, ac-ft/yr*
Not applicable		

SEWD's agricultural area is primarily upstream of available urban recycled wastewater and considerable pumping would be required to provide recycled water to SEWD customers. Recycled urban waste water use was investigated in a 1995 study by the City of Stockton, which operates the wastewater treatment facility. Until recently the City did provide some water to a farmer located near the wastewater treatment plant, but the discharge permit was not renewed and no wastewater is being recycled at this time. SEWD supports the City of Stockton's recycling efforts.

3. Facilitate the financing of capital improvements for on-farm irrigation systems

Funding Source Programs	*How provide assistance*
Surface Water Incentive Program	Encourage use of surface water through water pricing incentives (see below)

SEWD currently offers a Surface Water Incentive Program. This program encourages the conversion to surface from groundwater through water pricing. The owner of the pumping facility is charged the groundwater assessment rate for water until the capital costs of the facility have been amortized. This program is noticed in SEWD's Ag Newsletter and on its web page. Three irrigators have taken advantage of this program to date.

In 1996, SEWD provided zero interest loans for a pumping facility to customers who switched from groundwater use to surface water use. SEWD provided $1.3 million in loans. Funding sources for these loans were the subject of a lawsuit between SEWD and the urban contractors. In 1999, the zero percent loan program was discontinued. SEWD continues to provide information to its customers on other loan programs as they become available.

4. Incentive pricing

Structure of incentive pricing	*Related goal*
Not applicable	

SEWD's enabling legislation limits its ability to offer pricing incentives for water (see Attachment Q).

5. a) Line or pipe ditches and canals

Canal/Lateral (Reach)	*Type of Improvement*	*Number of Miles in Reach*	*Estimated Seepage (ac-ft/yr)*	*Accomplished/ Planned Date*
See below				

SEWD has two canal systems, Upper Farmington Canal and Lower Farmington Canal, which are part of the New Melones Conveyance System. SEWD utilizes natural creeks, sloughs, and rivers to distribute water. Percolation from these natural water ways provides natural recharge to the groundwater basin. In 1999, SEWD collected data to verify percolation from its unlined canals: Upper Farmington Canal and Lower Farmington Canal. Percolation from both canals was found to be minimal (less than 5 percent). Percolation was addressed in an Environmental Impact Report for the canal system. SEWD and CSJWCD, which also uses the Upper Farmington Canal for transport of New Melones water, are situated over the Eastern San Joaquin Groundwater Basin, which is critically overdrafted. Percolation is reclaimed through groundwater pumping as a component of SEWD's conjunctive use plan. This BMP is complete.

b) Construct regulatory reservoirs

Reservoir Name	*Annual Spill in Section (ac-ft/yr)*	*Estimated Spill Recovery (ac-ft/yr)*	*Accomplished/ Planned Date*
See below			

The reservoirs surrounding the treatment plant act as buffers during storm events and percolate water, recharging the aquifer at the treatment plant. Reservoir maintenance and groundwater monitoring are ongoing.

Construction of an additional regulatory/percolation pond is in the planning stages. Monies are being sought from the USACE (via stimulus money) and also local funds.

6. Increase flexibility in water ordering by, and delivery to, water users

SEWD operates an on-demand system. SEWD asks customers to call or email 24 hours in advance. This advance notice helps SEWD manage its irrigation supplies more efficiently. This system has flexibility in water ordering and delivery to the water user. The overall system is working well; however, SEWD is having problems with the SCADA system and is reviewing new software programs to improve the system.

7. Construct and operate district spill and tailwater recovery systems

Distribution System Lateral	*Annual Spill (ac-ft/yr)*	*Quantity Recovered and reused (ac-ft/yr)*
See below		
Total		

Drainage System Lateral	*Annual Drainage Outflow (ac-ft/yr)*	*Quantity Recovered and reused (ac-ft/yr)*
See below		
Total		

USBR grant funds are utilized for this BMP. SEWD will continue to apply for these grants as they become available. In 2005, SEWD applied for and was awarded a Challenge Grant in the amount of $150,255 over two years to implement a SCADA system. SEWD's contribution was $154,553. Although SCADA is not a spill or tail water recovery system, it allows enhanced surface water management abilities which should minimize already limited system losses. The equipment was installed in 2006; however, SEWD is still adjusting the SCADA system for optimum performance.

There is no plan to pump the limited system losses upstream. SEWD would need to build the costly facilities to pump this relatively small volume of water over 20 miles upstream. Currently, this water flows downstream and is put to beneficial use either by other growers or by flowing into the San Joaquin River. A cost-benefit analysis is provided in Attachment R.

8. *Plan to measure outflow.*

Total # of outflow (surface) locations/points 3
Total # of outflow (subsurface) locations/points 0
Total # of measured outflow points 3
Percentage of total outflow (volume) measured during report year 80*

* Percent of total outflow is estimated. There are no accurate measurements at this time. Over the next five years, SEWD will be installing measuring devices to determine how much water leaves the district.

Identify locations, prioritize, determine best measurement method/cost, submit funding proposal

Location and Priority	*Estimated cost (in $1,000s)*				
	2009	*2010*	*2011**	*2012**	*2013**
First priority: Main Street, SCADA	2	2			
Second priority: McAllen on Calaveras, SCADA	2	2			
Third priority: Leffler on Mosher, SCADA	2	2			

*Measurement devices and SCADA equipment are installed along with new installations.

9. Optimize conjunctive use of surface and ground water

SEWD's goal is to optimize conjunctive management of surface and groundwater. SEWD secures and provides supplemental water to protect the District's only reliable water supply, groundwater. SEWD is looking for more recharge sites. See Section 3 for more information.

10. Automate canal structures

This BMP is being implemented in conjunction with BMP B7.

11. Facilitate or promote water customer pump testing and evaluation

SEWD promotes its own pump testing program for its customers. SEWD has received USBR grant funding and offered free pump tests and irrigation evaluations to its customers. SEWD completed 3 pump tests in 2010, and three more in 2011. The pump tests are promoted in SEWD's twice annual newsletter, at Stockton East Advisory meetings and through SEWD field personnel communication with customers.

For meter installation on existing surface water pumps that require major capital costs, SEWD offers pump hour meter installation in conjunction a with a free pump test to quantify water use.

12. Mapping

GIS maps	*Estimated cost (in $1,000s)*				
	2009	*2010*	*2011*	*2012*	*2013*
Layer 1 – Distribution system	$0	$1,000	$0	$12,000	$10,000

C. Provide a 3-Year Budget for Implementing BMPs

1. Amount actually spent during current year.

BMP #		*BMP Name*	*Actual Expenditure (not including staff time)*	*Staff Hours*
A	*1*	*Measurement*	$6,227	10.5
	2	*Conservation staff*	$3,000	40
	3a	*On-farm evaluation/water delivery info*	$5,000[a]	2
	3b	*Irrigation Scheduling*	$50	1
	3c	*Water quality*	$950	8
	3d	*Agricultural Education Program*	$600	25
	4	*Quantity pricing*	$0	0
	5	*Policy changes*	$0	0
	6	*Contractor's pumps*	$0	0
B	*1*	*Alternative land use*	$0	0
	2	*Urban recycled water use*	$0	0
	3	*Financing of on-farm improvements*	$850	8
	4	*Incentive pricing*	$0	0
	5	*Line or pipe canals/install reservoirs*	$110,000	700
	6	*Increase delivery flexibility*	$0	40
	7	*District spill/tailwater recovery systems*	$0	0
	8	*Measure outflow*	$6,000	0
	9	*Optimize conjunctive use*	$1,200	24
	10	*Automate canal structures*	$0	0
	11	*Customer pump testing*	$675	8
	12	*Mapping*	$1,000	0
		Total	$135,552	866.5

[a] This amount will be increased if additional growers request an evaluation.

2. Projected budget summary for the next year.

BMP #		BMP Name	Budgeted Expenditure (not including staff time)	Staff Hours
A	*1*	*Measurement*	$10,000	30
	2	*Conservation staff*	$7,000	75
	3a	*On-farm evaluations/water delivery info*	$5,000	2
	3b	*Irrigation Scheduling*	$50	1
	3c	*Water quality*	$1,000	8
	3d	*Agricultural Education Program*	$1,000	40
	4	*Quantity pricing*	$0	0
	5	*Policy changes*	$0	0
	6	*Contractor's pumps*	$0	0
B	*1*	*Alternative land use*	$0	0
	2	*Urban recycled water use*	$0	0
	3	*Financing of on-farm improvements*	$25,000	8
	4	*Incentive pricing*	$0	0
	5	*Line or pipe canals/install reservoirs*	$750,000	800
	6	*Increase delivery flexibility*	$2,000	40
	7	*District spill/tailwater recovery systems*	$0	0
	8	*Measure outflow*	$0	0
	9	*Optimize conjunctive use*	$1,000	8
	10	*Automate canal structures*	$2,000	40
	11	*Customer pump testing*	$1,125	8
	12	*Mapping*	$0	0
		Total	$811,175	1,060

3. Projected budget summary for 3rd year.

BMP #		BMP Name	Budgeted Expenditure (not including staff time)	Staff Hours
A	*1*	*Measurement*	$10,500	30
	2	*Conservation staff*	$7,350	75
	3a	*On-farm evaluations/water delivery info*	$5,000	2
	3b	*Irrigation Scheduling*	$53	1
	3c	*Water quality*	$1,050	8
	3d	*Agricultural Education Program*	$1,050	40
	4	*Quantity pricing*	$0	0
	5	*Policy changes*	$0	0
	6	*Contractor's pumps*	$0	0

B	*1*	*Alternative land use*	$0	0
	2	*Urban recycled water use*	$0	0
	3	*Financing of on-farm improvements*	$26,250	8
	4	*Incentive pricing*	$0	0
	5	*Line or pipe canals/install reservoirs*	$0	800
	6	*Increase delivery flexibility*	$2,100	40
	7	*District spill/tailwater recovery systems*	$0	0
	8	*Measure outflow*	$0	0
	9	*Optimize conjunctive use*	$1,050	8
	10	*Automate canal structures*	$2,100	40
	11	*Customer pump testing*	$1,181	8
	12	*Mapping*	$12,000	0
		Total	$69,684	1,060

Section 4: Best Management Practices for Urban Contractors

A. Urban BMPs

1. Utilities Operations

1.1 Operations Practices

SEWD supplies wholesale treated drinking water that is retailed to Stockton area customers by the California Water Service Company, the City of Stockton, and San Joaquin County. SEWD has developed a program that addresses operations practices in its service area. Implementation is ongoing.

SEWD does not own or operate an urban distribution system (see Attachment S). City of Stockton and California Water Service Company both participate in CUWCC and implement Urban Water Management plans. See Attachment T.

1.2 Pricing

The district bills the urban Contractors per the Second Amended Contract and the bills are based on water produced. A copy of the SEWD Base Monthly Payment (calculated by contract and water usage) and Municipal groundwater rate equalization Calculations (Water Fee Schedule Effective April 13, 2010) set per contract between the district, Cal Water, City of Stockton and San Joaquin County is included in Attachment H.

1.3 Metering

SEWD meters the connections to its three urban contractors (the City of Stockton, California Water Service Company, and San Joaquin County). The accuracy of these meters are verified and calibrated annually by an outside testing company.

1.4 Water Loss Control

SEWD conducts water audits for the DJWWTP. SEWD measures their diversions, the amount treated at the DJWWTP, and the amount delivered to its urban customers monthly. Any discrepancies are immediately investigated, and repairs made as necessary.

2. Education

2.1 Public Information Programs

SEWD participates in the Stockton Area Water Suppliers (SAWS), which jointly funds the Water Conservation Education Program in the Stockton urban area. The SAWS Water Education Program participates in and supplies hand-outs and outreach materials for numerous community gatherings and other special activities and events in Stockton. In 2011, SAWS participated in the following events:

- **San Joaquin County AgVenture:** The SAWS Water Education Program generally staffs a booth at three AgVenture events in Stockton, Lodi, and in the South County. Every third grader in San Joaquin County is invited to enjoy a day of fun while learning about the vast diversity of local agriculture through this dynamic program sponsored by San Joaquin Select. SAWS participation in AgVenture promotes SAWS-sponsored in-class, after school, and assembly programs while sharing the message of water awareness and conservation with thousands of third grade students and their teachers. SAWS is also a funding contributor to the annual events. Each AgVenture event hosts between 2,500 and 4,000 third graders; the SAWS activity booths hosted an approximate combined total of 4,500 students at the three events in 2011.
- **San Joaquin County Science Fair:** The SAWS Coordinator participates in exhibit judging at the annual San Joaquin County Science Fair. The SAWS Coordinator judged approximately 45 K-8 exhibits at this event.
- **Stockton's Earth Day Festival:** SAWS sponsors a booth featuring water themed activities for children, such as color-your-own water saver button, at Stockton's annual Earth Day event at Victory Park. The SAWS activities at this event reach approximately 1,500 community members.
- **KWIN/KAT Country's Promo at Stockton Car Wash:** The SAWS Water Education Program joins the City of Stockton and California Water Service Company staff in hosting a booth at this promotional event, which features giveaways and handouts of conservation materials. Outreach at this event reaches approximately 150 community members.
- **"May is Water Awareness Month":** In May 2011, the SAWS Coordinator attended a meeting of the Stockton City Council to participate in the acceptance of a "May is Water Awareness Month" proclamation in recognition of water conservation efforts by SAWS member agencies. Presentation of the proclamation was made in front of the Stockton City Council Members and approximately 100 community members.
- **Children and Youth Day at Pixie Woods:** The SAWS Water Education Program hosts an activity booth at this event, which is sponsored by the Stockton Family Resource and Referral Center. Children and their families enjoy free admission to Pixie Woods and are able to engage in a variety of crafts and activities throughout the day. Those visiting the SAWS activity booth made color-your-own conservation themed buttons and participated in water "experiments" designed to spark interest in water science. The SAWS activities at this event reach approximately 1,000 people.
- **Project WET Workshops:** In June 2011, the water conservation staff attended a special Project WET workshop at the San Joaquin County Office of Education, hosted by Brian Brown of the Water Education Foundation. The workshop focused on hands-on water science activities and included an update on the California Environmental Education Initiative. The workshop included approximately 50 participants, mostly teachers, from San Joaquin County. SAWS participation in this event provided an opportunity to promote conservation and SAWS programs to local teachers.

- **San Joaquin Delta College "Kid's College":** The SAWS Water Education Program hosted a "Wonders of Water" workshop for 12 students during this summer program.
- **Project WET Facilitator Workshop, October 5, 2011:** The SAWS Water Education Program staff conducted a Project WET Facilitator Workshop in the SEWD Boardroom that focused on training Project WET facilitators to host teacher workshops. Approximately 20 facilitator-trainees attended. SAWS participation in this event provided an opportunity to promote conservation and our programs to regional facilitators, who will in turn promote conservation and water awareness among local teachers.
- **Water Treatment Plant Tours:** The SAWS Water Education Program and SEWD staff host water treatment plant tours. Tours for classrooms require one adult chaperone for every five students attending. Public tours of the Dr. Joe Waidhofer Drinking Water Treatment Plant, arranged by the Friends of the Lower Calaveras River advocacy group, are also conducted. SEWD hosts tours for over 100 students and community members annually.
- **Community Based Programs:** SAWS visits and supplies water conservation materials for Special Day classrooms at Stagg High School, First Five, Head Start and regional preschool programs, SUSD's "Project Live" programs for developmentally disabled adults, and other community programs requesting materials and resources.
- **Water Educator Training:** The SAWS Coordinator meets with and shares ideas and resources with other Northern California water agencies.
- **DWR Water Education Committee:** The SAWS Coordinator attends bi-annual meetings of the DWR Water Education Committee, joining water educators from all over California to share resources and ideas for water conservation education and outreach.
- **Children's Museum Benefit Bocce Challenge:** Each year, SAWS donates to and participates in the Children's Museum Annual Bocce Challenge, an event that raises thousands of dollars for the Children's Museum of Stockton.
- **Delta College "Reading for Science" classes:** During each school session, the SAWS Coordinator makes presentations on the water cycle, water treatment and distribution, and the Sacramento San Joaquin Delta for SJDC's Reading for Science classes. Instructors at SJDC use SAWS presentations to teach incoming community college students how to listen to a guest speaker, take notes and ask meaningful questions.

2.2 School Education

The Stockton Area Water Suppliers (SAWS), a partnership between SEWD, California Water Service Company, the City of Stockton and San Joaquin County, are dedicated to providing quality water education programs for our youth. To this end, the SAWS partners offer stimulating, age appropriate water education presentations for public and private school classrooms within the Stockton Metropolitan Area. Special event presentations are also available. The SAWS water education programs align with the California Content Standards and are designed to coordinate with teachers' lesson plans.

Through these programs, the SAWS partners are seeking to reach out to our youth to promote an understanding of the scientific and social principles related to water resource conservation. It is SEWD's hope that this outreach effort will build a progressive knowledge base within the community that will promote sound water resource decisions in the future.

Specific programs include:

- **Lincoln USD "Window on Your Future":** SAWS educators participate in mock job interviews designed to prepare Lincoln High School students for entry into the job market. This event presents an opportunity for SAWS to share career path outreach with potential job seekers. SAWS Educators reach approximately 40 Lincoln High School juniors and seniors at this event.
- **Don Riggio Elementary School's "Delta Experience":** The SAWS Water Education Program participates in this lower elementary school event that focuses on the Sacramento/San Joaquin Delta. The SAWS activities at this event reach approximately 150 students and their teachers.
- **Manteca Unified School District's Farm Days:** SAWS sponsors an activity booth (H2Olympics) at each of the three Weston Ranch elementary schools' annual Farm Day events. The SAWS activity booth hosts an approximate combined total of 1,500 students at the three events.

Kristin Coon, Water Conservation Coordinator
Stockton East Water District
(209) 444-3126
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3. Wholesale Agency Assistance Programs

The City of Stockton, Cal Water, San Joaquin County and the district are members of the Stockton Area Water Suppliers (SAWS). This group meets monthly to discuss water related matters, including water supply, use, conservation and the development of water shortage contingency planning. The district administers and funds public outreach and education programs for SAWS with an annual budget of over $200,000. The district supports all of the Urban Contractors in their conservation plans.

4. Water Conservation Coordinator

In 2004, the district created a full time Water Conservation Coordinator for developing and implementing a comprehensive public outreach and water conservation education program .

Kristin Coon, Water Conservation Coordinator
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(209) 444-3126
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B. Provide a 3-Year Budget for Expenditures and Staff Effort for BMPs

1. Amount actually spent during current year.

Year 2010 BMP #	BMP Name	Projected Expenditures (not including staff hours)	Staff Hours
1.	Utilities Operations		
	1.1 Operations Practices	$0	0
	1.2 Pricing	$0	0
	1.3 Metering	$10,000	0
	1.4 Water Loss Control	$0	0
2.	Education		
	2.1 Public Information Programs	$19,533	250
	2.2 School Education	$169,500	1,830
3.	Residential	$0	0
4.	CII	$0	0
5.	Landscape	$0	0
	Total	$199,033	2,080

2. Projected budget summary for 2nd year.

Year 2011 BMP #	BMP Name	Projected Expenditures (not including staff hours)	Staff Hours
1.	Utilities Operations		
	1.1 Operations Practices	$0	0
	1.2 Pricing	$0	0
	1.3 Metering	$10,500	0
	1.4 Water Loss Control	$0	0
2.	Education		
	2.1 Public Information Programs	$20,500	250
	2.2 School Education	$178,000	1,830
3.	Residential	$0	0
4.	CII	$0	0
5.	Landscape	$0	0
	Total	$209,000	2,080

3. Projected budget summary for 3rd year.

Year 2012 BMP #	BMP Name	Projected Expenditures (not including staff hours)	Staff Hours
1.	Utilities Operations		
	1.1 Operations Practices	$0	0
	1.2 Pricing	$0	0
	1.3 Metering	$11,500	0
	1.4 Water Loss Control	$0	0
2.	Education		
	2.1 Public Information Programs	$21,500	250
	2.2 School Education	$187,000	1,830
3.	Residential	$0	0
4.	CII	$0	0
5.	Landscape	$0	0
	Total	$220,000	2,080

Section 5: District Water Inventory Tables

The Water Inventory Tables are presented on the following pages.

Note: On Table 1 - The source of "Federal Ag Water" and "Federal non-Ag water" is New Hogan and New Melones Reservoirs. The source of "Other Water" is transfer water from Oakdale and South San Joaquin Irrigation District.

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Year of Data | 2010 | **Enter data year here**

Table 1

Surface Water Supply

2010 Month	**Federal Ag Water** (acre-feet)	**Federal non-Ag Water.** (acre-feet)	**State Water** (acre-feet)	**Local Water** (acre-feet)	**Other Water (transfer)** (acre-feet)	**Upslope Drain Water** (acre-feet)	**Total** (acre-feet)
Method							
January	0	4000	0	0	0	0	4,000
February	0	3676	0	0	0	0	3,676
March	243	2026	0	0	2113	0	4,382
April	1532	312	0	0	3510	0	5,355
May	6688	565	0	0	4900	0	12,152
June	10953	2067	0	0	4700	0	17,720
July	11859	2147	0	0	5077	0	19,083
August	10328	3557	0	0	3700	0	17,586
September	7658	4230	0	0	2900	0	14,788
October	2068	7443	0	0	0	0	9,511
November	13	6088	0	0	0	0	6,101
December	198	3664	0	0	0	0	3,862
TOTAL	51,540	39,776	0	0	26,900	0	118,216

Table 2

Ground Water Supply

2010 Month	**District Groundwate** (acre-feet)	**Private Urban** *(acre-feet)	**Private Agric** *(acre-feet)
Method			
January	0	611	0
February	0	476	0
March	0	623	8,387
April	0	396	16,775
May	0	787	16,775
June	0	1,896	16,775
July	0	2,371	16,775
August	0	1,942	16,775
September	0	1,387	16,775
October	0	686	8,387
November	0	454	0
December	0	749	0
TOTAL	0	12,378	117,424

*normally estimated

Table 3

Total Water Supply

2010 Month	Surface Water Total (acre-feet)	District Groundwate (acre-feet)	Recycled M&I (acre-feet)	Total District (acre-feet)
Method				
January	4,000	0	0	4,000
February	3,676	0	0	3,676
March	4,382	0	0	4,382
April	5,355	0	0	5,355
May	12,152	0	0	12,152
June	17,720	0	0	17,720
July	19,083	0	0	19,083
August	17,586	0	0	17,586
September	14,788	0	0	14,788
October	9,511	0	0	9,511
November	6,101	0	0	6,101
December	3,862	0	0	3,862
TOTAL	118,216	0	0	118,216

*Recycled M&I Wastewater is treated urban wastewater that is used for agriculture.

Table 4

Agricultural Distribution System

2010 Canal, Pipeline, Lateral, Reservoir	Length (feet)	Width (feet)	Surface Area (square feet)	Precipitatio (acre-feet)	Evaporation (acre-feet)	Spillage (acre-feet)	Seepage (acre-feet)	Total (acre-feet)
Calaveras River	168,960	85	14,361,600	488.2	1,826.8	0	2,728	(4,067)
Mormon Slough	102,960	85	8,751,600	297.5	1,113.2	0	6,612	(7,428)
Potter Creek	70,752	35	2,476,320	84.2	315.0	0	6,612	(6,843)
Mosher Slough	101,904	35	3,566,640	121.2	453.7	0	9,092	(9,424)
New Melones C.S.	150,480	52	7,824,960	266.0	995.3	0	4,408	(5,138)
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
TOTAL				1,257.2	4,704.0	0	29,452	(32,899)

Urban Distribution System

2010 Area or Line	Length (feet)	Leaks (acre-feet)	Breaks (acre-feet)	Flushing/Fire (acre-feet)	Total (acre-feet)
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
TOTAL	0	0	0	0	0

Table 5

Crop Water Needs

2010 Crop Name	Area (crop acres)	Crop ET (AF/Ac)	Leaching Requiremen (AF/Ac)	Cultural Practices (AF/Ac)	Effective Precipitatio (AF/Ac)	Appl. Crop Water Use (acre-feet)
Walnuts	22,743	3.30	0.0	0.0	0.47	64,401
Cherries	10,290	2.99	0.0	0.0	0.48	25,794
Tomatoes	2,192	1.66	0.0	0.0	0.52	2,510
Vineyard	4,264	2.50	0.0	0.0	0.00	10,678
Other cereal	2,147	2.12	0.0	0.0	0.47	3,550
Other forage	2,265	3.63	0.0	0.0	0.47	7,173
Other field	0	1.84	0.0	0.0	0.48	0
Other vegetables	2,234	1.13	0.0	0.0	0.53	1,357
Other fruits	4,170	2.99	0.0	0.0	0.48	10,453
Other nuts	88	2.64	0.0	0.0	0.48	190
All other crops	588	2.97	0.0	0.0	0.47	1,470
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.0	0.0	0.0	0.0	0
	0	0.0	0.0	0.0	0.0	0
	0	0.0	0.0	0.0	0.0	0
	0	0.0	0.0	0.0	0.0	0
	0	0.0	0.0	0.0	0.0	0
	0	0.0	0.0	0.0	0.0	0
	0	0.0	0.0	0.0	0.0	0
Crop Acres	50,981					127,575

Total Irrig. Acres 50,981 (If this number is larger than your known total, it may be due to double cropping)

Table 6

2010 District Water Inventory

Water Supply	Table 3		118,216
Riparian ET	(Distribution and Drain)	minus	1,000
Groundwater recharge	(intentional - ponds, injection)	minus	4,960
Seepage	Table 4	minus	29,452
Evaporation - Precipitation	Table 4	minus	3,447
Spillage	Table 4	minus	0
Leaks, Breaks, Flushing / Fire	Table 4	minus	0
Transfers/trades/wheeling		**plus/minus**	0
Water Available for sale to customers			79,357
2005 Actual Agricultural Water Sales	From District Sales Records		23,116
Private Groundwater	Table 2	plus	117,424
Crop Water Needs	Table 5	minus	127,575
Drainwater outflow	(tail and tile not recycled)	minus	0
Percolation from Agricultural Land	(calculated)		12,965
M&I Actual Water Sales	From District Records		52,388
Inside Use	Feb urban use x 12		44,111
Landscape / Outside Use	(calculated)		8,277

Table 7

Influence on Groundwater and Saline Sink

2010

Agric Land Deep Perc + Seepage + Recharge - Groundwater Pumping = District Influence	34,412
Estimated actual change in ground water storage, including natural recharge)	0
Irrigated Acres (from Table 5)	50,981
Irrigated acres over a perched water table	0
Irrigated acres draining to a saline sink	0
Portion of percolation from agri seeping to a perched water table	0
Portion of percolation from agri seeping to a saline sink	0
Portion of On-Farm Drain water flowing to a perched water table/saline sink	0
Portion of Dist. Sys. seep/leaks/spills to perched water table/saline sink	0
Total (AF) flowing to a perched water table and saline sink	0

Table 8

Annual Water Quantities Delivered Under Each Right or Contract

Year	Federal Ag Water (acre-feet)	Federal non-Ag Water. (acre-feet)	State Water (acre-feet)	Local Water (acre-feet)	Other Water (transfer) (acre-feet)	Upslope Drain Water (acre-feet)	Total (acre-feet)
2001	55,183	33,222	0	0	23,523	0	111,928
2002	50,893	19,011	0	0	34,168	0	104,072
2003	51,553	27,189	0	0	29,715	0	108,457
2004	51,578	27,228	0	0	29,470	0	108,276
2005	85,839	27,621	0	0	33,401	0	146,861
2006	60,988	38,294	0	0	22,260	0	121,542
2007	59,677	37,227	0	0	34,629	0	131,533
2008	50,969	36,753	0	0	29,986	0	117,708
2009	44,854	35,133	0	0	32,913	0	112,900
2010	51,540	39,776	0	0	26,900	0	118,216
Total	563,074	321,454	0	0	296,965	0	1,181,493
Average	56,307	32,145	0	0	29,697	0	118,149

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ATTACHMENT A

SEWD/ USBR and SEWD/CCWD Contract for New Hogan Project Water Supply

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R.O. Draft 7/6-1970
Rev. W.O. 7/20-1970
Rev. R.O. 8/13-1970

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
New Hogan Project, California

Contract No.
14-06-200-5057A

CONTRACT BETWEEN THE UNITED STATES OF AMERICA AND STOCKTON AND EAST SAN JOAQUIN WATER CONSERVATION DISTRICT AND CALAVERAS COUNTY WATER DISTRICT PROVIDING FOR REPAYMENT AND CONSERVATION USE OF NEW HOGAN PROJECT

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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
New Hogan Project, California

Contract No.
14-06-200-5057A

CONTRACT BETWEEN THE UNITED STATES OF AMERICA
AND STOCKTON AND EAST SAN JOAQUIN WATER CONSERVATION DISTRICT
AND CALAVERAS COUNTY WATER DISTRICT PROVIDING FOR
REPAYMENT AND CONSERVATION USE OF NEW HOGAN PROJECT

THIS CONTRACT, made this 25th day of August, 1970, in pursuance generally of the Act of June 17, 1902 (32 Stat. 388, 43 U.S.C. 391), and acts amendatory thereof and supplementary thereto, all collectively hereinafter referred to as the Federal reclamation laws, between THE UNITED STATES OF AMERICA, hereinafter referred to as the United States, and the STOCKTON AND EAST SAN JOAQUIN WATER CONSERVATION DISTRICT and the CALAVERAS COUNTY WATER DISTRICT, hereinafter collectively referred to as Districts and individually as District, political subdivisions of the State of California, duly organized, existing, and acting pursuant to the laws thereof, with their principal place of business in Stockton and San Andreas, California, respectively,

WITNESSETH, That:

EXPLANATORY RECITALS

WHEREAS, pursuant to the Act of December 22, 1944 (58 Stat. 887), the United States Army Corps of Engineers constructed the

New Hogan Project on the Calaveras River in the State of California primarily for flood control and secondarily for irrigation and other water use purposes; and

WHEREAS, under the terms of Contract No. 14-06-200-8213, dated March 2, 1960, hereinafter referred to as the 1960 contract, between the United States and the State of California, which contract provides for repayment of that portion of the cost of the Project allocated to conservation purposes, the United States may enter into a contract or contracts pursuant to Section 9 of the Reclamation Project Act of 1939 with other organizations for repayment of the New Hogan Project; and

WHEREAS, this contract is made pursuant to said Act and in accordance with the provisions of the 1960 contract;

NOW, THEREFORE, in consideration of the covenants herein contained, it is agreed as follows:

DEFINITIONS

1. When used herein, unless otherwise distinctly expressed or manifestly incompatible with the intent hereof, the term:

(a) "Secretary" or "Contracting Officer" shall mean the Secretary of the United States Department of the Interior or his duly authorized representative;

(b) "District Engineer" shall mean the District Engineer, Sacramento District, United States Army, Corps of Engineers, or his duly authorized representative;

(c) "Calaveras District" shall mean the Calaveras County Water District, and "Stockton District" shall mean the Stockton and East San Joaquin Water Conservation District;

(d) "New Hogan" shall mean the New Hogan Project;

(e) "agricultural water" shall mean water used primarily in the commercial production of agricultural crops or livestock, including domestic use incidental thereto, on tracts of land operated in units of more than two (2) acres;

(f) "municipal, industrial, and domestic water" shall mean water used for other than agricultural purposes;

(g) "year" shall mean the period from April 1 to March 31;

(h) "conservation storage space" shall mean that space in New Hogan which may be utilized, subject to flood control requirements, for agricultural and municipal, industrial, and domestic water use. It shall be limited to a maximum of three hundred and ten thousand (310,000) acre-feet at any one time and shall not include the storage space in New Hogan actually used for sediment and flood control; and

(i) "water released from New Hogan" shall mean water released from the outlet works of New Hogan Dam or withdrawn directly from New Hogan Reservoir.

EFFECTIVE DATE

2. This contract shall be effective on the date first hereinabove written and at that time shall supersede Interim Contract No. 14-06-200-4659A, dated December 31, 1969, between the United States and the Stockton District relating to the use of New Hogan.

DISTRICTS TO APPOINT WATERMASTER--NONLIABILITY OF THE UNITED STATES

3. (a) The Districts by written agreement shall appoint a watermaster, and shall make his identity known to the Contracting Officer and the District Engineer. He shall be responsible for the following:

(1) Administration of the diversion into storage, storage regulation, and release of water pursuant to the terms of this contract; and

(2) Submittal of water use schedules to the Contracting Officer and the District Engineer pursuant to Article 5 and the coordination of schedules between the Districts.

(b) The United States shall not be liable or responsible for the carriage, distribution, or diversion of water after its release and/or diversion from New Hogan pursuant to this contract.

RESERVOIR OPERATION--USE OF WATER BY DISTRICTS

4. (a) Acting through the District Engineer, at the request of the watermaster, the United States shall store, regulate and/or release all flows of the Calaveras River at New Hogan for the purpose of making available agricultural and municipal, industrial, and domestic water for use by the Districts. Such storage, regulation, and release of water shall be subordinate only to storage and release of water for flood control, as conclusively determined by the District Engineer; to maintenance of a storage basin of fifteen thousand (15,000) acre-foot capacity for silting and storage of water for recreational and incidental uses, including recreational use on United States lands adjacent to the Reservoir; and to release of the portion of the unregulated runoff in the Calaveras River which is passed through New Hogan as it occurs in recognition of prior downstream water rights entitlements.

(b) Acting through the District Engineer, the United States may temporarily reduce or discontinue storage, regulation, and/or release of water for purposes of investigation, inspection, maintenance, repair, or replacement of any of the facilities of New Hogan. So far as feasible, however, the District Engineer will give the watermaster notice in advance of such temporary interruption except in case of emergency when notice need not be given.

(c) After meeting prior downstream water rights entitlements, the release and entitlement to water from New Hogan shall be in accordance with the schedule submitted pursuant to Article 5.

(d) For purposes of subdivision (b) of Article 6 the Stockton District shall be deemed to have diverted municipal, industrial, and domestic water during this contract as follows:

(1) 1st through 10th year - as determined by actual deliveries to municipal, industrial, and domestic customers;

(2) 11th through 20th year - ten thousand (10,000) acre-feet or actual municipal, industrial, and domestic water deliveries, whichever is greater;

(3) 21st through 30th year - twenty thousand (20,000) acre-feet or actual municipal, industrial, and domestic water deliveries, whichever is greater; and

(4) 31st through 40th year - thirty thousand (30,000) acre-feet or actual municipal, industrial, and domestic water deliveries, whichever is greater.

WATER USE SCHEDULE

5. (a) Prior to April 1 the watermaster shall submit a written schedule to the District Engineer and the Contracting Officer indicating the desired times and quantities of water to be released from New Hogan during the year. The watermaster shall inform the District Engineer of any revision in said schedule within a reasonable time before the desired change of time of delivery.

(b) Prior to May 1 of each year the watermaster shall submit to the Contracting Officer a water use report indicating for the preceding year the total quantity of water actually used for municipal, industrial, and domestic purposes.

(c) Each day the watermaster shall submit to the District Engineer a water use report indicating for the previous day the total quantity of water actually withdrawn directly from New Hogan Reservoir.

RATE AND METHOD OF PAYMENT

6. (a) The Districts shall pay to the United States their share of the construction, operation, maintenance, replacement, and contract administration costs of New Hogan in the following manner:

(1) Construction Costs - The total reimbursable construction allocation of New Hogan, which is thirty-six and two-tenths percent (36.2%) of the construction cost of New Hogan, excluding any specific costs associated with recreational use, as determined by the Secretary of the Army, in forty (40) equal annual installments commencing on September 1 following the execution of this contract. Payments shall be made to the Bureau of Reclamation and mailed to 2800 Cottage Way, Sacramento, California 95825. Revenues received from prior interim contracts between the Stockton District and the United States for water service from New Hogan, less operation and maintenance and contract administration expenses chargeable to such contracts, shall be credited to payments due until such credits are depleted. The Contracting Officer shall notify the Districts in writing by August 1 following execution of this contract the amount of accumulated credits and the application thereof. If the actual construction cost shall not have been determined on the date of this contract the Contracting Officer shall announce the

estimated construction cost. Such estimated construction cost shall govern the amount of the construction obligation until the actual construction obligation can be determined and a statement thereof furnished to the Districts. Installments coming due after the determination of the actual construction cost shall be adjusted to reflect any difference between the estimated and the actual construction cost;

(2) Operation, Maintenance, and Replacement Costs - The Districts shall pay to the United States thirty-eight percent (38%) of the total operation, maintenance, and replacement costs of New Hogan, excluding any specific costs associated with recreational use of New Hogan, to be paid in equal annual amounts for 5-year periods which shall begin on April 1 of the first year of each period and end March 31 of the fifth year. During the first 5-year period beginning April 1 of the year following the year in which this contract is executed, the Districts shall pay to the United States annually the sum of Seventy-two Thousand Two Hundred ($72,200). This amount is estimated to cover the annual operation, maintenance, and replacement costs chargeable to the Districts during the first 5-year period plus the operation, maintenance, and replacement costs allocated to the Districts from the date of execution of this contract to April 1 of the following year. At the end of each 5-year period an estimate shall be made by the District Engineer of the

annual operation, maintenance, and replacement costs for the next 5-year period payable by the District and the Districts will be notified of the annual amount within thirty (30) days after the end of the preceding 5-year period. After the first 5-year period the annual installments due for succeeding 5-year periods shall be adjusted to reflect the difference between the actual operation, maintenance, and replacement costs allocated to the Districts for the previous 5-year period and the sum advanced by the Districts. Annual payments for operation, maintenance, and replacement costs shall be due June 1 of each year and shall be made payable to the Treasurer of the United States and deposited with the Disbursing Officer, United States Army, Corps of Engineers, 650 Capitol Mall, Sacramento, California 95814; and

(3) Contract Administration Costs - Upon execution of this contract, the Districts shall pay Five Thousand Dollars ($5,000) to the Contracting Officer for contract administration costs. Not later than August 1 of each year thereafter the Contracting Officer shall furnish to the Districts a statement of the actual costs of the Bureau of Reclamation incurred in administering this contract and the recordable contracts in the preceding fiscal year made in accordance

with Article 19 and such amount shall be paid by the Districts to the Contracting Officer by September 1 of each year in order to restore the account to Five Thousand Dollars ($5,000): Provided, That this amount may be exceeded to the extent of the costs of appraisals provided for in Article 20: Provided further, That at any time it appears that this amount will be insufficient to cover the costs of appraisals for the remainder of the year the Districts shall advance within thirty (30) days after receipt of notice the additional amount which the Contracting Officer estimates will be necessary to cover such costs.

(b) Each year prior to September 1 the Districts shall pay interest at two and six-tenths percent (2.6%) annually on that portion of the unpaid construction obligation which is allocated to municipal, industrial, and domestic water use computed in the ratio that such use or contract obligation bears to sixty-nine thousand (69,000) acre-feet minus one-tenth (0.1) of the amount of municipal and industrial water contract obligation or water used. The interest for the period from the date of execution to the following March 31 shall be computed on that portion of the unpaid construction obligation allocated to municipal and industrial water use in the ratio that such use bears to twenty-nine thousand (29,000) acre-feet.

(c) After the construction cost allocated to conservation has been paid with interest when applicable as provided in subdivision (b) of this article, the only cost to be paid by the Districts will be for operation, maintenance, and replacement and contract administration as provided in subsections (2) and (3) of subdivision (a) of this article.

(d) All payments to be made by the Districts under this article shall be by certified check, money order, bank draft, or District warrant.

QUALITY OF WATER

7. The operation and maintenance of the New Hogan facilities for the provision of water under this contract shall be performed in such manner as is practicable to maintain the quality of raw water released from New Hogan. The United States is under no obligation to construct or furnish water treatment facilities to maintain or to better the quality of water. Further, the United States does not warrant the quality of water to be released from New Hogan pursuant to this contract.

POINTS OF DIVERSION--MEASUREMENT OF WATER

8. (a) Water will be made available to the Districts at the outlet works of New Hogan or at such points adjacent to New Hogan as may be jointly agreed upon in writing by the Contracting Officer, the District Engineer, and the watermaster.

(b) Water withdrawn directly from New Hogan Reservoir shall be measured by the Districts at a point located in accordance with subdivision (a) of this article. Water furnished by the Districts for municipal, industrial, and domestic use shall be measured by the Districts at the point or points of delivery to such users. Measurements shall be made with equipment installed, operated, and maintained by the Districts: Provided, That upon the request of the Contracting Officer the Districts shall investigate the accuracy of all measuring equipment installed by the Districts to determine the quantity of municipal, industrial, and domestic water diverted and shall adjust any errors disclosed by such investigation. The United States shall be afforded reasonable opportunity to be present during the inspection and testing procedure by the Districts and the United States shall have full and free access at all reasonable times to inspect said measuring equipment for the purpose of determining the accuracy and condition thereof. If said facilities are found to be defective or inaccurate they shall be readjusted or repaired, or both, or replaced by the Districts. In the event the Districts neglect or fail to make such repairs or replacements within a reasonable time as may be necessary to satisfy the operating requirements of the Contracting Officer, the United States may cause the repairs or replacements to be made and charge the costs thereof to the Districts, which charge the Districts shall pay to the United States on or before June 1 of the year following that in which the cost was incurred and a statement thereof furnished by the Contracting Officer.

SUBCONTRACTS

9. The Districts shall be responsible for the furnishing of agricultural water from New Hogan only to lands within the confines of each District's area of jurisdiction. Nothing herein shall prohibit the Districts or water users within the Districts from commingling municipal, industrial, and domestic water from New Hogan with water from other sources and exporting an amount of municipal, industrial, and domestic water not in excess of the water from those other sources beyond the boundaries of the Districts. Each District, without the consent of the other District or of the Contracting Officer, may enter into subcontracts for the furnishing of agricultural or municipal, industrial, and domestic water, and each such subcontract shall contain a provision whereby the subcontractor specifically agrees to be bound by the provisions of this contract. Nothing contained in any such subcontract shall be deemed in any way to release the Districts from their primary liability to the United States with respect to each and all of the obligations undertaken by each District pursuant to this contract. Copies of subcontracts for the furnishing of New Hogan water shall be furnished to the Contracting Officer.

UNITED STATES NOT LIABLE FOR WATER SHORTAGE--RESPONSIBILITY OF DISTRICTS--RETURN FLOWS--RIGHT OF ACCESS TO WORKS

10. (a) In no event shall any liability accrue against the United States or any of its officers, agents, or employees for any damage, direct or indirect, arising from a shortage of water on account of errors in operation, drought, or other unavoidable causes whatsoever.

(b) The Districts agree to take water released from New Hogan pursuant to this contract at the delivery points established pursuant to Article 8 hereof and to perform any and all acts necessary thereafter to maintain control over such water. The Districts assume full responsibility for the control and distribution of such water: Provided, That the United States reserves the right to all waste, seepage, and return-flow water derived from water furnished to the Districts which escapes or is discharged beyond the Districts' boundaries, and nothing herein shall be construed as an abandonment or a relinquishment by the United States of any such water, but this shall not be construed as claiming for the United States any right, as waste, seepage, or return flow, to water being used pursuant to this contract for surface irrigation or underground storage within the Districts' boundaries by the Districts.

(c) All works, including pipelines, pumps, and meters necessary to enable the Districts to take and distribute water from New Hogan pursuant to this contract shall be constructed, operated, and maintained, or caused to be constructed, operated, and maintained by the Districts without cost or expense to the United States. An easement is necessary and will be granted pursuant to 10 U.S.C. 2669 for the installation, operation, and maintenance of these works on property of the United States. In addition, it is understood that installation, operation, and maintenance of such works on property of the United States shall also be subject to such restrictions and regulations as to location, method of installation, operation, and maintenance as may be prescribed by the Contracting Officer and the District Engineer and subject further to the provisions of subdivision (d) of this article. It is specifically recognized and agreed that this contract does not grant to the Districts any right of access to the stored waters at New Hogan or to the adjacent lands of the United States for any purpose except as provided herein for installation, operation, and maintenance of facilities.

(d) Works installed pursuant to subdivision (c) of this article shall be installed in accordance with plans and specifications approved by the Contracting Officer and the District Engineer. The Contracting Officer and the District Engineer shall have the right of ingress and egress at all reasonable times over and across the land of the Districts for the purpose of inspecting and reading the meters which may be installed and the Districts hereby grant a right-of-way to said parties for such purpose.

(e) The Districts do not assume any obligation, liability, or responsibility for conditions arising out of the operation of New Hogan for flood control or the release of any water for flood control, or for any defect in or failure of New Hogan works.

WATER POLLUTION CONTROL

11. The Districts agree that they will comply fully with all applicable Federal laws, orders, and regulations, and the laws of the State of California, all as administered by appropriate authorities, concerning the pollution of streams, reservoirs, groundwater, or water courses with respect to thermal pollution or the discharge of refuse, garbage, sewage effluent, industrial waste, oil, mine tailings, mineral salts or other pollutants. The Districts agree further that any contract they may enter into with a third party for the furnishing of New Hogan water will contain a similar water pollution control article.

TITLE AND PHYSICAL OPERATIONS TO BE WITH THE UNITED STATES

12. (a) Title to all of New Hogan works shall be and remain in the name of the United States.

(b) Any and all physical operations of New Hogan pursuant to this contract shall be performed by the Corps of Engineers on behalf of the United States.

Article 10(e)
Article 11
Article 12

CHARGES A GENERAL OBLIGATION--LEVIES THEREFOR

13. (a) The Districts, notwithstanding the default in the payment by individual water users of assessments, tolls, or other charges levied by the Districts, are obligated to pay to the United States the charges becoming due as provided in this contract in the manner and proportions prescribed in the operating agreement entered into by the Districts pursuant to Article 34.

(b) The Districts shall cause to be levied and collected all necessary assessments, tolls, and other charges, and shall use all of the authority and resources of the Districts to meet their obligations hereunder.

ALL BENEFITS CONDITIONED UPON PAYMENT

14. (a) It is agreed that the payment of charges upon the terms and conditions provided for herein is a prerequisite to the right to the use of water released to the Districts pursuant to this contract.

(b) Should the Districts fail to levy the assessments, tolls, or charges against any lands or water user required to meet the Districts' obligation to the United States under this contract or, having levied, should the Districts be prevented from collecting such assessments, tolls, or charges by judicial proceedings, or otherwise fail to collect them, such lands or water users shall not be entitled to receive water from New Hogan and the Districts, except as otherwise ordered by a court of competent jurisdiction, shall not deliver water to such lands or water users from New Hogan unless and until arrangements for its delivery satisfactory to the Contracting Officer have been made.

COVENANT AGAINST CONTINGENT FEES

15. The Districts warrant that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Districts for the

purpose of securing business. For breach or violation of this warranty the United States shall have the right to annul this contract without liability, or in its discretion to add to the contract repayment obligation or consideration the full amount of such commission, percentage, brokerage, or contingent fee.

PENALTY FOR DELINQUENT PAYMENTS

16. The Districts shall pay a penalty on installments or charges which become delinquent computed at the rate of one-half of one percent per month of the amount of such delinquent installments or charges for each day from the date of such delinquency until paid: Provided, That no penalty shall be charged to the Districts unless such delinquency continues for more than thirty days.

BOOKS, RECORDS, AND REPORTS

17. The Districts shall establish and maintain accounts and other books and records pertaining to their financial transactions, land use and crop production, water use, and to such other matters as the Contracting Officer may require. Reports thereon shall be furnished to the United States in such form and on such date or dates as may be required by the Contracting Officer. Each party shall have the right, during office hours, to examine and make copies of the other parties' books and official records relating to matters covered by this contract.

CHANGES IN DISTRICT ORGANIZATION

18. While this contract is in effect, no change shall be made in the Districts, by inclusion or exclusion of lands, by dissolution, consolidation, or merger or otherwise, except upon the Contracting Officer's written consent thereto.

LAND NOT TO RECEIVE WATER FURNISHED TO DISTRICTS BY UNITED STATES UNTIL OWNERS THEREOF EXECUTE CERTAIN CONTRACTS

19. (a) No New Hogan water released to a District pursuant to this contract shall be furnished by the District or a subcontractor thereof to any excess lands as defined in Article 21 unless the owners thereof shall have executed valid recordable contracts in form prescribed by the United States, agreeing to the provisions of this article and Articles 20 and 21 hereof, agreeing to the appraisal provided for in Article 20 hereof and that such appraisal shall be made on the basis of the actual bona fide value of such lands at the date of the appraisal without reference to the construction of New Hogan, all as hereinafter provided, and agreeing to the sale of such excess lands under terms and conditions satisfactory to the Secretary and at prices not to exceed those fixed, as hereinafter provided. No sale of any excess lands shall carry the right to receive water made available pursuant to this contract, unless and until the purchase price involved in such sale is approved by the Contracting Officer and upon proof of fraudulent representation as to the true

consideration involved in such sales the United States may instruct the District by written notice to refuse to furnish any water subject to this contract to the land involved in such fraudulent sales and the District thereafter shall not furnish said water to such lands.

(b) If New Hogan water furnished to a District pursuant to this contract reaches the underground strata of excess land owned by a large landowner, as defined in Article 21, who has not executed a recordable contract and the large landowner pumps such New Hogan water from the underground, the District will not be deemed to have furnished such water to said lands within the meaning of this contract if such water reached the underground strata of the aforesaid excess land as an unavoidable result of the furnishing of New Hogan water by the District to nonexcess lands or to excess lands with respect to which a recordable contract has been executed.

VALUATION AND SALE OF EXCESS LANDS

20. (a) The value of the excess irrigable lands within a District as defined in Article 21, held in private ownership of large landowners as defined in said article, for the purposes of this contract, shall be appraised in a manner to be prescribed by the Secretary. At the option of the large landowner, however, the value of such land may be appraised, subject to the approval thereof by the Secretary, by three appraisers. One of said appraisers shall

be designated by the Secretary and one shall be designated by the respective District in which the land is located, and the two appraisers so appointed shall name the third. If the appraisers so designated by the Secretary and the District are unable to agree upon the appointment of the third, the Presiding Justice of the Third District Court of Appeal of the State of California shall be requested to name the third appraiser.

(b) The following principles shall govern the appraisal:

(1) No value shall be given such lands on account of the existing or prospective possibility of securing water from New Hogan; and

(2) The value of improvements on the land at the time of said appraisal shall be included therein, but shall also be set forth separately in such appraisal.

(c) The excess land of any large landowner shall be reappraised in the manner provided in subdivision (a) hereof at the instance of the United States or at the request of said landowner. The cost of the first two appraisals of each tract of excess land shall be paid by the United States. The cost of each appraisal thereafter shall be paid by the party requesting such appraisal.

(d) Any improvements made or placed on the appraised land after the appraisal hereinabove provided for prior to sale of the land by a large landowner may be appraised in like manner.

(e) Excess irrigable lands sold by large landowners within a District shall not carry the right to receive water made available pursuant to this contract for such land and the Districts agree to refuse to furnish such water to lands so sold until, in addition to compliance with the other provisions hereof, a verified statement showing the sale price upon any such sale shall have been filed with the District and the sale price is not in excess of the appraised value as provided herein.

(f) Each District agrees to take all reasonable steps requested by the Contracting Officer to ascertain the occurrence and conditions of all sales of irrigable lands of large landowners in such District made subsequent to the execution of this contract and to inform the United States concerning the same.

(g) A true copy of this contract, of each recordable contract executed pursuant to this article and Articles 19 and 21 hereof, and of each appraisal made pursuant thereto shall be furnished to the respective District by the United States and shall be maintained on file in the office of said District and like copies in such offices of the Bureau of Reclamation as may be designated by the Contracting Officer and shall be made available for examination during the usual office hours by all persons who may be interested therein.

EXCESS LANDS

21. (a) As used herein, the term "excess land" means that part of the irrigable land in excess of one hundred and sixty (160) acres held within the area served by a District and its subcontractors in the beneficial ownership of any single person, whether a natural person, a corporation, or the beneficiary of a trust approved by the Contracting Officer. With respect to land held in co-ownership, such as a tenancy in common, joint tenancy, or community property, the beneficial ownership of each co-owner shall be that fraction of the total acreage held in co-ownership which equals the co-owner's fractional interest therein. The term "large landowner" means an owner of excess lands, and the term "nonexcess land" means all irrigable land within each District which is not excess land as defined herein.

(b) Each large landowner as a condition precedent to the right to receive water made available pursuant to this contract for any of his excess lands shall:

(1) Before any New Hogan water is furnished by the District to his excess land, execute a valid recordable contract in form prescribed by the United States, agreeing to the provisions contained in this article and Articles 19 and 20 hereof and agreeing to dispose of his excess lands in accordance therewith to persons who can take title thereto as nonexcess land as

Article 21(a)(b)(1)--

herein provided and at a price not to exceed the approved, appraised value of such excess land and within a period of ten (10) years after the date of the execution of said recordable contract and agreeing further that if said land is not so disposed of within said period of ten (10) years, the Secretary shall have the power to dispose of said land at the appraised value thereof fixed as provided herein or such lower price as may be approved by the owner of such land, subject to the same conditions on behalf of such large landowner; and each District agrees that it will refuse to furnish said water to any large landowner other than for his nonexcess lands until such owner meets the conditions precedent herein stated; and

(2) Within thirty (30) days after the date of notice from the United States requesting such large landowner to designate his irrigable lands within a District which he desires to designate as nonexcess lands, file in the office of such District, in duplicate, one copy thereof to be furnished by said District to the Bureau of Reclamation, his written designation and description of lands so selected to be nonexcess lands and upon failure to do so the District shall make such designation and mail a notice thereof to such large landowner, and in the event the District fails to act within such period of time as

the Contracting Officer considers reasonable, such designation will be made by the Contracting Officer, who will mail a notice thereof to the District and the large landowner. The large landowner shall become bound by any such action on the part of the District or the Contracting Officer and the District will furnish said water only to the land so designated to be nonexcess land. A large landowner may with the consent of the Contracting Officer designate land other than that previously designated as nonexcess land: Provided, That an equal acreage of the land previously designated as nonexcess, shall, upon such new designation, become excess land thereafter subject to the provisions of this article and Articles 19 and 20 hereof and shall be described in an amendment of such recordable contract as may have been executed by the large landowner, in the same manner as if such land had been excess land at the time of the original designation.

REPEAL OR AMENDMENT OF FEDERAL RECLAMATION LAWS

22. In the event that the Congress of the United States repeals the so-called excess land provisions of the Federal reclamation laws, Articles 19, 20, and 21 of this contract will no longer be of any force or effect, and, in the event that the Congress amends the excess-land provision or other provisions of the Federal reclamation laws, the

United States agrees, at the option of the Districts, to negotiate amendments of appropriate articles of this contract, all consistently with the provisions of such amendment.

WATER ACQUIRED BY DISTRICTS OTHER THAN FROM THE UNITED STATES

23. (a) The provisions of this contract shall not be applicable to or affect water or water rights now owned or hereafter acquired by the Districts or landowners within the Districts other than from the United States. Water furnished pursuant to the terms of this contract may be transported by means of the same facilities as water now available or which may become available to the Districts or landowners within the Districts other than pursuant to the terms of this contract if the Contracting Officer determines that such mingling is necessary to avoid a duplication of facilities; and notwithstanding such mingling of water, the provisions of this contract shall be applicable to the quantity of water furnished to the Districts pursuant to the terms hereof, and such mingling of water shall not in any manner subject to the provisions of this contract the quantity of water acquired by or available to the Districts or landowners within the Districts other than from the United States.

(b) With respect to the facilities or portions thereof in which mingling is permitted as provided in subdivision (a) hereof, the Districts shall take or cause to be taken such action as may in

the opinion of the Contracting Officer be necessary to assure that the quantity of water furnished by the United States during each 24-hour period will be delivered by the Districts only to lands eligible to receive the same under Articles 19, 20, and 21 herein. The Districts shall be deemed to be in breach of this article and Articles 19, 20, and 21 of this contract if at any time there is furnished to excess lands not covered by recordable contracts and served by the facilities or portions thereof in which mingling is permitted, a quantity of water which is greater than that which the District or landowners within the Districts have introduced into said facilities from the supply available other than pursuant to this contract.

CONTINGENT ON APPROPRIATION OR ALLOTMENT OF FUNDS

24. The expenditure of any money or the performance of any work by the United States hereunder which may require appropriation of money by the Congress or the allotment of funds shall be contingent upon such appropriation or allotment being made. The failure of the Congress so to appropriate funds or the absence of any allotment of funds shall not relieve the Districts from any obligations then accrued under this contract and no liability shall accrue to the United States in case such funds are not appropriated or allotted.

OFFICIALS NOT TO BENEFIT

25. (a) No Member of or Delegate to Congress or Resident Commissioner shall be admitted to any share or part of this contract or to any benefit that may arise therefrom. This restriction shall not be construed to extend to this contract if made with a corporation or company for its general benefit.

(b) No official of the Districts shall receive any benefit that may arise by reason of this contract other than as a landowner within the Districts and in the same manner as other landowners within the Districts.

NOTICES

26. (a) Any notice authorized or required to be given to the United States shall be deemed to have been given when mailed, postage prepaid, or delivered to the Regional Director, Region 2, Bureau of Reclamation, 2800 Cottage Way, Sacramento, California 95825. Any notice authorized or required to be given to the Districts shall be deemed to have been given when mailed in a postage-prepaid or franked envelope or delivered to:

(1) Stockton and East San Joaquin Water Conservation District, Post Office Box 5157, Stockton, California 95205; and

(2) Calaveras County Water District, Post Office Box 846, San Andreas, California 95249.

(b) The designation of the addressee or the address given above may be changed by notice given in the same manner as provided in this article for other notices.

(c) This article shall not preclude the effective service of any such notice or announcement by other means.

ASSIGNMENT LIMITED--SUCCESSORS AND ASSIGNS OBLIGATED

27. The provisions of this contract shall apply to and bind the successors and assigns of the parties hereto, but no assignment or transfer of this contract or any part or interest therein shall be valid until approved by the Secretary.

REMEDIES UNDER CONTRACT NOT EXCLUSIVE--WAIVERS

28. Nothing contained in this contract shall be construed as in any manner abridging, limiting, or depriving the United States of any means of enforcing any remedy, either at law or in equity, for the breach of any of the provisions hereof which it would otherwise have. Any waiver at any time by either party to this contract of its rights with respect to a default, or any matter arising in connection with this contract, shall not be deemed to be a waiver with respect to any subsequent default or matter.

Article 26(b) - (c)
Article 27
Article 28

DETERMINATIONS

29. (a) Where the terms of this contract provide for action to be based upon the opinion or determination of either party to this contract, whether or not stated to be conclusive, said terms shall not be construed as permitting such action to be predicated upon arbitrary, capricious, or unreasonable opinions or determinations.

(b) In the event the Districts question any factual determination made by a representative of the Secretary as required in the administration of this contract, any findings, as to the facts in dispute thereafter made by the Secretary shall be made only after consultation with the Board of Directors of each District.

(c) Except as otherwise provided herein, the Secretary's decision on all questions of fact arising under this contract shall be conclusive and binding upon the parties hereto.

ASSURANCE RELATING TO VALIDITY OF CONTRACT

30. Promptly after the execution and delivery of this contract each District shall file and prosecute to a final decree, including any appeal therefrom to the highest court of the State of California, in a court of competent jurisdiction a special proceeding for the judicial examination, approval, and confirmation of the proceedings had for the organization of the District and the proceedings of the District's Board of Directors and of the District leading up to and

including the making of this contract and the validity of the provisions hereof; and this contract shall not be binding on the United States until each District's organization and proceedings and this contract shall have been so confirmed by a court of competent jurisdiction or pending appellate action in any court if ground for appeal be laid. The Districts shall furnish to the Contracting Officer certified copies of such decree and of all pertinent supporting documents.

TITLE VI, CIVIL RIGHTS ACT OF 1964

31. (a) The Districts hereby agree that they will comply with Title VI of the Civil Rights Act of 1964 (P.L. 88-352) and all requirements imposed by or pursuant to the Department of the Interior Regulation (43 CFR 17) issued pursuant to that title, to the end that, in accordance with Title VI of that Act and the Regulation, no person in the United States shall, on the ground of race, color, or national origin be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which the Districts receive financial assistance from the Bureau of Reclamation and hereby give assurance that they will immediately take any measures to effectuate this agreement.

(b) If any real property or structure thereon is provided or improved with the aid of Federal financial assistance extended to

the Districts by the Bureau of Reclamation, this assurance obligates the Districts, or in the case of any transfer of such property, any transferee for the period during which the real property or structure is used for a purpose involving the provision of similar services or benefits. If any personal property is so provided, this assurance obligates the Districts for the period during which they retain ownership or possession of the property. In all other cases, this assurance obligates the Districts for the period during which the Federal financial assistance is extended to them by the Bureau of Reclamation.

(c) This assurance is given in consideration of and for the purpose of obtaining any and all Federal grants, loans, contracts, property, discounts, or other Federal financial assistance extended after the date hereof to the Districts by the Bureau of Reclamation, including installment payments after such date on account of arrangements for Federal financial assistance which were approved before such date. The Districts recognize and agree that such Federal financial assistance will be extended in reliance on the representations and agreements made in this assurance, and that the United States shall reserve the right to seek judicial enforcement of this assurance. This assurance is binding on the Districts, their successors, transferees, and assignees.

EQUAL OPPORTUNITY

32. During the performance of this contract, the Districts agree as follows:

(a) The Districts will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Districts will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Districts agree to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this Equal Opportunity clause.

(b) The Districts will, in all solicitations or advertisements for employees placed by or on behalf of the Districts, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

(c) The Districts will send to each labor union or representative of workers with which they have a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency Contracting Officer, advising the labor union or workers' representative of the Districts' commitments under this Equal Opportunity clause, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(d) The Districts will comply with all provisions of Executive Order No. 11246 of September 24, 1965, as amended, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(e) The Districts will furnish all information and reports required by said Executive Order and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to their books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(f) In the event of the Districts' noncompliance with the Equal Opportunity clauses of this contract or with any

EQUAL OPPORTUNITY

32. During the performance of this contract, the Districts agree as follows:

(a) The Districts will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Districts will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Districts agree to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this Equal Opportunity clause.

(b) The Districts will, in all solicitations or advertisements for employees placed by or on behalf of the Districts, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

(c) The Districts will send to each labor union or representative of workers with which they have a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency Contracting Officer, advising the labor union or workers' representative of the Districts' commitments under this Equal Opportunity clause, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(d) The Districts will comply with all provisions of Executive Order No. 11246 of September 24, 1965, as amended, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(e) The Districts will furnish all information and reports required by said Executive Order and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to their books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(f) In the event of the Districts' noncompliance with the Equal Opportunity clauses of this contract or with any

of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended, in whole or in part, and the Districts declared ineligible for further Government contracts in accordance with procedures authorized in said Executive Order, and such other sanctions may be imposed and remedies invoked as provided in said Executive Order, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(g) The Districts will include the provisions of subdivisions (a) through (g) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of said Executive Order so that such provisions will be binding upon each subcontractor or vendor. The Districts will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, That in the event the Districts become involved in, or are threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the Districts may request the United States to enter into such litigation to protect the interests of the United States.

RULES AND REGULATIONS

33. The Secretary reserves the right to make, after consultation with the Districts, such rules and regulations consistent with the provisions of this contract, the laws of the United States and the State of California, and to add to or to modify them as may be deemed proper and necessary to carry out this contract, and to supply necessary details of its administration which are not covered by express provisions of this contract. The Districts agree to observe such rules and regulations.

DISTRICTS TO MAKE OPERATING AGREEMENT

34. Prior to the execution of this contract the Districts shall enter into an operating agreement providing, among other things, for the division between the Districts of the New Hogan water and the payment of the costs becoming due pursuant to this contract. Such agreement shall be in accordance with the terms and conditions of this contract and shall be subject to approval by the Contracting Officer prior to execution.

IN WITNESS WHEREOF, the parties have executed this contract the day and year first herein written.

THE UNITED STATES OF AMERICA

Rita Singer
Appd. Sol. Off.

By _____
Regional Director, Region 2
Bureau of Reclamation

STOCKTON AND EAST SAN JOAQUIN
WATER CONSERVATION DISTRICT

(SEAL)

ATTEST:

By _____
President

_____
Secretary

CALAVERAS COUNTY WATER DISTRICT

(SEAL)

ATTEST:

By _____
President

_____
Secretary

APPROVED:

DEPARTMENT OF THE ARMY

By _____

Date: September 15, 1970

RESOLUTION NO. 1255

RESOLUTION OF THE BOARD OF DIRECTORS OF THE CALAVERAS COUNTY WATER DISTRICT AUTHORIZING EXECUTION OF CONTRACT BETWEEN THE UNITED STATES OF AMERICA AND THE STOCKTON & EAST SAN JOAQUIN WATER CONSERVATION DISTRICT AND THE CALAVERAS COUNTY WATER DISTRICT PROVIDING FOR REPAYMENT AND CONSERVATION USE OF NEW HOGAN PROJECT

WHEREAS, there has been presented to this Board a proposed "Contract Between the United States of America and Stockton & East San Joaquin Water Conservation District and Calaveras County Water District Providing for Repayment and Conservation Use of New Hogan Project Numbered R.O. Draft 7/6-1970, Rev. W.O. 7/20-1970, Rev. R.O. 8/13-1970"; and

WHEREAS, said contract has been approved by the United States Department of the Interior and the Corps of Army Engineers; and

WHEREAS, the Secretary - Manager of this District recommends that said Contract be approved by this Board and that the President and Secretary of this District be authorized to execute said Contract on behalf of this District;

NOW, THEREFORE, BE IT RESOLVED:

That said Contract is approved and the President and Secretary of this District are authorized and directed to execute said "Contract Between the United States of America and the Stockton & East San Joaquin Water Conservation District and Calaveras County Water District Providing for Repayment and Conservation Use of the New Hogan Project" on behalf of this District.

PASSED AND ADOPTED this 19th day of August 1970, by the following vote:

AYES: Directors Irvin Tanner, Elliott McCombs, Oliver Turner, Kenneth Mitchell and William Hart

NOES: None

ABSENT: None

CALAVERAS COUNTY WATER DISTRICT

RESOLUTION NO. 1255

William D. Hart
President of the Board of Directors
of Calaveras County Water District

ATTEST:

Stanley Edwards
Secretary of the Board of Directors
of Calaveras County Water District

CERTIFIED A TRUE COPY
Stanley Edwards
SECRETARY
Calaveras County Water District

R.O. Draft 10/16-1987

Contract No.
14-06-200-5057A
Amendatory

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
New Hogan Project, California

AMENDATORY CONTRACT AMONG THE UNITED STATES OF AMERICA, STOCKTON EAST WATER DISTRICT AND CALAVERAS COUNTY WATER DISTRICT PROVIDING FOR REPAYMENT AND CONSERVATION USE OF NEW HOGAN PROJECT

THIS AMENDATORY CONTRACT, made this 25th day of March, 1988 between the UNITED STATES OF AMERICA, hereinafter referred to as the United States, represented by the Contracting Officer executing this amendment, and STOCKTON EAST WATER DISTRICT AND CALAVERAS COUNTY WATER DISTRICT hereinafter referred to as the Contractors,

WITNESSETH, That:

EXPLANATORY RECITALS

WHEREAS, the parties have entered into a repayment contract, dated August 25, 1970 and identified as contract No. 14-06-200-5057A, as amended, which provides repayment and conservation use of New Hogan Dam and Reservoir and is hereinafter referred to as the repayment contract; and

WHEREAS, pursuant to Section 212 of Public Law 97-293 the Reclamation Reform Act of October 12, 1982, the Contractors' water supply from the abovestated reservoir is exempt from the provisions of Federal reclamation law; and

WHEREAS, the Contractors desire to amend the repayment contract to reflect the intent so stated in Section 212 of Public Law 97-293;

NOW, THEREFORE, in consideration of the mutual and dependent stipulations and covenants herein contained, it is mutually agreed by the parties hereto as follows:

1. The following changes to the repayment contract between the United States and the Contractors, shall be effective commencing October 12, 1982.

2. Articles 19, 20, 21 and 22 of the repayment contract and all references to such articles in other articles of the repayment contract are hereby deleted in their entirety.

3. Nothing in this amendatory contract shall terminate, cancel or affect any sales of land heretofore made under recordable contract.

4. Except as herein amended, all provisions of the repayment contract shall remain in full force and effect.

IN WITNESS WHEREOF, the parties hereto have signed their names as of the day and year first above written.

UNITED STATES OF AMERICA

ACTING By _____
Regional Director, Mid-Pacific Region
Bureau of Reclamation

(SEAL)

Attest:

_____
Secretary

STOCKTON-EAST WATER DISTRICT

By _____
President

(SEAL)

Attest:

_____
Secretary
CORP20

CALAVERAS COUNTY WATER DISTRICT

By _____
President

RESOLUTION NO. 87-160

WHEREAS, the Bureau of Reclamation has proposed amendments to the contract for New Hogan Water to delete those sections relating to ownership or pricing limitations of Federal Reclamation Law.

BE IT RESOLVED that the Board of Directors of CALAVERAS COUNTY WATER DISTRICT does hereby authorize the execution of the "Amendatory Contract Among the UNITED STATES OF AMERICA, STOCKTON EAST WATER DISTRICT and CALAVERAS COUNTY WATER DISTRICT Providing For Payment and Conservation Use of the New Hogan Project."

BE IT FURTHER RESOLVED that the President is hereby authorized to execute said Amendatory Contract.

PASSED AND ADOPTED this 10th day of December, 1987 by the following vote:

AYES: Directors Clark, Johnson, Neilsen, Gleason and Queirolo

NOES: None

ABSENT: None

CALAVERAS COUNTY WATER DISTRICT

President

ATTEST:

Steve Felts
Secretary

CERTIFIED A TRUE COPY
Linda O'Keefe
Assistant Secretary
Calaveras County Water District

BUREAU OF RECLAMATION
OFFICIAL FILE COPY
RECEIVED
MAR 17 1988

RESOLUTION OF THE BOARD OF DIRECTORS OF STOCKTON EAST WATER DISTRICT

RESOLUTION 87-88-26

RESOLUTION AUTHORIZING SIGNATURES ON AMENDMENT TO CONTRACT FOR USE OF NEW HOGAN WATER

WHEREAS, on February 16, 1988 the Board of Directors of Stockton East Water District adopted the Amendatory Contract Among the United States of America, Stockton East Water District and Calaveras County Water District Providing For Repayment And Conservation Use of New Hogan Project; and

WHEREAS, the United States of America has requested that signatures on the Amendatory Contract be authorized by Resolution of the Board of Directors of Stockton East Water District;

NOW, THEREFORE, BE IT RESOLVED, that the Board of Directors of Stockton East Water District approves and authorizes the Board President and Secretary of the Board to execute and sign the Amendatory Contract approved at the February 16, 1988 Board meeting.

PASSED AND ADOPTED by the Board of Directors of Stockton East Water District at a regular meeting held on March 15, 1988, by the following vote:

AYES: Solari, Dondero, Laven, Bozzano, MacNear, Huckins
NOES: Tone
ABSENT: None

Roger M. Huckins
ROGER M. HUCKINS, President
Stockton East Water District

ATTEST:

EDWARD M. STEFFANI, Secretary
Stockton East Water District

SECRETARY'S CERTIFICATE

I, EDWARD M. STEFFANI, Secretary of the Board of Directors of the STOCKTON-EAST WATER DISTRICT, Stockton, California, do hereby certify as follows:

The foregoing is a full, true and correct copy of a resolution duly adopted at a Regular Meeting of the Board of Directors of said District duly and regularly and legally held at the regular meeting place thereof on March 15, 1988, of which meeting all of the members of said Board of Directors had due notice and at which a majority thereof were present.

I have carefully compared the same with the original minutes of said meeting on file and of record in my office, and the foregoing is a full, true, and correct copy of the original resolution adopted at said meeting and entered in said minutes.

Said resolution has not been amended, modified, or rescinded since the date of its adoption, and the same is now in full force and effect.

Dated: 3/15/88

EDWARD M. STEFFANI
Secretary of the Board
STOCKTON-EAST WATER DIST

(SEAL)

MEMORANDUM OF UNDERSTANDING

BETWEEN

CALAVERAS COUNTY WATER DISTRICT

AND

STOCKTON EAST WATER DISTRICT

WHEREAS, on August 25, 1970 Calaveras County Water District (Calaveras) and Stockton East Water District (Stockton) entered into a contract with the United States of America providing for repayment and conservation use of New Hogan Project; and

WHEREAS, on August 25, 1970 Calaveras and Stockton entered into a contract providing for the use, repayment and administration of water from the New Hogan Project; and

WHEREAS, the New Hogan Project is operated by the US Corps of Engineers as a multi-purpose reservoir for recreation, flood control and conservation use; and

WHEREAS, contract between Calaveras, Stockton and United States reserves a storage basin of 15,000 acre feet for silting and storage of water for recreational and incidental uses; and

WHEREAS, the US Corps of Engineers through the District Engineer has developed an operational plan for the storage, regulation and release of flood control waters; and

WHEREAS, Calaveras filed an Application with the Federal Energy Regulatory Commission (FERC) for License to construct an electrical generating facility at New Hogan Dam; and

WHEREAS, it is the desire of Calaveras and Stockton to maximize the combined conservation and power generation potential of New Hogan and the Calaveras watershed.

NOW, THEREFORE, BE IT RESOLVED that Calaveras and Stockton are entering into this Memorandum of Understanding (MOU) to cooperatively pursue the greater use of water from New Hogan, to clarify the application of various contract terms, to resolve the conflict of the parties with respect to the proposed New Hogan Power Plant Project and to jointly investigate the availability and development of additional water supplies.

The Contract between Calaveras and Stockton provides for a distribution of the conservation yield based on a yield study prepared by Murray, Burns and Kienlen dated May 4, 1970. As a result of a study dated November 4, 1980 by Murray, Burns and Kienlen, Calaveras and Stockton wish to consider modification of the parameters used to develop the original yield study and thus increase the amount of water yield and assume risks which differ from those on which the 1970 study was based. In so doing, each party recognizes the need to protect and provide for certain needs and therefore wish to define the minimum delivery amounts which shall dictate the maximum reservoir drawdown. Calaveras shall have reserved for its uses up to 7,700 acre feet plus 350 acre feet for water rights and Stockton shall have reserved for its uses up to 15,000 acre feet plus 12,650 acre feet for water rights.

The parties recognize that certain contract provisions may be conflicting due to this MOU but agree that at such time as conflicts arise the parties shall confer to resolve any conflict in keeping with the concepts developed in

this MOU. With respect to the provisions of Paragraph 5(A)(1) of the District's contract, the definition of "P", project water, shall be "Project Water, but in no event less than 71,100 acre feet".

Stockton shall prepare and submit to Calaveras a revised Operations Plan which Calaveras shall in good faith review and comment on, and then the parties shall jointly agree on a Final Operations Plan no later than December 31, 1982. This Plan may thereafter be modified by agreement of the parties.

Calaveras shall review its ultimate use and buildup schedule set forth in said August 25, 1970 contract and shall submit a revised use and buildup schedule to Stockton for good faith review and comment by July 1, 1983.

Calaveras filed an Application for License on October 13, 1981 with the Federal Energy Regulatory Commission (FERC) for Project No. 2903-001, a proposed 2.5 megawatt unit at New Hogan Dam. Stockton, on February 19, 1982, filed a petition to intervene and a Notice of Intent to file a competing application. In recognition of the desires and interests expressed in this MOU, and immediately upon mutual agreement between Calaveras and Stockton of this MOU or any modification thereof, then Stockton agrees to withdraw its petition, not file a competing application and to cooperate with Calaveras' efforts to develop and operate the hydroelectric project.

Stockton and Calaveras have a mutual need for additional water supplies as noted above, and Calaveras has submitted to Stockton a number of options for developing additional water supplies within Calaveras County. The parties agree that they shall investigate joint development of these options and in so doing Calaveras shall provide to Stockton its records, maps and other data regarding those options. The parties shall then jointly consider the feasibility of

pursuing in additional detail development of one or more of those alternative projects. It is further understood that if one party desires not to proceed, the other may do so independently, and will not be hindered or opposed by the non-participating party.

PASSED AND ADOPTED by the Board of Directors of STOCKTON-EAST WATER DISTRICT on the 15th day of June, 1982 by Resolution No. 82-83-07.

STOCKTON-EAST WATER DISTRICT

By _____
President

ATTEST:

_____
Secretary

PASSED AND ADOPTED by the Board of Directors of CALAVERAS COUNTY WATER DISTRICT on the 10th day of June, 1982 by Resolution No. 3441.

CALAVERAS COUNTY WATER DISTRICT

By _____
President

ATTEST:

_____
Secretary

Resolution No. 82-83-07(

RESOLUTION OF THE BOARD OF DIRECTORS OF THE STOCKTON-EAST WATER DISTRICT RELATIVE TO ADOPTION OF THE MEMORANDUM OF UNDERSTANDING BETWEEN CALAVERAS COUNTY WATER DISTRICT (CCWD) AND STOCKTON-EAST WATER DISTRICT (SEWD) REGARDING THE PROPOSED NEW HOGAN POWER PLANT PROJECT AND RELATIVE TO JOINTLY INVESTIGATING THE AVAILABILITY AND DEVELOPMENT OF ADDITIONAL WATER SUPPLIES

WHEREAS, on August 25, 1970 Stockton-East Water District (SEWD) and Calaveras County Water District (CCWD) entered into a contract with the United States of America providing for repayment and conservation use of New Hogan Project; and

WHEREAS, on August 25, 1970 SEWD and CCWD entered into a joint contract providing for the use, repayment and administration of water from the New Hogan Project; and

WHEREAS, it is the desire of SEWD and CCWD to maximize the conservation use and power generation potential of New Hogan and the Calaveras watershed; and

WHEREAS, it is the desire of SEWD and CCWD to enter into a Memorandum of Understanding to cooperatively pursue the greater use of water from New Hogan, to clarify the application of various contract terms, to resolve the conflict of the parties with respect to the proposed New Hogan Power Plant Project and to jointly investigate the availability and development of additional water supplies.

NOW, THEREFORE, BE IT RESOLVED, that the Board of Directors of SEWD approves and adopts said Memorandum of Understanding, dated May 25, 1982.

PASSED AND ADOPTED BY THE BOARD OF DIRECTORS OF THE STOCKTON-EAST WATER DISTRICT ON THE 15TH DAY OF JUNE, 1982.

PERRY H. TAFT, President
Board of Directors
Stockton-East Water District

ATTEST

JAMES D. BEARD, II, Secretary
Board of Directors
Stockton-East Water District

(SEAL)

SECRETARY'S CERTIFICATE

I, JAMES D. BEARD, II, Secretary of the Board of Directors of the STOCKTON-EAST WATER DISTRICT, Stockton, California, do hereby certify as follows:

The foregoing is a full, true and correct copy of a resolution duly adopted at a Regular Meeting of the Board of Directors of said District duly and regularly and legally held at the regular meeting place thereof on _____, of which meeting all of the members of said Board of Directors had due notice and at which a majority thereof were present.

I have carefully compared the same with the original minutes of said meeting on file and of record in my office, and the foregoing is a full, true, and correct copy of the original resolution adopted at said meeting and entered in said minutes.

Said resolution has not been amended, modified, or rescinded since the date of its adoption, and the same is now in full force and effect.

Dated: 4/15/82

James D. Beard II

JAMES D. BEARD, II
Secretary of the Board
STOCKTON-EAST WATER DISTRICT

(SEAL)

RESOLUTION NO. 3441

WHEREAS, CALAVERAS COUNTY WATER DISTRICT (CCWD) and STOCKTON EAST WATER DISTRICT (SEWD) entered into an agreement with the U.S. Corps of Engineers on August 25, 1970 for use of water out of New Hogan Reservoir, and also entered into an agreement jointly concerning use, repayment and administration of water from said New Hogan Reservoir; and

WHEREAS, it is the desire of CCWD and SEWD to maximize the combined conservation and power generation potential of New Hogan and the Calaveras watershed; and

WHEREAS, CCWD and SEWD have hereby decided to enter into a Memorandum of Understanding to cooperatively pursue the greater use of water from New Hogan, to clarify the application of various contract terms, to resolve the conflict of the parties with respect to the proposed New Hogan Power Plant Project and to jointly investigate the availability and development of additional water supplies.

NOW, THEREFORE, BE IT RESOLVED that the President of the Board of Directors of CALAVERAS COUNTY WATER DISTRICT be authorized to execute said Memorandum of Understanding.

PASSED AND ADOPTED this 10th day of June, 1982, by the following vote:

AYES: Directors Queirolo, Neilsen, Sisco and Silveira
NOES: None
ABSENT: Director Johnson

CALAVERAS COUNTY WATER DISTRICT

President

ATTEST:

Secretary

Execution Copy

August 25, 1970

CONTRACT BETWEEN THE STOCKTON & EAST SAN JOAQUIN WATER CONSERVATION DISTRICT AND THE CALAVERAS COUNTY WATER DISTRICT PROVIDING FOR THE USE, REPAYMENT, AND ADMINISTRATION OF WATER FROM THE NEW HOGAN PROJECT OF THE UNITED STATES.

THIS CONTRACT is made this 25th day of August, 1970, between the STOCKTON & EAST SAN JOAQUIN WATER CONSERVATION DISTRICT, a political subdivision of the State of California, and the CALAVERAS COUNTY WATER DISTRICT, a political subdivision of the State of California.

EXPLANATORY RECITALS

I.

The United States of America has agreed that the two contracting parties herein may contract for the water of the New Hogan Project, upon terms to be mutually agreed, provided that prior to the execution of any contract with the United States the two contracting parties herein enter into an operating agreement providing among other things for the division between the parties of the water from the New Hogan Project, the payment of the costs becoming due the United States under the proposed contract, and the appointment of a watermaster.

II.

The contracting parties herein, that is the DISTRICTS, have jointly requested and reviewed a yield study for the New Hogan Project prepared by the United States Bureau of Reclamation dated August 1968, have sponsored for their respective service areas a study of water use and water rights on the Calaveras River prepared by Murray, Burns & Kienlen Civil Engineers dated February 7, 1969, and have caused to be made an Operation Study, and on the

basis of the information contained in those studies have apportioned the New Hogan Project water as set forth by this CONTRACT.

III.

The parties recognize that STOCKTON DISTRICT may enter into a separate long-term contract with the United States for delivery of water from Folsom South Canal to supplement the supplies available to STOCKTON DISTRICT under this CONTRACT, the Bureau Contract, and otherwise.

IV.

The Bureau is authorized and is now constructing Folsom South Canal pursuant to Congressional authorization and said canal will have a hydraulic capacity substantially in excess of the requirements of the service area in Sacramento and San Joaquin Counties. Said excess capacity is anticipated to be used to convey water for the proposed East Side Division of the Central Valley Project, the feasibility of which has been reported on by the Bureau of Reclamation and is now under review by the State of California. The parties recognize that when and if said East Side Division is authorized and constructed the CALAVERAS DISTRICT may be able to obtain additional supplemental water supplies from said Division.

THEREFORE, IN CONSIDERATION OF THE TERMS AND CONDITIONS HEREIN CONTAINED, IT IS AGREED AS FOLLOWS:

1. Definitions. As used herein, the following terms shall have the stated meanings:

1. (A) "accounting year" shall mean the twelve consecutive calendar months beginning April 1 of each year and ending March 31 of the succeeding year.

1. (B) "agricultural water" shall mean Project Water used primarily in the commercial production of agricultural crops or livestock, including domestic use incidental thereto, on tracts of land operated in units of more than two (2) acres.

1. (C) "Articles" are preceded by an Arabic number; "Sub-articles" are preceded by a capital-case letter in parenthesis; "Paragraphs" are preceded by an Arabic number in parenthesis; "sub-paragraphs" are preceded by a lower-case letter in parenthesis.

1. (D) "assumed water rights" shall mean the rights to the natural flow of the Calaveras River, including the percolation losses necessary to deliver the water required to satisfy said rights as agreed upon by the parties in this CONTRACT.

1. (E) "Bureau" shall mean the Bureau of Reclamation of the United States Department of the Interior.

1. (F) "Bureau Contract" shall mean a repayment contract signed by the DISTRICTS and the United States.

1. (G) "CALAVERAS DISTRICT" shall mean the CALAVERAS COUNTY WATER DISTRICT.

1. (H) "DISTRICTS" shall mean the CALAVERAS DISTRICT and the STOCKTON DISTRICT collectively.

1. (I) "Folsom South Canal" shall mean the Folsom South Canal of the American River Division of the Central Valley Project, California.

1. (J) "Initial Delivery Date" shall mean January 1st of the year in which the Secretary of the Interior of the United States announces that water from the Folsom South Canal is first available for delivery to STOCKTON DISTRICT under a long-term contract.

1. (K) "irrigation season" shall mean the first seven consecutive calendar months of each accounting year, i.e., the period

x

extending from April 1 to October 31 of each such year.

1. (L) "M & I Water" shall mean Project Water other than agricultural water.

1. (M) "New Hogan Project" shall mean the New Hogan Project of the United States located on the Calaveras River, in Calaveras County, California.

1. (N) "Operations Study" shall mean that study prepared by Murray, Burns & Kienlen under date of May 4, 1970, a copy of which is on file in each of the DISTRICT offices.

1. (O) "Project Water" shall mean the total amount of water available to the DISTRICTS from New Hogan Reservoir each year under the Bureau Contract less the amounts of water necessary to satisfy assumed water rights. Project Water may be determined by the following formula: $P = D + C_r - W_c - W_s$.

1. (P) "Repayment Obligation" is the amount set out in the Bureau Contract as the "total reimbursable construction allocation".

1. (Q) "STOCKTON DISTRICT" shall mean the STOCKTON AND EAST SAN JOAQUIN WATER CONSERVATION DISTRICT.

1. (R) "water entitlement" shall mean the percent of the Project Water that each DISTRICT at a given time is entitled to in accordance with the provisions of this CONTRACT. Any computation using this term shall be made using the water entitlement as it exists at the time of the computation.

1. (S) "Watermaster" shall be as defined in Article 11 herein.

1. (T) (Letters):

1. (T) (1) "AF" shall mean acre feet.

1. (T) (2) "C_c" shall mean annual diversions to CALAVERAS DISTRICT, including W_c, from the channel of the Calaveras River downstream from New Hogan Dam measured in AF.

1. (T) (3) "C_{cm}" shall mean the portion of C_c used as M & I water.

1. (T) (4) "C_r" shall mean annual diversions from the New Hogan Reservoir pool to CALAVERAS DISTRICT measured in AF.

1. (T) (5) "C_{rm}" shall mean the portion of C_r used as M & I water.

1. (T) (6) "D" shall mean the annual releases from the New Hogan Reservoir Pool in AF measured at the gage located on the Calaveras River approximately 1/2 mile downstream from New Hogan Dam which releases are made pursuant to direction of the Watermaster (thus excluding spills and flood control releases).

1. (T) (7) "P" shall mean Project Water as defined in Subarticle (O) of this Article.

1. (T) (8) "S" shall mean the quantity of water in AF available annually to STOCKTON DISTRICT determined by the following formula: $S = D - C_c$.

1. (T) (9) "S_m" shall mean the portion of S used as M & I water.

1. (T) (10) "W_c" shall mean the quantity of water in AF necessary annually to satisfy the assumed water rights within CALAVERAS DISTRICT. The parties agree that, subject to revision as provided in Subarticle 3(A), said quantity of water necessary for CALAVERAS DISTRICT is 350 AF.

1. (T) (11) "W_s" shall mean the quantity of water in AF necessary annually to satisfy the assumed water rights within STOCKTON DISTRICT. The parties agree that, subject to revision as provided in Subarticle 3(A), said quantity of water necessary for STOCKTON DISTRICT is 12,650 AF.

2. Payment of Obligations Under the Bureau Contract. STOCKTON DISTRICT, subject to the execution of the Bureau Contract, shall pay the charges imposed by the Bureau Contract.

3. Determination of Project Water.

3. (A) It is agreed by the parties that initially the sum of W_c and W_s shall equal 13,000 AF and that release of this quantity

annually from New Hogan Reservoir to the Calaveras River will satisfy the assumed water rights within the DISTRICTS. The amounts of water necessary to satisfy W_c and W_s shall be considered to remain constant for ten year periods, the first of which shall begin with the date of this CONTRACT. At any time after the expiration of a ten year period either DISTRICT can request that a redetermination be made whether either or both W_c or W_s should be changed to reflect changes in use of lands by owners having rights to use of the natural flow of the Calaveras River under the laws of the State of California. If the DISTRICTS cannot agree on the changes, if any, to be made, the issue shall be submitted to a civil engineer experienced in water matters and his decision shall be final. If the DISTRICTS cannot agree on an engineer, the matter shall be submitted to arbitration as set out in Article 12. After any agreement between the DISTRICTS to change W_c or W_s, or both, or after any decision rendered by a civil engineer or by arbitration as provided herein, no new request for such a redetermination may be made by either DISTRICT until the expiration of the new ten year period commencing with the date of the preceding request for a redetermination.

3. (B) Water shall be scheduled by the DISTRICTS as follows:

3. (B) (1) (a) On or before March 15 of each accounting year, CALAVERAS DISTRICT shall furnish to Watermaster an initial schedule setting forth its desired monthly quantities of water in AF for the next succeeding accounting year. The total of the monthly amounts of water in said initial schedule shall not exceed, by more than the amount of W_c, the maximum water entitlement of CALAVERAS DISTRICT under this CONTRACT during the succeeding accounting year. The initial schedule shall be accompanied by the advance payment specified in Subarticle 5(D) below.

3. (B) (1) (b) Watermaster shall combine the initial schedule furnished by CALAVERAS DISTRICT with a similar initial

schedule for STOCKTON DISTRICT to determine the total amount of water and the scheduled availability thereof as desired by both DISTRICTS during the succeeding accounting year.

3. (B) (1) (c) The total amount of water scheduled initially pursuant to subparagraph 3(B)(1)(b) above shall not exceed 84,100 AF.

3. (B) (2) On April 1 of each accounting year the Watermaster, using the total amounts of water initially scheduled pursuant to Paragraph 3(B)(1) above, shall estimate whether a reduction should be made in the total amount of water from that initially scheduled by both DISTRICTS for the accounting year. The estimate shall be based on a forecast of the content in AF of New Hogan Reservoir on the last day of the current irrigation season, which forecast shall be made by the Watermaster as follows:

3. (B) (2) (a) Utilizing the techniques employed in the Operation Study and beginning with the amount of water in, and the surface area of, the reservoir on March 31, the monthly quantities of total water initially scheduled by both DISTRICTS during the irrigation season shall be assumed withdrawn as scheduled. Inflows to the reservoir and rates of evaporation each month shall be assumed to occur as set forth in the following table:

Month	Inflow (AF)	Evaporation Rate (feet per month)
April	3,500	0.3
May	2,800	0.4
June	1,900	0.6
July	1,600	0.9
August	1,400	0.7
September	900	0.5
October	600	0.3

Amounts of evaporation in AF each month shall be the product of the evaporation rate for that month and the area of reservoir water

surface corresponding to the amount of water in storage at the end of the prior month.

3. (B) (2) (b) In the event the estimate made pursuant to subparagraph 3(B)(2)(a) above indicate that withdrawal of the total water initially scheduled by the DISTRICTS will result in less than 71,400 AF of water remaining in the reservoir on the last day of the irrigation season, the total amount of water available for both DISTRICTS during the accounting year shall be reduced by 17,800 AF so that such total amount of available water will not exceed 66,300 AF.

3. (B) (2) (c) In the event said reduction of 17,800 AF in total scheduled water is required pursuant to subparagraph 3(B)(2)(b) above, and subject to the provisions of Subarticle 4(C) below, Watermaster shall adjust downward the total amount of water available to CALAVERAS DISTRICT from that scheduled initially under subparagraph 3(B)(1)(a) above. Said downward adjustment shall be made by reducing the total water scheduled by CALAVERAS DISTRICT during the irrigation season by the product of 17,800 AF and the percent of Project Water initially scheduled by CALAVERAS DISTRICT in the schedule submitted pursuant to subparagraph 3(B)(1)(a) above.

3. (B) (2) (d) Watermaster, after adjusting downward CALAVERAS DISTRICT'S initial schedule as provided in subparagraph 3(B)(2)(c) above, shall adjust downward STOCKTON DISTRICT'S initial schedule, subject to the provisions of Subarticle 4(C), so the total water scheduled by both DISTRICTS for the accounting year shall not exceed 66,300 AF.

As an example illustrating the adjustments to the initial schedules of both DISTRICTS under subparagraphs 3(B)(2)(c) and (d) above in the event the total of the water desired by both DISTRICTS during the accounting year must be limited to 66,300 AF pursuant to subparagraph 3(B)(2)(b) above, let it be

3(B)(2)(a) to 3(B)(2)(d)

assumed that, with applicable W_c at 350 AF, CALAVERAS DISTRICT initially schedules 4,350 AF of water for diversion during the accounting year, an amount which does not exceed its maximum water entitlement at the time. STOCKTON DISTRICT initially schedules the remaining 79,750 AF of the total scheduled supply of 84,100 AF.

Thus, Project Water initially scheduled by CALAVERAS DISTRICT is 4,350 minus 350, or 4,000 AF, or 5.63% of the total Project Water (71,100 AF) initially scheduled. Pursuant to subparagraph 3(B)(2)(c), the 4,000 AF of Project Water initially scheduled for diversion during the irrigation season by CALAVERAS DISTRICT will be reduced by 17,800 x 0.0563, or 1,002 AF, to 2,998 AF, and the total diversion by CALAVERAS DISTRICT during the accounting year will be limited to 2,998 plus 350, or 3,348 AF. STOCKTON DISTRICT will adjust its initial schedule for the accounting year to accord with the remainder of the available Project Water which is 66,300 minus 13,000 minus 2,998, or 50,302 AF, and accordingly will have available during the accounting year 50,302 plus 12,650, or 62,952 AF.

3. (B) (2) (e) For use in the forecasting provided in this Paragraph 3(B)(2) the Watermaster shall treat any releases scheduled from New Hogan Reservoir during November through March following the irrigation season as though such releases were made during the irrigation season and during the month of October.

3. (B) (2) (f) For the purposes of computing the reductions in total scheduled water pursuant to subparagraphs 3(B)(1)(c) and (d) above, the Watermaster shall treat any irrigation releases scheduled from New Hogan Reservoir during January, February, and March immediately preceding the irrigation season as though such releases had been made during the irrigation season and during April and shall treat any irrigation releases scheduled from the

reservoir in November and December as though such releases were made in October.

3. (B) (3) In the event the March 31 reservoir content and anticipated inflow to and evaporation from the reservoir indicate that reservoir content on the last day of the irrigation season will exceed 162,000 AF, Watermaster may, and at the request of CALAVERAS DISTRICT shall, make an estimate in a manner similar to that provided for in Paragraph 3(B)(2) above to determine whether water will be available in excess of the total amount scheduled for use during the irrigation season in the initial schedules prepared pursuant to Paragraph 3(B)(1). Said estimate may be made any time during the month of April but shall be considered tentative until confirmed or revised to reflect the content of the reservoir on April 30. The difference between 162,000 AF and the reservoir content estimated pursuant to this Paragraph 3(B)(3) to exist on the last day of the irrigation season shall be available to either or both DISTRICTS for use during the irrigation season as follows:

3. (B) (3) (a) Watermaster shall inform CALAVERAS DISTRICT promptly of the results of any forecast made pursuant to this Paragraph 3(B)(3) and CALAVERAS DISTRICT shall have the option of increasing the amounts of water initially scheduled by it under Paragraph 3(B)(1) for diversion during the irrigation season. The amount of said increase shall be not more than the product of the percent of Project Water initially scheduled by CALAVERAS DISTRICT and the forecasted excess over 162,000 AF of the reservoir content on the last day of the irrigation season. CALAVERAS DISTRICT shall inform Watermaster whether it chooses to exercise the option herein provided within five days after being notified that excess water is available and shall furnish to Watermaster a schedule revised to conform with this subparagraph 3(B)(3)(a) at the time CALAVERAS DISTRICT so informs Watermaster. No additional advance payment shall accompany any schedule revised in accordance with this subparagraph 3(B)(3)(a).

3. (B) (3) (b) STOCKTON DISTRICT shall have the option of using all water available under Paragraph 3(B)(3) above, and not desired by CALAVERAS DISTRICT under its option exercised pursuant to subparagraph 3(B)(3)(a). Watermaster shall revise STOCKTON DISTRICT'S initial schedule of water use during the irrigation season to conform with the water available to it under this subparagraph 3(B)(3)(b), and shall inform CALAVERAS DISTRICT promptly of the revised schedule.

3. (B) (3) (c) In the event Watermaster estimates prior to April 30 of an accounting year that excess water will be available to DISTRICTS under Paragraph 3(B)(3) and the confirming forecast reflecting the actual reservoir content on April 30 indicates that withdrawal of the excess water scheduled pursuant to subparagraphs 3(B)(3)(a) and (b) will result in a reservoir content of less than 162,000 AF on the last day of the irrigation season, the amounts of the excess water tentatively made available to each DISTRICT shall immediately be reduced proportionately in such total amounts as will result in an estimated reservoir content of not less than 162,000 AF on the last day of the irrigation season.

3. (B) (4) On or before April 2 of each year the Watermaster shall deliver to the office of CALAVERAS DISTRICT a written report showing his estimates of the total amounts of water to be available to each DISTRICT during the accounting year beginning April 1, as determined pursuant to Paragraphs 3(B)(2), and the monthly schedule of deliveries of such totals. If the total water available to both DISTRICTS during the irrigation season is reduced in accordance with subparagraphs 3(B)(2)(c) and (d) the revised schedule prepared by Watermaster for CALAVERAS DISTRICT shall adjust the monthly amounts initially scheduled each month proportionately and the revised schedule for STOCKTON DISTRICT shall conform to said revised schedule of CALAVERAS DISTRICT within the total amount of water available to both DISTRICTS during the accounting

year. If CALAVERAS DISTRICT is for any reason in disagreement with the foregoing determination and report by Watermaster, CALAVERAS DISTRICT shall give written notice of said disagreement to Watermaster on or before April 5. If such a notice of disagreement is received by the Watermaster on or before April 5, Watermaster shall arrange a joint meeting of the Boards of Directors of the DISTRICTS to be held not later than April 10. Said determination of the Watermaster may be revised at said joint meeting by action approved by a majority of each Board of Directors. If said Boards do not agree on a revision and CALAVERAS DISTRICT continues to object to the determination made by the Watermaster, then the matter shall be submitted to a civil engineer experienced in water matters and his decision shall be final. If the DISTRICTS cannot agree on a civil engineer, the matter shall be submitted to arbitration pursuant to Article 12 of this CONTRACT. During the period following April 2 and until the determination of the Watermaster has been modified by agreement of the Boards of Directors or by a decision of a civil engineer or through arbitration, the scheduled amounts of water set forth in the report of the Watermaster shall be complied with by both DISTRICTS.

3. (B) (5) In the event the forecast made pursuant to Paragraph 3(B)(3) indicates that water in excess of the initial schedules prepared pursuant to Paragraph 3(B)(1) will be available during the irrigation season and CALAVERAS DISTRICT informs the Watermaster that it chooses to exercise its option in accordance with subparagraph 3(B)(3)(a), such action of CALAVERAS DISTRICT shall be deemed to indicate its approval of the determination of the Watermaster. In the event CALAVERAS DISTRICT does not choose to exercise said option and also, within the five days provided it for such choice, informs Watermaster of its disagreement with the Watermaster's estimate that excess water will be available during the irrigation season, Watermaster will arrange for a joint meeting

of the Boards of Directors of the DISTRICTS to be held on one of the days May 1-5, inclusive, when results of the confirming forecast made pursuant to Paragraph 3(B)(3) may be revised at said joint meeting by action of a majority of each Board of Directors. If said Boards do not agree on a revision and CALAVERAS DISTRICT continues to object to the determination made by the Watermaster, then the matter shall be submitted to a civil engineer experienced in water matters and his decision shall be final. If the DISTRICTS cannot agree on a civil engineer, the matter shall be submitted to arbitration as set out in Particle 12. During the period following CALAVERAS DISTRICT'S notification of disagreement with the determination of the Watermaster made pursuant to Paragraph 3(B)(3) and until that determination has been confirmed or modified by agreement of the Boards of Directors or by decision of a civil engineer or through arbitration, only the amounts of water initially scheduled pursuant to Paragraph 3(B)(1) shall be available to each DISTRICT.

3. (B) (6) In entering into this CONTRACT the DISTRICTS are agreed that scheduling of, and diversion and releasing of water from, New Hogan Reservoir and the channel of Calaveras River by each DISTRICT and the individual water users therein, shall be so administered as to enable the water entitlements of each DISTRICT to be fully supplied, subject to all of the applicable provisions of this Article 3 and of Article 4, during a recurrence of the water-supply conditions of the period of years covered by the Operation Study. If as shown in the calculations made pursuant to Paragraph 5(D)(3) CALAVERAS DISTRICT has taken in excess of the total amount of water scheduled pursuant to Paragraph 3(B)(1) or as that schedule may have been revised pursuant to Paragraphs 3(B)(2), 3(B)(3), or 5(D)(2), or if Watermaster has caused to be released from New Hogan Reservoir water in excess of the total amount scheduled for STOCKTON DISTRICT pursuant to Paragraphs 3(B)(1) or as that schedule may have been revised pursuant to Paragraphs 3(B)(2) or 3(B)(3), the DISTRICTS recognize that in subsequent years the ability of either or both DISTRICTS to fully secure its or their water entitlements

under said water-supply conditions may be jeopardized. Accordingly, if CALAVERAS DISTRICT has so taken excess water, or if Watermaster has so caused excess water to be released to STOCKTON DISTRICT, the following actions shall be taken.

3. (B) (6) (a) If CALAVERAS DISTRICT has taken water during an accounting year in excess of the amounts so scheduled, Watermaster in the succeeding accounting year, shall reduce the total amount of water scheduled by STOCKTON DISTRICT pursuant to subparagraphs 3(B)(1)(b) and (c), or 3(B)(2)(b) and (d), by the amount of such excess taking by CALAVERAS DISTRICT, and CALAVERAS DISTRICT shall make the payment to STOCKTON DISTRICT provided for in Paragraph 5(D)(4) below.

3. (B) (6) (b) If Watermaster has caused to be released from New Hogan Reservoir water in excess of the total amount scheduled for STOCKTON DISTRICT, then Watermaster, in the succeeding accounting year, shall reduce the total amount of water scheduled by STOCKTON DISTRICT pursuant to subparagraphs 3(B)(1)(b) and (c), or 3(B)(2)(b) and (d), by the amount of such excess releases.

3. (B) (6) (c) The actions provided for in this Paragraph 3(B)(6) shall not be required if either flood control releases are made during the November through March portion of the accounting year in which the excess taking or releasing of water occurred, or, if the Watermaster in a forecast made pursuant to Paragraph 3(B)(3) anticipates an October 31 reservoir content of more than 162,000 AF in the accounting year following the one in which the excess diversions or releases occurred.

3. (B) (7) Subject to the provisions of Subarticle 5(D) below, CALAVERAS DISTRICT may change its rates of diversion or its monthly schedule of diversion during the accounting year as follows:

3. (B) (7) (a) Rates of diversion at points located on the reservoir above New Hogan Dam may be changed at any time.

3. (B) (7) (b) Notification of a desire to change the rates of diversion from the channel of Calaveras River below New Hogan Dam shall be furnished the Watermaster a reasonable time in advance of the desired time of change to enable Watermaster to communicate with the District Engineer as provided in the Bureau Contract. The change in rate of diversion shall be made at the time established by the District Engineer and the Watermaster shall inform CALAVERAS DISTRICT of said time.

3. (C) (1) The Operation Study was adopted by the DISTRICTS to express certain principles of operating New Hogan Reservoir and to define certain limiting conditions governing operation of said reservoir. The Operation Study is based on the anticipated characteristics of the requirements of the DISTRICTS for water at the time of negotiating and executing this CONTRACT, which requirements are anticipated to be for irrigation service only, except for the use by CALAVERAS DISTRICT of a nominal quantity of M & I water. In the event either DISTRICT begins to deliver significant water from New Hogan Project for municipal and industrial purposes, and from time to time as such deliveries for municipal and industrial purposes are increased or decreased, it may be necessary to revise said Operation Study to conform with such changed use and to accordingly redefine the limiting conditions governing operation of said Reservoir. Upon the request of the Board of Directors of either of the DISTRICTS the Watermaster shall prepare, or cause to be prepared, such a revised study. Any such revisions shall employ the basic data in the Operation Study or agreed upon modifications of such data and shall comply with the following principles: First, the revised requirements on the Reservoir shall be so established as to make it unnecessary to reduce the content of New Hogan Reservoir below 15,000 AF at any time. Second, requirements by either DISTRICT for municipal and industrial water to the extent provided in

Subarticle 4(C) shall at all times be served without deficiency. Third, new operating limitations similar to those provided in subparagraphs 3(B)(1)(c), 3(B)(2)(b), and Paragraph 3(B)(3) shall be determined. Fourth, each revised Operation Study shall cover the same period of years, or an extension thereof, as were employed in the Operation Study.

3. (C) (2) Upon approval of any revised Operation Study by both DISTRICTS, said revised study shall become the Operation Study defined in Subarticle 1(N), and the limitations provided in subparagraphs 3(B)(1)(c), 3(B)(2)(b), and Paragraph 3(B)(3) shall be automatically amended accordingly.

3. (C) (3) If the DISTRICTS are unable to agree upon such a revised Operation Study or upon the need to make a revision in the Operation Study all of said issues shall be submitted to a civil engineer experienced in water matters and his decision shall be final, and if the DISTRICTS cannot agree on an engineer the matter shall be submitted to arbitration as set out in Article 12.

4. District Water Entitlements. The water entitlements of the DISTRICTS shall be as follows:

4. (A) The maximum water entitlement of CALAVERAS DISTRICT shall be 43.50% of the Project Water, provided that:

4. (A) (1) Until April 1, 1985, or until April 1 of the accounting year which begins after the initial delivery date, whichever is earlier, the CALAVERAS DISTRICT shall not take more than 10,000 AF of Project Water per year.

4. (A) (2) In the event CALAVERAS DISTRICT does not pay 43.50% of 1/40th of the repayment obligation in the 15th accounting year after the initial delivery date, the maximum water entitlement of CALAVERAS DISTRICT shall be reduced to such lesser percentage of 1/40th of the repayment obligation which the CALAVERAS DISTRICT does in fact pay in the 15th accounting year after the

initial delivery date. For example, if in the 15th accounting year referred to, CALAVERAS DISTRICT'S payment is 43.50% of 1/40th of the repayment obligation, then no adjustment shall be made in CALAVERAS DISTRICT'S maximum water entitlement. If, however, CALAVERAS DISTRICT'S payment in said 15th accounting year amounts to 25.00% of 1/40th of the repayment obligation, then CALAVERAS DISTRICT'S maximum water entitlement shall thereafter be no more than 25.00%.

4. (A) (3) It is anticipated, based on information presently available to the DISTRICTS, that the Folsom South Canal water service contract which hereafter may be made between the United States and STOCKTON DISTRICT will contain an option, which option may be exercised by STOCKTON DISTRICT at any time or times prior to the end of the 15th year after the initial delivery date, and which option will permit STOCKTON DISTRICT to take at least 30,928 AF more water than it is otherwise obligated to take under such Folsom South Canal water service contract. Insofar as concerns securing said option to take at least 30,928 AF within 15 years STOCKTON DISTRICT, in the course of negotiations with the Bureau, shall consult with CALAVERAS DISTRICT and shall permit CALAVERAS DISTRICT to participate in said negotiations. If STOCKTON DISTRICT enters into a contract for water service from the Folsom South Canal and such water service contract does not contain the full option set forth above but contains either, or both, an option period shorter or longer than 15 years, or an option which will not permit it to take at least 30,928 AF more than it is otherwise obligated to take, then Paragraph 4(A)(2) shall be automatically amended as follows:

4. (A) (3) (a) If said 15 year option period is reduced to a lesser period, or increased to a longer period, then the time in which CALAVERAS DISTRICT may build up to its maximum water entitlement shall be reduced or increased to the length of option

time granted to the STOCKTON DISTRICT in said Folsom South Canal water service contract.

4. (A) (3) (b) Upon execution of this CONTRACT by the parties, CALAVERAS DISTRICT will have an option to a water entitlement of 43.50% of the Project Water (0.4350 x 71,100) or 30,928.50 AF taken for purposes of calculations herein as 30,928 AF. If the amount of water subject to an option on the part of the STOCKTON DISTRICT in the Folsom South Canal water service contract is less than 30,928 AF then, not later than April 1 of the accounting year which begins after the initial delivery date, said maximum water entitlement of 43.50% shall be reduced by multiplying said 43.50% by the ratio of the amount of water in AF which the STOCKTON DISTRICT has under option to 30,928 AF, provided, however, that CALAVERAS DISTRICT, at its option, may avoid any part or all of such reduction by commencing and continuing annual payments toward the repayment obligation, which payments are proportional to the maximum water entitlement which CALAVERAS DISTRICT chooses to retain. For example, if the option accorded STOCKTON DISTRICT in its Folsom South Canal contract is for 20,000 AF, CALAVERAS DISTRICT's maximum water entitlement will be reduced to $\frac{20,000 \times 100}{30,928} \times 0.4350$, or 28.13%; however, if CALAVERAS DISTRICT chooses under its option to avoid this reduction in maximum water entitlement, and instead wishes to retain a maximum water entitlement of 43.50%, it shall commence and continue paying annually not less than 43.50 minus 28.13, or 15.37% of 1/40th of the repayment obligation. In the same example, with STOCKTON DISTRICT securing an option to only 20,000 AF in its Folsom South Canal contract, if CALAVERAS DISTRICT chooses to retain a maximum water entitlement of 40.00%, then it shall commence and continue paying annually 40.00 minus 28.13, or 11.87% of 1/40th, of the repayment obligation. Payments made under this subparagraph 4(A)(3)(b) shall in all respects be treated as though they were payments made for water actually used.

4(A)(3)(a) to 4(A)(3)(b)

4. (A) (4) At any time that this CONTRACT is in effect CALAVERAS DISTRICT may obtain a supply of water from the proposed East Side Division of the Central Valley Project or from any other source and may exchange water so obtained for water to which STOCKTON DISTRICT has become entitled pursuant to this CONTRACT provided that STOCKTON DISTRICT shall in any event be entitled to take without exchange 56.50% of the Project Water, and provided further, that water shall not be so exchanged unless:

4. (A) (4) (a) It is delivered to STOCKTON DISTRICT without additional charge to STOCKTON DISTRICT.

4. (A) (4) (b) It is delivered to STOCKTON DISTRICT without the STOCKTON DISTRICT being required to make any expenditure for purposes of receiving such exchange water which it would not otherwise be required to make were it not for the delivery of such exchange water.

4. (A) (4) (c) Such exchange water is of a quality equal to or better than the quality of water flowing in the Folsom South Canal at its intersection with the Calaveras River.

4. (A) (4) (d) Such exchange water is delivered to the STOCKTON DISTRICT at a point within the DISTRICT at or east of the Folsom South Canal and at an elevation not lower than the water surface in the Folsom South Canal at its intersection with the Calaveras River.

The right to so exchange water as set forth above in this Paragraph 4(A)(4) shall immediately terminate at any time that the CALAVERAS DISTRICT fails to comply with each and every condition set forth above in this Paragraph 4(A)(4).

4. (B) Subject to the payment obligations imposed on STOCKTON DISTRICT by this CONTRACT, STOCKTON DISTRICT shall be entitled, at its option, to take and use all Project Water CALAVERAS DISTRICT is not entitled to under this CONTRACT, or does not in fact use.

4. (C) In the event the Watermaster determines pursuant to Paragraph 3(B)(2) above that the total amount of available water

in any accounting year shall be 66,300 AF or less, the DISTRICTS shall apply the reduction in water available to each proportionately to so much of the water otherwise scheduled by each as is in excess of an amount of 7,700 AF plus W_c for use in CALAVERAS DISTRICT and 10,000 AF plus W_s for use in STOCKTON DISTRICT, which amounts shall be available to each DISTRICT respectively without deficiencies to the extent of assumed water rights and estimated municipal, industrial, and domestic use. Estimated municipal, industrial, and domestic use shall be determined from actual use during the preceding accounting year plus anticipated new uses for the current accounting year.

5. Payments By The Calaveras District.

5. (A) CALAVERAS DISTRICT shall pay to STOCKTON DISTRICT a sum equal to the product of CALAVERAS DISTRICT'S ultimate water entitlement determined pursuant to Paragraph 4(A)(2), expressed as a percentage, and the total Repayment Obligation as payment in full thereof by CALAVERAS DISTRICT of its share thereof. Said payment shall be made in the following manner until the entire amount with interest, where applicable, is paid:

5. (A) (1) During each accounting year no less than that percentage of the equal annual installment of the total Repayment Obligation, whether or not such an installment is due and payable in that particular accounting year, equal to the percentage of Project Water used by CALAVERAS DISTRICT during that accounting year; said percentage of the equal annual installment being determined by the formula $100\ (\frac{C_r + C_c - W_c}{P})$. If a balance is still outstanding at the time STOCKTON DISTRICT completes full repayment of the Repayment Obligation, the total amount then payable by CALAVERAS DISTRICT must be paid within 15 accounting years after STOCKTON DISTRICT completes full repayment of the total Repayment Obligation. During each accounting year of said 15 year period

CALAVERAS DISTRICT must pay no less than 1/15th of its total obligation due on the date said period begins.

5. (A) (2) During each accounting year, that percentage of the interest payable by STOCKTON DISTRICT to the Bureau for the use of M & I water that equals the percentage of M & I water used by CALAVERAS DISTRICT of the entire amount of M & I water allocated to that year under the Bureau Contract; said percentage of interest payable being determined by the formula $\frac{(C_{rm} + C_{cm})\ 100}{C_{rm} + C_{cm} + S_m}$. Payments under this Paragraph 5(A)(2) shall not be credited to CALAVERAS DISTRICT'S obligation under Subarticle 5(A) above.

5. (A) (3) When any payment provided for in Paragraph 5(A)(1) herein is due and payable in an accounting year subsequent to STOCKTON DISTRICT'S full repayment of the Repayment Obligation due under the Bureau Contract, CALAVERAS DISTRICT shall pay interest annually at the rate of four and one-half percent (4½%) on the full unpaid decreasing balance due under Subarticle 5(A).

5. (B) CALAVERAS DISTRICT shall pay to STOCKTON DISTRICT for each accounting year a sum equal to that percentage of the administration costs and operation, maintenance, and replacement costs that STOCKTON DISTRICT must pay to the Bureau each accounting year under the Bureau Contract that equals the percentage of Project Water used by CALAVERAS DISTRICT during that year; said percentage of contract administration costs and operation, maintenance, and replacement costs being determined by the formula $\frac{(C_r + C_c - W_c)}{P}\ 100$.

5. (C) Subject to the provisions herein on maximum use, CALAVERAS DISTRICT shall pay for, per accounting year, as a minimum, the amount of water shown on its buildup schedule attached hereto as Exhibit "A".

5. (D) An advance payment shall be made and adjusted as follows:

5(A)(1) to 5(D)

5. (D) (1) Upon submitting the initial schedule provided for in Paragraph 3(B)(1), CALAVERAS DISTRICT shall pay to STOCKTON DISTRICT an advance payment for the number of AF of Project Water ordered in such schedule. Such advance payment shall be computed as follows:

$$\frac{\text{Total AF scheduled minus } W_c}{40 \times 71{,}100} \times \text{Repayment Obligation}$$

plus

$$\frac{\text{Total AF scheduled minus } W_c}{71{,}100} \times \text{The operation, maintenance, replacement, and administrative costs to be paid by STOCKTON DISTRICT for the current year pursuant to the Bureau Contract.}$$

5. (D) (2) At any time CALAVERAS DISTRICT may request a revision in its then current schedule of monthly AF for the remainder of the accounting year. Such request for revision shall be submitted in writing to STOCKTON DISTRICT. If the request is for an increase in the total quantity of water scheduled for the accounting year, an additional advance payment shall be submitted to the Watermaster along with the request to STOCKTON DISTRICT; said additional advance payment shall be computed in the same manner as set forth in Paragraph 5(D)(1) above. Upon receipt of said request STOCKTON DISTRICT shall consider the same and shall within its sole discretion determine whether or not it will grant the request of CALAVERAS DISTRICT. STOCKTON DISTRICT shall reply to the request of the CALAVERAS DISTRICT within ten days. If an increase has been requested and STOCKTON DISTRICT does not approve said request for increase or approves a lesser amount than is covered by the additional payment accompanying the request for an increase, the Watermaster shall immediately make an appropriate refund of the advance payment or a proportional part thereof. If the request was for a reduction in the scheduled amount and STOCKTON DISTRICT has approved said reduction, the Watermaster shall immediately make a refund to

CALAVERAS DISTRICT, said refund to be calculated in the same manner as set forth in Paragraph 5(D)(1).

5. (D) (3) The Watermaster shall calculate the final amounts owed by CALAVERAS DISTRICT as of March 31 of each accounting year and shall present his calculations in a statement to CALAVERAS DISTRICT by June 1 of the succeeding accounting year. Failure of the Watermaster to present his calculations as provided herein shall not affect CALAVERAS DISTRICT'S obligations under this Article, but CALAVERAS DISTRICT shall not be in default for failure to pay said amounts during any period of such failure by the Watermaster. The Watermaster shall show in said statement any additional sums due STOCKTON DISTRICT because of water use in excess of the amount covered by the advance payment provided for in Paragraph 3(B)(1) and the amount of interest due for the preceding accounting year under Paragraphs 5(A)(2) and (3). Within 30 days after receiving the statement of the Watermaster CALAVERAS DISTRICT shall pay to STOCKTON DISTRICT any additional sums due STOCKTON DISTRICT.

5. (D) (4) In the event that as shown in the calculations made pursuant to Paragraph 5(D)(3) the use of CALAVERAS DISTRICT during the preceding accounting year has not been in accordance with its schedule as submitted pursuant to Paragraph 3(B)(1) or as said schedule may have been revised pursuant to Paragraphs 3(B)(2) or 5(D)(2), then in such event if the use has been less than scheduled STOCKTON DISTRICT shall retain any advance funds having been paid to it for that accounting year and the same shall be accounted for as though CALAVERAS DISTRICT had used the scheduled water in that accounting year. If CALAVERAS DISTRICT has taken in excess of the amount so scheduled and STOCKTON DISTRICT in the ensuing accounting year reduces its total scheduled water in accordance with the provisions of subparagraph 3(B)(6)(a), then CALAVERAS DISTRICT shall pay STOCKTON DISTRICT $15.00 for each acre foot of such

reduction by STOCKTON DISTRICT. Any amount due under this Paragraph 5(D)(4) shall be included in the statement rendered by the Watermaster to CALAVERAS DISTRICT on or before June 1 of each accounting year. In the event that STOCKTON DISTRICT is required to reduce its total scheduled water in accordance with the provisions of subparagraph 3(B)(6)(a) for one or more successive years, then for each of such successive years after the first year said sum of $15.00 for each AF shall be increased for each successive year by $5.00; that is, in the second successive year the rate per AF would be increased to $20.00 and in the fourth successive year the rate would be increased to $30.00. Said sums of $15.00 and $5.00 may from time to time be increased or decreased as the cost of water in the general area increases or decreases. Either DISTRICT may at any time request such an increase or decrease and if the DISTRICTS cannot agree upon the question of an increase or decrease the matter shall be submitted to a civil engineer experienced in water matters and his decision shall be final. If the DISTRICTS cannot agree on a civil engineer, the matter shall be submitted to arbitration pursuant to Article 12 of this CONTRACT. The provisions of this Subarticle 5(D) shall not relieve CALAVERAS DISTRICT from the obligation to use not more than the amount of water scheduled nor shall it in any way relieve the Watermaster from taking necessary action to enforce use of water by <u>both</u> DISTRICTS in accordance with applicable schedules.

5. (E) Irrespective of any of the foregoing, the total sum to be paid to STOCKTON DISTRICT by CALAVERAS DISTRICT for each accounting year pursuant to Paragraph 5(A)(1) until the Repayment Obligation under the Bureau Contract has been fully discharged, shall be not less than the amount paid the preceding accounting year.

6. <u>Remedies of Stockton District</u>. The right of CALAVERAS DISTRICT and the water users within that DISTRICT to receive Project Water is dependent upon performance by CALAVERAS DISTRICT of its obligations under this CONTRACT. If CALAVERAS DISTRICT fails for any reason to pay any sum due STOCKTON DISTRICT under this CONTRACT:

6. (A) Interest shall be payable by CALAVERAS DISTRICT on the delinquent sum at the rate of nine percent (9%) per annum on the delinquent amount.

6. (B) If any sum due under this CONTRACT remains delinquent for 12 months or longer, STOCKTON DISTRICT prior to any such sum being fully repaid, may upon written notice cause CALAVERAS DISTRICT'S water entitlement to Project Water to be reduced by the percentage that said delinquent sums bear to the total obligation at that time of the CALAVERAS DISTRICT under Subarticle 5(A). Any amounts so used to reduce CALAVERAS DISTRICT'S water entitlement and the interest on any such amounts shall no longer be an obligation of CALAVERAS DISTRICT and shall be deemed fully compensated by the increased water entitlement of STOCKTON DISTRICT. For example, during the period to the 15th accounting year referred to in Paragraph 4(A)(2) CALAVERAS DISTRICT'S maximum water entitlement is 43.50% and its Repayment Obligation under Subarticle 5(A) is 0.435 x $5,597,000 (said sum of $5,597,000 shall be automatically adjusted if the total reimburseable construction allocation announced by the Secretary of the Army pursuant to the Bureau Contract is a different sum), or $2,434,695. If CALAVERAS DISTRICT orders 7,110 AF of Project Water in such an accounting year, its advance payment which should accompany that order is 10% $\left(\frac{100 \times 7,110}{71,100}\right)$ of the annual payment of $210,000 due from the STOCKTON DISTRICT to the Bureau (assuming $140,000 due on Repayment Obligation = $65,000 O, M, & R + $5,000 administration). If the advance payment does not accompany the order and a 12-month period goes by, then the $2,434,695 will be reduced in the amount of $21,000 (10% of $210,000) to $2,413,695, and thereafter the CALAVERAS DISTRICT'S maximum water entitlement is $\frac{100 \times 2,413,695}{5,597,000}$, or 43.12%.

6. (C) If any sum due under this CONTRACT remains delinquent for 36 months or longer, STOCKTON DISTRICT, acting as Watermaster or otherwise, upon 30 days written notice to CALAVERAS DISTRICT, may terminate the total water entitlement of CALAVERAS DISTRICT, and STOCKTON DISTRICT in such event is authorized to sell

and dispose of the water to which CALAVERAS DISTRICT would otherwise but for such nonpayment be entitled, to any person, firm, or corporation within or without the DISTRICTS upon such terms and conditions as the STOCKTON DISTRICT shall determine, provided, that CALAVERAS DISTRICT may reacquire its said water entitlement at such time, if any, as said water entitlement is not disposed of or committed to others or in use in place of other water supplies which the STOCKTON DISTRICT has relinquished. If only a portion of such water entitlement is so available, then the CALAVERAS DISTRICT may reacquire such portion that is available. The ability of the CALAVERAS DISTRICT to reacquire water entitlement pursuant to this Subarticle 6(C) shall be subject to reduction by the operation of Subarticle 6(B), Paragraph 4(A)(2), and Paragraph 4(A)(3). Such right to reacquire water shall be subject to the condition that CALAVERAS DISTRICT shall pay to STOCKTON DISTRICT a sum calculated as follows: All delinquent sums including sums becoming delinquent after the exercise of the STOCKTON DISTRICT'S rights under this Subarticle 6(C), plus interest as set forth in Subarticle 6(A), less any income that STOCKTON DISTRICT has had during the period of termination from the sale or other disposition of the subject water, plus actual expenses of STOCKTON DISTRICT in temporarily disposing of water subject to such termination.

6. (D) During any period that CALAVERAS DISTRICT is in default under this CONTRACT, STOCKTON DISTRICT may require that CALAVERAS DISTRICT and all users of Project Water within CALAVERAS DISTRICT cease diversion from any pumps or other diversion works owned, operated, maintained, or authorized by CALAVERAS DISTRICT, whether such pumps or other diversion works are located at the New Hogan Reservoir pool or below, and if said diversion or any part

x

6(C) to 6(D)

of it does not cease, CALAVERAS DISTRICT authorizes the Watermaster to shut off, and in any reasonable fashion, temporarily disable any such pump or other diversion works. CALAVERAS DISTRICT expressly gives authority to the United States and the Watermaster during the period of such default to shut off, and by any reasonable means, temporarily disable any of said pumps or other diversion works, provided, however, that within the limits of CALAVERAS DISTRICT'S water entitlement the Watermaster shall furnish water to CALAVERAS DISTRICT water users upon payment in advance by those users of a charge per AF not in excess of what STOCKTON DISTRICT charges its water users for water of a similar type for a similar use. All amounts collected pursuant to this Subarticle 6(D) shall be credited, less actual expenses, to the delinquent sums owed by CALAVERAS DISTRICT.

6. (E) The remedies under this Article are cumulative and non restrictive. STOCKTON DISTRICT may use any, or any combination of, the remedies specified in this Article 6 and any other remedy or remedies allowed to it in law or equity, whether based upon breach of contract or otherwise.

6. (F) Any water use or diversion agreements made by CALAVERAS DISTRICT with its water users shall be expressly made subject to this CONTRACT and the remedies herein.

7. Remedies of Calaveras District. The right of STOCKTON DISTRICT and the water users within that DISTRICT to receive Project Water is dependent upon performance by the STOCKTON DISTRICT of its obligations under this CONTRACT.

7. (A) If STOCKTON DISTRICT fails to pay any sum due under the Bureau Contract, or fails to perform any other obligation due thereunder, the CALAVERAS DISTRICT may in its stead perform said obligation. To the extent that CALAVERAS DISTRICT pays any sum due under the Bureau Contract, such sum shall be credited to CALAVERAS DISTRICT'S obligation under Subarticle 5(A) herein. To the

extent that CALAVERAS DISTRICT'S payments exceed the amount that CALAVERAS DISTRICT would have had to pay under Subarticle 5(A) herein, such excess amount shall be deemed immediately delinquent and STOCKTON DISTRICT shall pay interest on said delinquent amounts at the rate of nine percent (9%) per annum until paid.

7. (B) If STOCKTON DISTRICT fails to pay any sum due under the Bureau Contract, or fails to perform any obligation due thereunder, including but not limited to the performance of the duties of the Watermaster, on 30 days written notice in advance to STOCKTON DISTRICT, CALAVERAS DISTRICT may exclude the STOCKTON DISTRICT as Watermaster hereunder and without any other authorization than herein contained, CALAVERAS DISTRICT is authorized to take over and perform all of the duties and responsibilities of STOCKTON DISTRICT as Watermaster, and to substitute CALAVERAS DISTRICT in all respects as Watermaster. Said right to so function as Watermaster shall continue until such time as STOCKTON DISTRICT has corrected the delinquency in payment or other failure.

7. (C) If any sum due under this CONTRACT remains delinquent for 36 months or longer, CALAVERAS DISTRICT, acting as Watermaster or otherwise, upon 30 days written notice to STOCKTON DISTRICT, may terminate the total water entitlement of STOCKTON DISTRICT, and CALAVERAS DISTRICT in such event is authorized to sell and dispose of the water to which STOCKTON DISTRICT would otherwise but for such nonpayment be entitled, to any person, firm, or corporation within or without the DISTRICTS (to the extent permitted by the Bureau Contract or any amendment thereto) upon such terms and conditions as the CALAVERAS DISTRICT shall determine, provided, that the STOCKTON DISTRICT may reacquire its said water entitlement at such time, if any, as said water entitlement is not disposed of or committed to others or in use in place of other water supply which CALAVERAS DISTRICT has relinquished. If only a portion of such water entitlement

is so available, then STOCKTON DISTRICT may reacquire such portion that is available. Such right to reacquire water shall be subject to the condition that STOCKTON DISTRICT shall pay to CALAVERAS DISTRICT a sum calculated as follows: All delinquent sums including sums becoming delinquent after the exercise of CALAVERAS DISTRICT'S rights under this Subarticle 7(C), plus interest as set forth in Subarticle 7(A) above, less any income that CALAVERAS DISTRICT has had during the period of termination from the sale or other disposition of the subject water, plus actual expenses of CALAVERAS DISTRICT in temporarily disposing of water subject to such termination.

7. (D) The remedies under this Article are cumulative and nonrestrictive. CALAVERAS DISTRICT may use any, or any combination of, the remedies specified in this Article 7 and any other remedy or remedies allowed to it in law or equity, whether based upon breach of contract or otherwise.

7. (E) Any water use or diversion agreements made by STOCKTON DISTRICT with its water users shall be expressly made subject to this CONTRACT and the remedies herein.

8. Delay in Payment. If, due to adverse economic conditions, or for any other reason, either or both DISTRICTS are unable to make payments required under this CONTRACT, or by the Bureau Contract, and the United States because of such inability grants a delay of a definite or indefinite period for payment under the Bureau Contract, then such delay shall be applied for the benefit of the DISTRICT experiencing such inability to make payments, and if both DISTRICTS are subject to such inability then the benefit of such delay shall be applied pro rata on the basis of the affected then current payment obligations of the respective DISTRICTS. This Article 8 shall be liberally construed to the end that any loss of water, the right to use water, or water entitlement by either DISTRICT, as a result of adverse economic conditions, or other causes beyond the control of a DISTRICT, shall be reduced or eliminated.

9. Vesting of Water Entitlements; Continuation of Agreement. At the conclusion and complete performance of both the Repayment Obligation of the Bureau Contract and the repayment provided under Subarticle 5(A) of this CONTRACT, both DISTRICTS shall become vested with the water entitlements for which they have respectively paid, subject only to what rights remain in the United States at the conclusion of the Repayment Obligation of the Bureau Contract. This CONTRACT shall then continue in effect in perpetuity, subject to all of its terms.

10. Area of Water Use. The CALAVERAS DISTRICT expressly agrees that no water from the New Hogan Project shall be used by it or through it by a third party beyond the boundaries shown on the attached map marked Exhibit "B". All water sales, use, or distribution contracts made by CALAVERAS DISTRICT shall be expressly subject to the provisions of this Article 10.

11. Watermaster.

11. (A) The STOCKTON DISTRICT is hereby appointed Watermaster under this CONTRACT and the Bureau Contract. The function of the Watermaster shall be exercised by the Secretary-Manager of STOCKTON DISTRICT or by any other person or position designated by resolution of the Board of Directors of STOCKTON DISTRICT. It shall be the duty of the Watermaster to:

11. (A) (1) Exercise general supervision over the administration of this CONTRACT and general administration on behalf of the DISTRICTS over the operation of the Bureau Contract.

11. (A) (2) Exercise general supervision over the diversion and use of water from the New Hogan Project by the DISTRICTS.

11. (A) (3) Administer the diversion into storage, the storage regulation and the release of water.

11. (A) (4) Compile and submit water use schedules to the Contracting Officer and the District Engineer as set forth in the Bureau Contract.

11. (A) (5) Calculate and determine the sums, including interest, owed by CALAVERAS DISTRICT to STOCKTON DISTRICT under this CONTRACT.

11. (A) (6) Exercise such other duties given to the Watermaster elsewhere in this CONTRACT.

11. (B) CALAVERAS DISTRICT shall pay the expenses of the Watermaster directly attributed to that DISTRICT'S activities on the following basis: Two (2) times the hourly wage or salary of any non-CALAVERAS DISTRICT personnel used, for the actual hours of time spent by such personnel, and other costs, actually incurred, including automobile and truck costs, insurance costs, and audit costs, all as may be agreed upon by the DISTRICTS from time to time in writing. If the DISTRICTS are unable at any time to agree upon the amount of the Watermaster's expenses properly chargeable to CALAVERAS DISTRICT, then the matter shall be submitted to arbitration as set forth in Article 12.

11. (C) All diversions from the Calaveras River from the New Hogan Reservoir pool or from below New Hogan Dam within CALAVERAS DISTRICT shall be metered by meters of a type approved by the Watermaster. These meters shall be installed, services, maintained, and replaced as necessary by CALAVERAS DISTRICT and the Watermaster shall be free to inspect any such meter at any reasonable time. CALAVERAS DISTRICT shall read and inspect all of the aforementioned meters monthly and shall supply the information required by the Watermaster and certify the correctness of the meters to the Watermaster by the 10th day of each following month. If a diversion is unmetered, or if the meter is not approved, or

if the data from an approved meter is not supplied as required, the Watermaster may estimate the amount of water used for each such diversion, using, when possible, the criteria then in use by STOCKTON DISTRICT within its own DISTRICT for estimating the consumption of water for various types and classes of water use. The Watermaster shall determine the amount of M & I water used by the CALAVERAS DISTRICT. In determining the total quantity of Project Water diverted by CALAVERAS DISTRICT each year for use in preparing the statement provided for in Paragraph 5(D)(3) above, the Watermaster shall do so either by adding the amounts metered or estimated monthly, or alternatively, at the option of STOCKTON DISTRICT, by subtracting from D, as defined in Paragraph 1(T)(6) the amount of water entering STOCKTON DISTRICT in the Calaveras River and adding C_r as defined in Paragraph 1(T)(4). In case the alternative method is employed, the amount of water entering STOCKTON DISTRICT shall be measured by a device whose type, location, and installation is approved by CALAVERAS DISTRICT and which is installed and maintained by STOCKTON DISTRICT entirely at STOCKTON DISTRICT'S expense, and representatives of CALAVERAS DISTRICT may inspect any such measuring device at any reasonable time. The determination of the Watermaster is bound by the data supplied by an approved meter unless the Watermaster can show that the information recorded by meter is substantially in error.

11. (D) The Watermaster shall cause to be measured by meter diversions for M & I use within STOCKTON DISTRICT (S_m). Representatives of CALAVERAS DISTRICT may inspect such meters at any reasonable time.

11. (E) STOCKTON DISTRICT by undertaking and performing the functions of Watermaster does not warrant to either CALAVERAS DISTRICT or to the water users of CALAVERAS DISTRICT, as to conditions beyond the control of said Watermaster, a supply of water of any given quantity at any given time, or of any particular quality.

11. (F) By July 1 of each year the Watermaster shall submit a report to each DISTRICT giving a full accounting of the use of New Hogan water for the preceding accounting year, all money paid to the Bureau under the Bureau Contract, and all money paid to STOCKTON DISTRICT under this CONTRACT. Said report shall contain any suggestions for improving operations under this CONTRACT. The Watermaster shall cause an annual audit to be made of the financial transactions under this CONTRACT by a certified public accountant and shall send a copy of each said annual audit to each DISTRICT.

12. Arbitration. In any instance in which the DISTRICTS fail to reach agreement as required herein, or in any instance in which a DISTRICT disagrees with a determination of the Watermaster, a DISTRICT may submit the disagreement to arbitration in the manner provided in this Article 12. Matters for which arbitration is specifically provided elsewhere in this CONTRACT shall also be subject to the procedures set forth in this Article 12. The procedure for arbitration shall be as follows:

12. (A) Either party may give notice requesting arbitration to the other.

12. (B) Within ten (10) days of the giving of a notice pursuant to Subarticle 12(A) of this Article, the DISTRICTS shall each select one arbitrator and the two arbitrators so selected shall together select a third arbitrator. If the third arbitrator has not been appointed by the expiration of the ten (10) day period specified above in this Subarticle 12(B) then either party may request the American Arbitration Association to make the selection of any arbitrator or arbitrators who have not been so selected. During the fifteen (15) days next following the selection of the third member of said board of arbitration, the board of arbitration shall meet together from time to time and hear evidence and arguments orally and in writing from the DISTRICTS relative to the matters before it and shall then render its decision with respect

to any matter submitted to it. The decision of said board of arbitration with respect to any matter submitted to it pursuant to this Article 12 shall be final and binding on both parties. The Watermaster shall cause notice of any decision of a board of arbitration hereunder to be given to both DISTRICTS.

12. (C) The costs of arbitration pursuant to this Article 12, including the fees and expenses of the members of the board of arbitration, if any, shall be borne equally by the DISTRICTS.

12. (D) As to any matter not specifically provided for herein as to the procedure for arbitration, the rules of the American Arbitration Association shall apply unless the DISTRICTS agree to the contrary.

13. Attorneys' Fees and Costs. In any case where court action is instituted by one DISTRICT against the other to interpret this CONTRACT, the rights of the parties thereunder, or to enforce a right or obligation created by this CONTRACT, the prevailing party shall receive its costs and reasonable attorneys' fees to be set by the court.

14. Captions and Calculations. The captions to the Articles herein are not part of this CONTRACT, and are not to be used in its interpretation. Any computations made pursuant to this CONTRACT concerning numbers of AF shall be carried out to the nearest acre foot. Any computations made pursuant to this CONTRACT involving percentages shall be carried out to the closest 1/100th of one percent.

15. Binds and Inures. This CONTRACT shall bind and inure to the legal successors of the DISTRICTS and is not made for the benefit of any third party.

16. Subordinate to Bureau Contract. This CONTRACT at all times is subject and subordinate to the provisions of the Bureau Contract.

17. Notices. Notices required to be given under this CONTRACT shall be made by prepaid registered or certified mail deposited

in a United States Post Office mail box addressed as follows:

CALAVERAS DISTRICT:

Secretary-Manager
Calaveras County Water District
P. O. Box 846
San Andreas, California 95249

STOCKTON DISTRICT:

Secretary-Manager
Stockton and East San Joaquin
Water Conservation District
P. O. Box 5157
Stockton, California 95205

Notices so posted shall be deemed delivered on the second day following said posting. Changes in these addresses shall be given in writing by the method specified herein.

18. Effective Date and Delay in Payment.

18. (A) This CONTRACT shall not be effective until the Bureau Contract has been signed and approved by the United States.

18. (B) It is understood that certain of the water users identified in the Murray, Burns & Kienlen Civil Engineers study dated February 7, 1969 and located within CALAVERAS DISTRICT have for some time been making diversions for agricultural purposes from the Calaveras River below New Hogan Dam and that said diversions have included, in part, stored water which has been released from the New Hogan Project pursuant to interim contracts now and heretofore in effect between the STOCKTON DISTRICT and the Bureau by which contracts the STOCKTON DISTRICT has paid the Bureau at the rate of $4.00 per AF for said release of stored water and will so pay the Bureau during 1970. It is anticipated by the parties that in 1971 and subsequently these water users will divert water, part of which will be Project Water and part of which will be W_c as defined in this CONTRACT. It is further understood that CALAVERAS DISTRICT may need to complete certain internal arrangements before it can pay STOCKTON DISTRICT for the Project Water diverted by these users. CALAVERAS DISTRICT shall include within the initial schedules submitted on March 15, 1971 pursuant to Paragraph 3(B)(1) the monthly quantity of water estimated to be required by the aforementioned diverters during the 1971 year and shall similarly include the amount so required in the initial schedules submitted on March 15 of each year thereafter. Notwithstanding the provisions of Paragraph 3(B)(1) and Subarticle 5(D) related to advance payments, the advance payment made by CALAVERAS DISTRICT on March 15, 1971 need not include the amount representing planned diversions by these water users but

may be deferred by the CALAVERAS DISTRICT to and including April 1, 1972, provided that any sum so deferred pursuant to this Subarticle 18(B) shall bear interest at the rate of nine percent (9%) per annum until paid in full. On March 15, 1972 and in all years thereafter, the water and advance payment therefor for these users shall be included in the initial schedules and advance payments submitted by CALAVERAS DISTRICT pursuant to Paragraph 3(B)(1).

IN WITNESS WHEREOF, the parties have executed this CONTRACT the day and year first herein written.

CALAVERAS COUNTY WATER DISTRICT

By William D. Hart
President

ATTEST:
Stanley Edwards
Secretary

STOCKTON & EAST SAN JOAQUIN WATER CONSERVATION DISTRICT

By William C Ghio
President

ATTEST:
Secretary

EXECUTION OF THE FOREGOING CONTRACT APPROVED BY THE DEPARTMENT OF THE INTERIOR OF THE UNITED STATES.

By
Contracting Officer

Year	Delivery AF/Annum AG	M & I	Total AF/Annum
1972	6340	60	6400
1973	6632	75	6707
1974	6923	93	7016
1975	7215	110	7325
1976	7507	133	7640
1977	7798	156	7954
1978	8090	182	8272
1979	8382	210	8592
1980	8673	240	8913
1981	8965	275	9240
1982	9257	310	9567
1983	9548	355	9903
1984	9840	400	10240
1985	11560	450	12010
1986	13280	500	13780
1987	15000	570	15570
1988	16720	630	17350
1989	18440	700	19140
1990	20160	790	20950
1991	21880	880	22760
1992	23600	940	24540
1993	25290	1010	26300
1994	27040	1080	28120
1995	27040	1160	28200
1996	27040	1250	28290
1997	27040	1340	28380
1998	27040	1440	28480
1999	27040	1550	28590
2000	27040	1680	28720
2001	27040	1780	28820
2002	27040	1880	28920
2003	27040	1990	29030
2004	27040	2150	29190
2005	27040	2220	29260
2006	27040	2340	29380
2007	27040	2480	29520
2008	27040	2630	29670
2009	27040	2790	29830
2010	27040	2960	30000

AG - Agriculture

M & I - Municipal & Industrial

AF/Annum - Acre Feet Per Annum

EXHIBIT "A"

Water Delivery

For

New Hogan Project

Calaveras County Water District

1972	6340	60	6400
1973	6632	75	6707
1974	6923	93	7016
1975 -	7215	110	7325
1976	7507	133	7640
1977	7798	156	7954
1978	8090	182	8272
1979	8382	210	8592
1980 -	8673	240	8913
1981	8965	275	9240
1982	9257	310	9567
1983	9548	355	9903
1984	9840	400	10240
1985 -	11560	450	12010
1986	13280	500	13780
1987	15000	570	15570
1988	16720	630	17350
1989	18440	700	19140
1990 -	20160	790	20950
1991	21880	880	22760
1992	23600	940	24540
1993	25290	1010	26300
1994	27040	1080	28120
1995 -	27040	1160	28200
1996	27040	1250	28290
1997	27040	1340	28380
1998	27040	1440	28480
1999	27040	1550	28590
2000 -	27040	1680	28720
2001	27040	1780	28820
2002	27040	1880	28920
2003	27040	1990	29030
2004	27040	2150	29190
2005 -	27040	2220	29260
2006	27040	2340	29380
2007	27040	2480	29520
2008	27040	2630	29670
2009	27040	2790	29830
2010 -	27040	2960	30000

AG - Agriculture

M & I - Municipal & Industrial

AF/Annum - Acre Feet Per Annum

EXHIBIT "A"

Water Delivery

R.O. Draft 10/16-1987

Contract No.
14-06-200-5057A
Amendatory

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
New Hogan Project, California

AMENDATORY CONTRACT AMONG THE UNITED STATES OF AMERICA, STOCKTON EAST WATER DISTRICT AND CALAVERAS COUNTY WATER DISTRICT PROVIDING FOR REPAYMENT AND CONSERVATION USE OF NEW HOGAN PROJECT

THIS AMENDATORY CONTRACT, made this 25th day of March, 1988 between the UNITED STATES OF AMERICA, hereinafter referred to as the United States, represented by the Contracting Officer executing this amendment, and STOCKTON EAST WATER DISTRICT AND CALAVERAS COUNTY WATER DISTRICT hereinafter referred to as the Contractors,

WITNESSETH, That:

EXPLANATORY RECITALS

WHEREAS, the parties have entered into a repayment contract, dated August 25, 1970 and identified as contract No. 14-06-200-5057A, as amended, which provides repayment and conservation use of New Hogan Dam and Reservoir and is hereinafter referred to as the repayment contract; and

WHEREAS, pursuant to Section 212 of Public Law 97-293 the Reclamation Reform Act of October 12, 1982, the Contractors' water supply from the abovestated reservoir is exempt from the provisions of Federal reclamation law; and

WHEREAS, the Contractors desire to amend the repayment contract to reflect the intent so stated in Section 212 of Public Law 97-293;

NOW, THEREFORE, in consideration of the mutual and dependent stipulations and covenants herein contained, it is mutually agreed by the parties hereto as follows:

1. The following changes to the repayment contract between the United States and the Contractors, shall be effective commencing October 12, 1982.

2. Articles 19, 20, 21 and 22 of the repayment contract and all references to such articles in other articles of the repayment contract are hereby deleted in their entirety.

3. Nothing in this amendatory contract shall terminate, cancel or affect any sales of land heretofore made under recordable contract.

4. Except as herein amended, all provisions of the repayment contract shall remain in full force and effect.

IN WITNESS WHEREOF, the parties hereto have signed their names as of the day and year first above written.

UNITED STATES OF AMERICA

ACTING By _____
Regional Director, Mid-Pacific Region
Bureau of Reclamation

(SEAL)

STOCKTON-EAST WATER DISTRICT

Attest:

_____
Secretary

By _____
President

(SEAL)

CALAVERAS COUNTY WATER DISTRICT

Attest:

_____
Secretary

By _____
President

CORP20

RESOLUTION NO. 87-160

WHEREAS, the Bureau of Reclamation has proposed amendments to the contract for New Hogan Water to delete those sections relating to ownership or pricing limitations of Federal Reclamation Law.

BE IT RESOLVED that the Board of Directors of CALAVERAS COUNTY WATER DISTRICT does hereby authorize the execution of the "Amendatory Contract Among the UNITED STATES OF AMERICA, STOCKTON EAST WATER DISTRICT and CALAVERAS COUNTY WATER DISTRICT Providing For Payment and Conservation Use of the New Hogan Project."

BE IT FURTHER RESOLVED that the President is hereby authorized to execute said Amendatory Contract.

PASSED AND ADOPTED this 10th day of December, 1987 by the following vote:

AYES: Directors Clark, Johnson, Neilsen, Gleason and Queirolo

NOES: None

ABSENT: None

CALAVERAS COUNTY WATER DISTRICT

President

ATTEST:

Steve Felts
Secretary

CERTIFIED A TRUE COPY
Linda Okeefe
Assistant Secretary
Calaveras County Water District

BUREAU OF RECLAMATION
OFFICIAL FILE COPY
RECEIVED
MAR 17 1988

RESOLUTION OF THE BOARD OF DIRECTORS
OF STOCKTON EAST WATER DISTRICT

RESOLUTION 87-88-26

RESOLUTION AUTHORIZING SIGNATURES ON AMENDMENT TO CONTRACT
FOR USE OF NEW HOGAN WATER

WHEREAS, on February 16, 1988 the Board of Directors of Stockton East Water District adopted the Amendatory Contract Among the United States of America, Stockton East Water District and Calaveras County Water District Providing For Repayment And Conservation Use of New Hogan Project; and

WHEREAS, the United States of America has requested that signatures on the Amendatory Contract be authorized by Resolution of the Board of Directors of Stockton East Water District;

NOW, THEREFORE, BE IT RESOLVED, that the Board of Directors of Stockton East Water District approves and authorizes the Board President and Secretary of the Board to execute and sign the Amendatory Contract approved at the February 16, 1988 Board meeting.

PASSED AND ADOPTED by the Board of Directors of Stockton East Water District at a regular meeting held on March 15, 1988, by the following vote:

AYES: Solari, Dondero, Laven, Bozzano, MacNear, Huckins
NOES: Tone
ABSENT: None

Roger M. Huckins
ROGER M. HUCKINS, President
Stockton East Water District

ATTEST:

EDWARD M. STEFFANI, Secretary
Stockton East Water District

RESOLUTION NO. 87-88-26

SECRETARY'S CERTIFICATE

I, EDWARD M. STEFFANI, Secretary of the Board of Directors of the STOCKTON-EAST WATER DISTRICT, Stockton, California, do hereby certify as follows:

The foregoing is a full, true and correct copy of a resolution duly adopted at a Regular Meeting of the Board of Directors of said District duly and regularly and legally held at the regular meeting place thereof on March 15, 1988, of which meeting all of the members of said Board of Directors had due notice and at which a majority thereof were present.

I have carefully compared the same with the original minutes of said meeting on file and of record in my office, and the foregoing is a full, true, and correct copy of the original resolution adopted at said meeting and entered in said minutes.

Said resolution has not been amended, modified, or rescinded since the date of its adoption, and the same is now in full force and effect.

Dated: 3/15/88

EDWARD M. STEFFANI
Secretary of the Board
STOCKTON-EAST WATER DIST

(SEAL)

ATTACHMENT B

SEWD/ USBR and SEWD/CSJWCD Contract for Central Valley Project Water Supply (New Melones)

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R.O. Draft 4/30-1982
Rev. R.O. 7/21-1982
Rev. R.O. 8/10-1982
Rev. R.O. 9/15-1982
Rev. R.O. 9/20-1982
W.O. Draft 10/28-1982
Rev. R.O. 2/17-1983
Rev. R.O. 2/28-1983
Rev. R.O. 3/2-1983
Rev. R.O. 9/7-1983

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
Central Valley Project, California

Contract No.
4-07-20-W0329

CONTRACT BETWEEN THE UNITED STATES AND STOCKTON-EAST WATER DISTRICT PROVIDING FOR PROJECT WATER SERVICE

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Contract No.
4-07-20-W0329

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
Central Valley Project, California

CONTRACT BETWEEN THE UNITED STATES
AND
STOCKTON-EAST WATER DISTRICT
PROVIDING FOR PROJECT WATER SERVICE

THIS CONTRACT, made this 19TH day of December 1983, in pursuance generally of the Act of June 17, 1902 (32 Stat. 388), and acts amendatory or supplementary thereto including but not limited to the Act of August 26, 1937 (50 Stat. 844), as amended and supplemented, and the Act of August 4, 1939 (53 Stat. 1187), as amended and supplemented, all collectively hereinafter referred to as the Federal reclamation laws between THE UNITED STATES OF AMERICA, hereinafter referred to as the United States, and STOCKTON-EAST WATER DISTRICT, hereinafter referred to as the Contractor, a public agency of the State of California, duly organized, existing, and acting pursuant to the laws thereof, with its principal place of business in Stockton, California.

WITNESSETH, That:

EXPLANATORY RECITALS

WHEREAS, the United States is constructing and operating the Central Valley Project, California for the purpose, among others, of furnishing water for irrigation, municipal, industrial, domestic, and other beneficial uses; and

WHEREAS, pursuant to the Flood Control Acts of December 22, 1944 (58 Stat. 887) and October 23, 1962 (76 Stat. 1173), the Corps of Engineers, United States Army was authorized to construct the New Melones Dam on the

Stanislaus River, California, for the multipurpose uses of flood control, irrigation, municipal and industrial, power generation, and recreation, among other beneficial purposes; and

WHEREAS, pursuant to said acts, New Melones Dam and Reservoir were constructed by the Corps of Engineers and transferred to the Secretary of the Interior to become an integral part of the Central Valley Project to be operated and maintained pursuant to the authorizing acts and Federal reclamation laws; and

WHEREAS, investigations by the United States indicate that the Contractor has a present and potential need for an irrigation and municipal and industrial water supply; and

WHEREAS, Stockton-East Water District has sought a long-term water supply from the Folsom South Canal of the Central Valley Project which is not currently available; and

WHEREAS, the Flood Control Act of 1962 provides "That before initiating any diversions of water from the Stanislaus River Basin in connection with the operation of the Central Valley project, the Secretary of the Interior shall determine the quantity of water required to satisfy all existing and anticipated future needs within that basin and the diversions shall at all times be subordinate to the quantities so determined . . ."; and

WHEREAS, in the Record of Decision dated June 29, 1981, the Secretary determined the Stanislaus River Basin and the needs therein; and

WHEREAS, although Stockton-East Water District is not within the Basin, said Secretarial determination and investigations by the United States indicate that there will be an interim water supply available from the

Central Valley Project for furnishing to the Contractor for surface diversion and direct application for irrigation and municipal and industrial and other purposes; and

WHEREAS, the Contractor desires to contract pursuant to Federal reclamation laws and the laws of the State of California, for water service from the Central Valley Project pursuant to the conditions hereinafter set forth;

NOW, THEREFORE, in consideration of the covenants herein contained, it is agreed as follows:

DEFINITIONS

1. When used herein, unless otherwise distinctly expressed or manifestly incompatible with the intent hereof, the term:

(a) "Secretary" or "Contracting Officer" shall mean the Secretary of the Interior or his duly authorized representative;

(b) "Project" shall mean the Central Valley Project, California, of the Bureau of Reclamation;

(c) "year" shall mean calendar year;

(d) "Basin" shall mean the Stanislaus River Basin area for which a reservation of water is required by the Flood Control Act of 1962 and which is defined in the special report entitled "New Melones Unit, Central Valley Project, California, Stanislaus River Basin Alternative and Water Allocation, September 1980," approved by the Under Secretary in his June 29, 1981, Record of Decision;

(e) "agricultural water" shall mean water used primarily in the commercial production of agricultural crops or livestock including domestic

--Explanatory recitals--
Article 1--

use incidental thereto, on tracts of land operated in units of more than five acres;

(f) "municipal, industrial, and domestic water" (hereinafter referred to as M&I) shall mean water used for other than agricultural purposes;

(g) "interim water supply" shall mean that portion of the water supply available from the New Melones Unit during the buildup to full Basin requirements which will be withdrawn as the needs within the Basin develop.

TERM OF CONTRACT--RIGHT TO USE OF WATER

2. (a) This contract shall be effective on the date first hereinabove written and shall remain in effect through December 31, 2022.

(b) The Contracting Officer shall provide a written notification to the Contractor announcing the initial delivery date which shall be January 1 of the year following the date that water from the Project is first available to the Contractor: Provided, That water availability shall not be declared until all applicable requirements of State and Federal law with respect to utilization and delivery of Stanislaus River water for the purpose of this contract have been complied with: Provided further, That the land classification requirements of Federal reclamation law must be satisfied prior to the announcement of water availability.

(c) If within a period of 5 years, commencing with the year in which the initial delivery date occurs, the Contractor does not own or have available to it for the remainder of the term hereof, facilities which in the opinion of the Contracting Officer are adequate for the conveyance and distribution of water to be made available pursuant to the terms of this contract, this contract shall terminate. If in the opinion of the Contracting Officer, at the end of said 5-year period, the Contractor is diligently proceeding toward completion of the conveyance and distribution facilities, the Contracting Officer shall extend said period from year to year to permit completion of said facilities.

WATER TO BE FURNISHED TO THE CONTRACTOR

3. (a) The Contractor understands and agrees that the water supply provided pursuant to this contract is an interim water supply. As the Basin use develops or if the interim water supply available to Central San Joaquin Water Conservation District pursuant to its contract with the United States is increased, the Contractor's interim water supply may be reduced for subsequent years as determined by the Contracting Officer upon a minimum of one year written notification to the Contractor. The Contractor's interim water supply also may be reduced, as determined by the Contracting Officer, to provide South Delta Water Agency an interim water supply in dry and critically dry water years, as determined by the Contracting Officer, but only in the event that the United States and said Agency execute a contract for that interim water supply during those dry and critically dry water years.

(b) Subject to the terms and conditions herein stated, the United States shall make available annually to the Contractor a maximum of 75,000

acre-feet of interim water: Provided, That this quantity may be increased pursuant to subdivisions (f) and (g) of this article; Provided further, That if the total water quantity is reduced pursuant to subdivision (a) of this article, the maximum and minimum quantities specified in subdivisions (c) and (d) shall be adjusted proportionately to such reduction or otherwise adjusted in a manner mutually agreed to by the Contracting Officer and the Contractor: And provided further, That in the event litigation by a third party prevents delivery of Project water for a period of time during the term of this contract, upon approval of the Contracting Officer the minimum payments as described in subdivisions (c) and (d) of this article during that same period shall be suspended.

(c) The United States shall make available to the Contractor the annual quantities of agricultural water up to a maximum quantity of 65,000 acre-feet as specified in the schedule submitted by the Contractor in accordance with Article 4 and the Contractor shall pay for said water in accordance with Article 5: Provided, That the United States shall make available and the Contractor shall pay for, as a minimum, such quantities of agricultural water as specified below:

(1) Each year, for the first five years commencing with the year in which the initial delivery date occurs pursuant to Article 2, the quantity of water specified in a schedule, or any revision thereof, submitted in accordance with Article 4.

(2) Each year for years 6 through 8 a minimum quantity of 22,750 acre-feet and for years 9 and 10 the minimum quantity of 45,500 acre-feet: Provided, That if in any year the Contractor schedules a quantity larger than the stated minimum, such increased quantity shall

constitute a new minimum for each subsequent year until such time as the above-stated minimums exceed that quantity.

(3) Each year beginning in the 11th year and continuing for the remaining contract term, the quantity of water scheduled in the 11th year (which quantity shall be at least equal to or greater than the quantity made available and paid for in the 10th year except as reduced pursuant to subdivision (a) of this article). In no event shall the annual quantity furnished for agricultural purposes exceed 65,000 acre-feet, except as provided pursuant to subdivisions (f) and (g) of this article: Provided, That the United States shall not be obligated to furnish any quantity greater than the quantity scheduled in the 11th year and such quantity shall constitute the new contract maximum for the remaining contract term.

(d) The United States shall make available to the Contractor the annual quantities of M&I water up to a maximum quantity of 10,000 acre-feet as specified in the schedule submitted by the Contractor in accordance with Article 4 and the Contractor shall pay for said water in accordance with Article 5: Provided, That the United States shall make available and the Contractor shall pay for, as a minimum, such quantities of M&I water as specified in the following table except as reduced pursuant to subdivision (a) of this article: Provided, however, That at any time or times after the

TABLE OF MINIMUM M&I WATER QUANTITIES

(In acre-feet)

Years Beginning With Initial Delivery Date	Minimum Annual M&I Water Delivery	Years Beginning With Initial Delivery Date	Minimum Annual M&I Water Delive
1	100	21	8,700
2	200	22	9,400
3	300	23	10,000
4	400	24	10,000
5	500	25	10,000
6	600	26	10,000
7	700	27	10,000
8	800	28	10,000
9	900	29	10,000
10	1,000	30	10,000
11	1,700	31	10,000
12	2,400	32	10,000
13	3,100	33	10,000
14	3,800	34	10,000
15	4,500	35	10,000
16	5,200	36	10,000
17	5,900	37	10,000
18	6,600	38	10,000
19	7,300	39	10,000
20	8,000	40	10,000

Contractor's requirement for M&I water exceeds 10,000 acre-feet per year, any or all of the Project water to be furnished for agricultural use, as specified in subdivision (c) of this article, may be converted to M&I use and shall be added to said 10,000 acre-feet and shall become the minimum quantity the Contractor shall pay for as M&I water each year thereafter during the term of this contract. Any time or times water for agricultural use is converted to M&I use, the minimum quantities of agricultural water for which payment is required pursuant to subdivision (c) of this article shall be adjusted accordingly.

(e) In any year the Contractor schedules a quantity larger than the minimum stated in the Table of Minimum M&I Water Quantities for that year, such scheduled quantity shall constitute a new minimum for each subsequent year until such time as the minimum stated on the Table exceeds that quantity.

(f) The Contracting Officer will review the supplemental needs of the Contractor following restudy of the available groundwater and with the mutual agreement of the Contractor the maximum water quantity of 75,000 acre-feet may be adjusted: Provided, That said maximum quantity may be increased only if the Contracting Officer has determined that additional Project water is available: Provided, however, That the increase shall not cause the adjusted maximum quantity to exceed 90,000 acre-feet; And Provided further, That if the total water quantity is increased pursuant to this subdivision, the maximum and minimum annual quantities specified in subdivisions (c) and (d) of this article shall be adjusted proportionately to such increase or otherwise adjusted in a manner mutually agreed to by the Contracting Officer and the Contractor.

(g) If the Contractor in any year requires a quantity of water in addition to the maximum quantities stated in subdivisions (b), (c), and/or (d) herein which the United States is obligated to furnish, additional Project

water, if available as determined by the Contracting Officer, may be furnished upon receipt of a schedule from the Contractor indicating the quantity of water and the desired time of delivery and appropriate payment. The furnishing by the United States and acceptance by the Contractor of such additional water shall neither entitle nor obligate the Contractor to receive or pay for such quantities in subsequent years.

(h) The United States and the Contractor by mutual agreement may reduce the annual quantity of water which the United States is obligated to make available and the Contractor obligated to pay for during the remainder of the term of this contract.

(i) The Contractor will use all proper methods to secure the economical and beneficial use of water furnished pursuant to this contract.

(j) If in any year after the Contracting Officer has approved a schedule or any revision thereof submitted by the Contractor, the United States is unable to furnish any of the water in the quantities and at the times requested in the schedule or revision thereof and the Contractor does not elect to receive and does not receive such water at other times during such year, the Contractor shall be entitled to an adjustment as provided in Article 6.

DELIVERY SCHEDULES

4. (a) For each year the Contractor will submit a schedule, subject to the provisions of Article 3, indicating the amounts of agricultural and M&I water required monthly. The first schedule shall be submitted 2 months prior to the initial delivery of water. Thereafter, annual schedules indicating monthly water requirements for the subsequent years shall be submitted not later than November 1 of each year or at such other times as determined by the Contracting Officer

to assure coordination of Project operations. The United States shall attempt to deliver water in accordance with said schedules, or any revisions thereof satisfactory to the Contracting Officer which are submitted to the Contracting Officer within a reasonable time before the desired time of delivery. The inability, failure, or refusal of the Contractor to submit a schedule shall not relieve it of its payment obligations.

(b) If the Contractor during any month is furnished a quantity of water in addition to that which it has requested for such month in its schedule and accepts such additional water, the Contractor shall be deemed to have revised its schedule and ordered and obligated itself to pay for such additional water and the United States shall be deemed to have accepted such revision as satisfactory. As soon thereafter as possible the Contractor shall submit a revised schedule to the United States for the remaining quantity to be delivered during that year.

RATES AND METHOD OF PAYMENT FOR WATER

5. (a) The rates of payment to be made by the Contractor for water made available pursuant to this contract shall be:

(1) $3.50 per acre-foot for agricultural water: Provided, That this rate shall be redetermined annually in accordance with reclamation law and the then current agricultural rate policy of the Project.

(2) $9.00 per acre-foot for M&I water: Provided, That this rate shall be redetermined annually in accordance with reclamation law and the then current M&I rate policy of the Project.

(b) At the time the Contractor submits the first schedules pursuant to Article 4 hereof to the Contracting Officer, the Contractor shall pay the amount payable for water to be delivered during the first two months. Before

the end of the first month or part thereof, of delivery of water pursuant to this contract and before the end of each month thereafter, the Contractor shall pay for the water to be delivered in accordance with the latest approved schedules during the second month immediately following. Adjustments between the payment for the scheduled amounts of water and the payment for quantities delivered each month shall be made during the following month: Provided, That any revised schedule which increases the Contractor's water deliveries shall be accompanied with an appropriate payment to assure water is not delivered in advance of payment. By December 1 of each year, the Contractor shall make any additional payment it is obligated to make for that year pursuant to Article 3.

(c) In the event the Contractor in any year is unable, fails, or refuses to accept delivery of the quantities of water scheduled and made available for delivery and for which payment is required pursuant to this contract or if the Contractor in any year fails to submit a schedule under subdivision (a) of Article 4, said inability, failure, or refusal shall not relieve the Contractor of the obligation to pay for said water and the Contractor agrees to make payment therefor in the same manner as if said water had been delivered to and accepted by the Contractor in accordance with this contract.

ADJUSTMENTS

6. The amount of any overpayment by the Contractor due to the quantity of water actually available for the Contractor during any year, as determined by the Contracting Officer, having been less than the quantity for which the Contractor was required to pay shall be applied first to any accrued indebtedness then due and payable by the Contractor pursuant to this contract. Any amount

of such overpayment then remaining shall, at the option of the Contractor, be refunded to the Contractor or credited upon amounts to become due to the United States from the Contractor under the provisions hereof in the ensuing year. Such adjustment shall constitute the sole remedy of the Contractor or anyone having or claiming to have the right to the use of any of the water supply provided for herein.

POINT OF DIVERSION--MEASUREMENT AND RESPONSIBILITY FOR DISTRIBUTION OF WATER

7. (a) The water to be furnished to the Contractor pursuant to this contract will be released from Project facilities and diverted at such location or locations as mutually agreed to by the Contracting Officer and the Contractor.

(b) The Contractor shall construct and install, without cost or expense to the United States, facilities required by the Contractor to take and convey the water from the point or points of delivery. In the event the Contractor's facilities are installed, operated, and maintained on property of the United States, the Contractor will furnish for approval of the Contracting Officer drawings showing the construction to be performed by the Contractor at least 6 months before starting said construction. The Contractor will not commence construction of any facilities on the property of the United States without the Contracting Officer's written approval of the drawings submitted by the Contractor. It is specifically recognized and agreed that this contract does not grant to the Contractor any right of access to Project water or to lands of the United States for any purpose except as provided herein for installation, operation, and maintenance of the Contractor's facilities to take Project water.

(c) All water diverted by the Contractor pursuant to this contract shall be measured with equipment furnished, installed, operated, and maintained by the Contractor at the point or points of diversion established pursuant to subdivision (a) of this article. The Contractor's maintenance program shall be approved by the Contracting Officer.

(d) M&I water furnished to the Contractor and delivered to its customers shall be measured, or caused to be measured, by the Contractor at the point or points of delivery provided from the Contractor's facilities. All measuring equipment required to determine such quantities shall be furnished, installed, operated, and maintained by the Contractor without expense to the United States.

(e) Measuring equipment required by subdivisions (c) and (d) of this article and its installation, maintenance, and use shall be approved by the Contracting Officer: Provided, That at least once each year, or upon request of the Contracting Officer, the Contractor shall investigate the accuracy of all measuring equipment used pursuant to subdivisions (c) and (d) of this article and shall correct any errors in measurement disclosed by such investigation. The United States shall be afforded reasonable opportunity to be present during the inspecting and testing procedure by the Contractor. The Contracting Officer shall have full and free access at all reasonable times to inspect said measuring equipment for the purpose of determining the accuracy and condition thereof. If said facilities are found to be defective or inaccurate,

they shall be readjusted or repaired, or both, or replaced without expense to the United States. In the event the Contractor neglects or fails to make such repairs or replacements within a reasonable time as may be necessary to satisfy the operating requirements of the Contracting Officer, the Contracting Officer may cause the repairs or replacements to be made and the costs thereof charged to the Contractor, which charge the Contractor shall pay to the United States on or before March 1 of the year following that in which the cost was incurred and a statement thereof furnished by the Contracting Officer to the Contractor.

(f) The Contractor shall maintain, in a manner satisfactory to the Contracting Officer, records of the quantities of water measured by the Contractor pursuant to subdivisions (c) and (d) of this article and will a report to the Contracting Officer before the 7th day of each month following the month in which water is so measured. The difference between the water measured by the Contractor pursuant to subdivision (d) and all water furnished by the Contracting Officer as measured pursuant to subdivision (c) shall be considered to be agricultural water.

(g) The United States shall not be responsible for the control, carriage, handling, use, disposal, or distribution of water beyond the delivery points and the Contractor shall hold the United States harmless on account of damage or claim of damage of any nature whatsoever, including property damage, personal injury or death arising out of or connected with the control, carriage, handling, use, disposal, or distribution of such water.

MAINTENANCE OF FLOWS AND LEVELS--TEMPORARY REDUCTION--
RETURN FLOWS

8. (a) The United States shall make all reasonable efforts, consistent with the most efficient overall operation of the Project, to furnish water to the Contractor at the delivery points established pursuant to Article 7.

(b) The United States may temporarily discontinue or reduce the quantity of water to be furnished to the Contractor as herein provided for the purposes of such investigation, inspection, maintenance, repair, or replacement of any of the Project facilities or any part thereof necessary for the furnishing of water to the Contractor, but so far as feasible the United States will give the Contractor due notice in advance of such temporary discontinuance or reduction, except in case of emergency, in which case no notice need be given: Provided, however, That the United States shall use its best efforts to avoid any discontinuance or reduction in service. Upon resumption of service after such reduction or discontinuance and if requested by the Contractor, the United States will attempt to deliver the quantity of water which would have been furnished hereunder in the absence of such discontinuance or reduction.

(c) The United States reserves the right to all waste, seepage, and return-flow water derived from water furnished to the Contractor which escapes or is discharged beyond boundaries of the Contractor's service area. Nothing herein shall be construed as claiming for the United States any right, as waste, seepage, or return flow, to water being used pursuant to this contract for surface irrigation or underground storage within the Contractor's service area by the Contractor, or those claiming by or through the Contractor.

WATER SHORTAGE AND APPORTIONMENT

9. (a) In its operation of the Project, the United States will use all reasonable means to guard against a condition of shortage in the quantity of water available to the Contractor pursuant to this contract. Nevertheless, if a shortage does occur during any year because of drought, or other causes which, in the opinion of the Contracting Officer, are beyond the control of the United States, no liability shall accure against the United States or any of its officers, agents, or employees for any damage, direct or indirect, arising therefrom.

(b) In any year that the Contracting Officer determines that there is a shortage in the quantity of water available to customers of the United States from the New Melones Unit of the Project, the Contracting Officer will apportion available water among the water users capable of receiving water from said Unit, consistent with the existing contracts and Project authorizations. During such water short years, the quantity of water available to the Contractor pursuant to the terms of this contract shall be reduced, as necessary, to meet the full needs of the Basin contractors and the needs of Central San Joaquin Water Conservation District for its firm and interim water supply. The Contractor's water supply may be further reduced to meet the needs of South Delta Water Agency pursuant to the terms of subdivision (a) of Article 3.

TRANSFERS OR EXCHANGES OF WATER

10. Water furnished to the Contractor pursuant to this contract shall not be sold, exchanged, or otherwise disposed of for use outside the Contractor's service area without prior written consent of the Contracting Officer.

WATER ACQUIRED BY CONTRACTOR OTHER THAN FROM THE UNITED STATES

11. (a) Water or water rights now owned or hereafter acquired by the Contractor other than from the United States and Project water furnished pursuant to the terms of this contract may be transported through distribution facilities of the Contractor if the Contracting Officer determines that such mingling is necessary to avoid a duplication of facilities: Provided, That such water is not transported through the Contractor's facilities constructed or financed by the United States. Notwithstanding such mingling, the provisions of this contract shall apply only to the quantity of water furnished to the Contractor pursuant to the terms hereof and the quantity of water acquired by or available to the Contractor other than from the United States shall not in any manner be subject to the provisions of this contract.

(b) With respect to the distribution works or portions thereof in which mingling is permitted as provided in subdivision (a) of this article, the Contractor:

(1) At the request of the Contracting Officer, the Contractor will be responsible for the installation, operation, and maintenance of watermeasuring equipment at delivery points to excess lands and, further, will be responsible for the installation, operation, and maintenance of similar equipment for measuring the water available to the Contractor or landowners within the Contractor's service area other than from the Project, and the Contracting Officer may check and inspect said equipment at any time; and

(2) Agrees that the quantity of water furnished to it by the United States during each 24-hour period will be delivered by the Contractor through the aforesaid outlets to eligible lands only. The Contractor shall be deemed to be in breach of this article and Article 12 of this contract

if at any time there is furnished to all excess lands not covered by recordable contracts and served by the distribution works or portions thereof in which mingling is permitted, a quantity of water which is greater than that which the Contractor or landowners within the Contractor's service area have introduced into said system from the supply available other than pursuant to this contract.

RULES, REGULATIONS, AND DETERMINATIONS

12. (a) The parties agree that the delivery of irrigation water or the use of Federal facilities pursuant to this contract is subject to the acreage and ownership limitations and pricing provisions of Reclamation law, as amended and supplemented, including but not limited to the Reclamation Reform Act of 1982 (Public Law 97-293, Title II).

(b) The Contractor further agrees to abide by final rules and regulations promulgated by the Secretary of the Interior covering the enforcement and administration of said limitations and provisions of Reclamation law as amended and supplemented by the Reclamation Reform Act of 1982, including the payment of full costs as provided therein.

(c) The Contracting Officer shall have the right to make, after an opportunity has been offered to the Contractor for consultation, rules and regulations consistent with the provisions of this contract, the laws of the United States and the State of California, to add or to modify them as may be deemed proper and necessary to carry out this contract, and to supply necessary details of its administration which are not covered by express provisions of this contract. The Contractor shall observe such rules and regulations.

(d) Where the terms of this contract provide for action to be based upon the opinion or determination of either party to this contract, whether or not stated to be conclusive, said terms shall not be construed as permitting such action to be predicated upon arbitrary, capricious, or unreasonable opinions or determinations. In the event that the Contractor questions any factual determination made by the Contracting Officer, the findings as to the facts shall be made by the Secretary only after consultation with the Contractor and shall be conclusive upon the parties.

GENERAL OBLIGATION—BENEFITS CONDITIONED UPON PAYMENT

13. (a) The obligation of the Contractor to pay the United States as provided in this contract is a general obligation of the Contractor notwithstanding the manner in which the obligation may be distributed among the Contractor's water users and notwithstanding the default of the individual water users in their obligations to the Contractor.

(b) The payment of charges becoming due hereunder is a condition precedent to receiving benefits under this contract. No water will be made available to the Contractor through Project facilities during any period in which the Contractor may be in arrears in the advance payment of any charges due the United States. The Contractor shall not furnish water made available pursuant to this contract for lands or parties which are in arrears in the advance payment of charges as levied or established by the Contractor.

CHARGE FOR LATE PAYMENTS

14. The Contractor shall pay a late payment charge on installments or charges which are received after the due date. The late payment charge percentage rate calculated by the Department of the Treasury and published quarterly in the Federal Register shall be used: Provided, That the late payment charge percentage rate will not be less than 0.5 percent per month. The late payment charge percentage rate applied on an overdue payment will remain in effect until payment is received. The late payment rate for a 30-day period will be determined on the day immediately following the due date and will be applied to the overdue payment for any portion of the 30-day period of delinquency. In the case of partial late payments, the amount received will first be applied to the late charge on the overdue payment and then to the overdue payment.

QUALITY OF WATER

15. The operation and maintenance of Project facilities shall be performed in such manner as is practicable to maintain the quality of raw water made available through such facilities as the highest level reasonably attainable as determined by the Contracting Officer. The United States does not warrant the quality of water and is under no obligation to construct or furnish water treatment facilities to maintain or better the quality of water.

WATER AND AIR POLLUTION CONTROL

16. The Contractor, in carrying out this contract, shall comply with all applicable water and air pollution laws and regulations of the United States and the State of California and shall obtain all required permits or licenses from the appropriate Federal, State, or local authorities.

EQUAL OPPORTUNITY

17. During the performance of this contract, the Contractor agrees as follows:

(1) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this nondiscrimination clause.

(2) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without discrimination because of race, color, religion, sex, or national origin.

(3) The Contractor will send to each labor union or representative of workers, with which it has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the Contracting Officer, advising the said labor union or workers' representative of the Contractor's commitments under Section 202 of Executive Order 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The Contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965, as amended, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The Contractor will furnish all information and reports required by said amended Executive Order and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the Contracting Officer and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(6) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended, in whole or in part, and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in said amended Executive Order, and such other sanctions may be imposed and remedies invoked as provided in said Executive Order, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(7) The Contractor will include the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by the rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of said amended Executive Order, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, That in the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

TITLE VI, CIVIL RIGHTS ACT OF 1964

18. (a) The Contractor agrees that it will comply with Title VI of the Civil Rights Act of July 2, 1964 (78 Stat. 241) and all requirements imposed by or pursuant to the Department of the Interior Regulation (43 CFR 17) issued pursuant to that title, to the end that, in accordance with Title VI of that Act and the Regulation, no person in the United States shall, on the grounds of race, color, or national origin be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which the Contractor receives financial assistance from the United States and hereby gives assurance that it will immediately take any measures to effectuate this agreement.

(b) If any real property or structure thereon is provided or improved with the aid of Federal financial assistance extended to the Contractor by the United States, this assurance obligates the Contractor, or, in the case of any transfer of such property, any transferee for the period during which the real property or structure is used for a purpose involving the provision of similar services or benefits. If any personal property is so provided, this assurance obligates the Contractor for the period during which it retains ownership or possession of the property. In all other cases, this assurance obligates the Contractor for the period during which the Federal financial assistance is extended to it by the United States.

(c) This assurance is given in consideration of and for the purpose of obtaining any and all Federal grants, loans, contracts, property, discounts, or other Federal financial assistance extended after the date hereof to the Contractor by the United States, including installment payments after such date on account of arrangements for Federal financial assistance which were approved before such date. The Contractor recognizes and agrees that such Federal financial assistance will be extended in reliance on the representations and agreements made in this assurance, and that the United States shall reserve the right to seek judicial enforcement of this assurance. This assurance is binding on the Contractor, its successors, transferees, and assignees.

WATER CONSERVATION PROGRAM

19. (a) While the contents and standards of a given water conservation program are primarily matters of State and local determination, there is a strong Federal interest in developing an effective water conservation program because of this contract. The Contractor shall develop and implement an effective water conservation program for all uses of water which is provided from, or conveyed through, Federally constructed or Federally financed facilities for the Contractor's use. The original water conservation program shall specify definite objectives, appropriate existing and proposed water conservation measures including, but not limited to, changes in water uses and modifications in the design or operation of existing or proposed distribution systems, and time schedules for meeting the water conservation objectives.

(b) The original water conservation program shall be submitted to and approved by the Contracting Officer prior to one or all of the following: (1) service of Federally stored/conveyed water; (2) transfer of operation and maintenance of the Project facilities to the Contractor; or (3) transfer of the Project to an operation and maintenance status. The distribution and use of Federally stored/conveyed water and/or the operation of Project facilities transferred to the Contractor shall be consistent with the approved water conservation program. Following date of execution of this contract, and at subsequent 5-year intervals, the Contractor and Contracting Officer shall review the original water conservation plan to determine if the objectives set forth therein are being met. If it is determined that the water conservation measures set forth therein require modification to further the established objectives, the Contractor and the Contracting Officer shall work together to formulate the modifications which the Contractor shall then be required to implement.

BOOKS, RECORDS, AND REPORTS

20. The Contractor shall establish and maintain accounts and other books and records pertaining to its financial transactions, land use and crop census, water use, and other matters as the Contracting Officer may require. Reports thereon shall be furnished to the Contracting Officer in such form and on such date or dates as he may require. Subject to applicable Federal laws and regulations, each party shall have the right during office hours to examine and make copies of each other's books and official records relating to matters covered by this contract.

CONTINGENT ON APPROPRIATION OR ALLOTMENT OF FUNDS

21. The expenditure or advance of any money or the performance of any work by the United States hereunder which may require appropriation of money by the Congress or the allotment of funds shall be contingent upon such appropriation or allotment being made. The failure of Congress to appropriate funds or the absence of any allotment of funds shall not relieve the Contractor from any obligation under this contract. No liability shall accrue to the United States in case such funds are not appropriated or allotted.

CHANGES IN CONTRACTOR'S SERVICE AREA

22. While this contract is in effect, no change shall be made in the Contractor's service area by inclusion or exclusion of lands, by dissolution, consolidation, merger, or otherwise, except upon the Contracting Officer's written consent.

ASSIGNMENT LIMITED--SUCCESSORS AND ASSIGNS OBLIGATED

23. The provisions of this contract shall apply to and bind the successors and assigns of the parties hereto, but no assignment or transfer of this contract or any part or interest therein shall be valid until approved by the Contracting Officer.

OFFICIALS NOT TO BENEFIT

24. (a) No Member of or Delegate to Congress or Resident Commissioner shall be admitted to any share or part of this contract or to any benefit that may arise herefrom. This restriction shall not be construed to extend to this contract if made with a corporation for its general benefit.

(b) No official of the Contractor shall receive any benefit that may arise by reason of this contract other than as a water user within the Project and in the same manner as other water users within the Project.

CONFIRMATION OF CONTRACT

25. Upon execution of this contract, the Contractor promptly shall secure a final decree of the proper court of the State of California, approving and confirming the contract and decreeing and adjudging it and the apportionment of the benefits and thereunder to be lawful, valid, and binding on the Contractor. The Contractor shall furnish to the United States a certified copy of such decree and of all pertinent supporting records.

WATER CONSERVATION PROGRAM

19. (a) While the contents and standards of a given water conservation program are primarily matters of State and local determination, there is a strong Federal interest in developing an effective water conservation program because of this contract. The Contractor shall develop and implement an effective water conservation program for all uses of water which is provided from, or conveyed through, Federally constructed or Federally financed facilities for the Contractor's use. The original water conservation program shall specify definite objectives, appropriate existing and proposed water conservation measures including, but not limited to, changes in water uses and modifications in the design or operation of existing or proposed distribution systems, and time schedules for meeting the water conservation objectives.

(b) The original water conservation program shall be submitted to and approved by the Contracting Officer prior to one or all of the following: (1) service of Federally stored/conveyed water; (2) transfer of operation and maintenance of the Project facilities to the Contractor; or (3) transfer of the Project to an operation and maintenance status. The distribution and use of Federally stored/conveyed water and/or the operation of Project facilities transferred to the Contractor shall be consistent with the approved water conservation program. Following date of execution of this contract, and at subsequent 5-year intervals, the Contractor and Contracting Officer shall review the original water conservation plan to determine if the objectives set forth therein are being met. If it is determined that the water conservation measures set forth therein require modification to further the established objectives, the Contractor and the Contracting Officer shall work together to formulate the modifications which the Contractor shall then be required to implement.

BOOKS, RECORDS, AND REPORTS

20. The Contractor shall establish and maintain accounts and other books and records pertaining to its financial transactions, land use and crop census, water use, and other matters as the Contracting Officer may require. Reports thereon shall be furnished to the Contracting Officer in such form and on such date or dates as he may require. Subject to applicable Federal laws and regulations, each party shall have the right during office hours to examine and make copies of each other's books and official records relating to matters covered by this contract.

CONTINGENT ON APPROPRIATION OR ALLOTMENT OF FUNDS

21. The expenditure or advance of any money or the performance of any work by the United States hereunder which may require appropriation of money by the Congress or the allotment of funds shall be contingent upon such appropriation or allotment being made. The failure of Congress to appropriate funds or the absence of any allotment of funds shall not relieve the Contractor from any obligation under this contract. No liability shall accrue to the United States in case such funds are not appropriated or allotted.

CHANGES IN CONTRACTOR'S SERVICE AREA

22. While this contract is in effect, no change shall be made in the Contractor's service area by inclusion or exclusion of lands, by dissolution, consolidation, merger, or otherwise, except upon the Contracting Officer's written consent.

ASSIGNMENT LIMITED--SUCCESSORS AND ASSIGNS OBLIGATED

23. The provisions of this contract shall apply to and bind the successors and assigns of the parties hereto, but no assignment or transfer of this contract or any part or interest therein shall be valid until approved by the Contracting Officer.

OFFICIALS NOT TO BENEFIT

24. (a) No Member of or Delegate to Congress or Resident Commissioner shall be admitted to any share or part of this contract or to any benefit that may arise herefrom. This restriction shall not be construed to extend to this contract if made with a corporation for its general benefit.

(b) No official of the Contractor shall receive any benefit that may arise by reason of this contract other than as a water user within the Project and in the same manner as other water users within the Project.

CONFIRMATION OF CONTRACT

25. Upon execution of this contract, the Contractor promptly shall secure a final decree of the proper court of the State of California, approving and confirming the contract and decreeing and adjudging it and the apportionment of the benefits and thereunder to be lawful, valid, and binding on the Contractor. The Contractor shall furnish to the United States a certified copy of such decree and of all pertinent supporting records.

NOTICES

26. Any notice, demand, or request authorized or required by this contract shall be deemed to have been given, on behalf of the Contractor, when mailed, postage prepaid, or delivered to the Regional Director, Bureau of Reclamation, 2800 Cottage Way, Sacramento, California 95825, and on behalf of the United States, when mailed, postage prepaid, or delivered to the Board of Directors of the Stockton-East Water District, Post Office Box 5157, Stockton, California 95205. The designation of the addressee or the address may be changed by notice given in the same manner as provided in this article for other notices.

IN WITNESS WHEREOF, the parties hereto have executed this contract the day and year hereinabove written.

THE UNITED STATES OF AMERICA

By _____
Regional Director, Mid-Pacific Region
Bureau of Reclamation

(SEAL)

STOCKTON-EAST WATER DISTRICT

By _____
President

Attest:

_____
Secretary

RESOLUTION NO. 83-84-06

RESOLUTION BEFORE THE BOARD OF DIRECTORS OF STOCKTON EAST WATER DISTRICT AUTHORIZING EXECUTION OF NEW MELONES CONTRACT

WHEREAS, the Bureau of Reclamation has presented to the District a proposed contract between the United States and Stockton East Water District providing for project water service, Contract No. REV. R.O. 9/7-1983; and

WHEREAS, the District has reviewed this contract; and

WHEREAS, it is to the District's advantage to execute this contract providing for access to water from New Melones Reservoir; and

WHEREAS, the contract may be terminated within a period of five (5) years if the District does not own or have available to it facilities adequate for the conveyance and distribution of water;

NOW, THEREFORE BE IT RESOLVED and it is hereby resolved that Stockton East Water District shall enter into this contract with the United States Department of Interior, Bureau of Reclamation; and

BE IT FURTHER RESOLVED that the President and Secretary of the Board of Directors of the District are hereby authorized and directed to execute all necessary documents in order to carry out this resolution.

PASSED AND ADOPTED this 4th day of October, 1983 at a regular meeting of the Board of Directors of Stockton East Water District by the following vote. TO WIT:

AYES: EILERS, DONDERO, TAFT, HUCKINS, BOZZANO
NOES: NONE
ABSTENTION: NONE
ABSENT: MACNEAR

PERRY H. TAFT, President
Board of Directors
Stockton East Water District

ATTEST:

EDWARD M. STEFFANI, Secretary
Board of Directors
Stockton East Water District

(SEAL)

SECRETARY'S CERTIFICATE

I, EDWARD M. STEFFANI, Secretary of the Board of Directors of the STOCKTON-EAST WATER DISTRICT, Stockton, California, do hereby certify as follows:

The foregoing is a full, true and correct copy of a resolution duly adopted at a Regular Meeting of the Board of Directors of said District duly and regularly and legally held at the regular meeting place thereof on OCTOBER 4, 1983, of which meeting all of the members of said Board of Directors had due notice and at which a majority thereof were present.

I have carefully compared the same with the original minutes of said meeting on file and of record in my office, and the foregoing is a full, true, and correct copy of the original resolution adopted at said meeting and entered in said minutes.

Said resolution has not been amended, modified, or rescinded since the date of its adoption, and the same is now in full force and effect.

Dated: October 4, 1983

EDWARD M. STEFFANI
Secretary of the Board
STOCKTON-EAST WATER DIST

(SEAL)

JM

CONTRACT BETWEEN
CENTRAL SAN JOAQUIN WATER CONSERVATION DISTRICT
AND
STOCKTON EAST WATER DISTRICT

THIS CONTRACT, made this 29th day of August, 1991, between Central San Joaquin Water Conservation District, hereinafter referred to as "CSJWCD", a public agency of the State of California, duly organized, existing and acting pursuant to the laws thereof, with its primary place of business in Stockton, California, and Stockton East Water District, hereinafter referred to as "SEWD", a public agency of the State of California, duly organized, existing and acting pursuant to the laws thereof, with its primary place of business in Stockton, California.

RECITALS

WHEREAS, CSJWCD has executed a Water Service Contract with the United States, providing for the delivery and purchase of Project Water from the New Melones Unit of the Central Valley Project in the annual quantity of 80,000 acre feet; and

WHEREAS, SEWD has executed a Water Service Contract with the United States, providing for the delivery and purchase of Project Water from the New Melones Unit of the Central Valley Project in the annual quantity of 75,000 acre feet; and

WHEREAS, SEWD is constructing and will be constructing various components of a water conveyance system to bring Project water into its service area; and

WHEREAS, CSJWCD and SEWD have executed a Wheeling contract

wherein SEWD has agreed to transport and convey Project Water for CSJWCD to its service area; and

WHEREAS, CSJWCD is designing and will construct an internal distribution system to convey and transport its Project Water throughout its service area; and

WHEREAS, SEWD is constructing as part of its water conveyance facilities a Lower Farmington Canal from Farmington Dam into its service area; and

WHEREAS, said Lower Farmington Canal can be designed, constructed, and utilized to allow the conveyance of CSJWCD Project Water into the Duck Creek system of its service area;

WHEREAS, CSJWCD and SEWD wish to cooperate and utilize facilities to the joint and mutual benefit of each of the parties for the conveyance of Project Water;

NOW, THEREFORE, in consideration of the covenants herein contained, it is agreed as follows:

1. **Definition:** When used herein, unless otherwise distinctly expressed or manifestly incompatible with the intent hereof, the term:

(a) "Internal Distribution Facility" shall mean such channel clearing, crossing, piping, check dams, and other necessary improvements within each party's separate service area;

(b) "Lower Farmington Canal" shall mean a canal approximately 9.6 miles in length from Farmington Dam to the SEWD service area;

(c) "Project Water" shall mean water available to each party pursuant to the terms of a water service contract with the United

States for delivery of water from the New Melones unit of the Central Valley Project;

2. **Purpose of Agreement:** The purpose and intent of this contract is to specify the terms on which SEWD will convey Project Water of CSJWCD through the Lower Farmington Canal to the service area of CSJWCD.

3. **Covenant of Cooperation:** The parties to this contract do hereby covenant to cooperate in good faith to enable CSJWCD to take delivery of its Project Water in conformance with this contract.

4. **Construction of Lower Farmington Canal:** SEWD has designed, and intends to place out for bid, a water conveyance canal called the Lower Farmington Canal with a design capacity at a minimum flow of 200 CFS. Construction is intended to be completed by the latter part of 1991. SEWD agrees that CSJWCD will prepare an addendum to the Lower Farmington Canal design contract documents dated July, 1990, changing and modifying the first Fourteen Thousand (14,000) feet of the Canal to allow a minimum flow of 300 CFS and adding gates at the Funck Road pipe crossing and one (1) turnout structure. Such modification shall allow diversion of Project Water into the Duck Creek area of CSJWCD.

SEWD shall be fully responsible for the construction and construction schedule of the Lower Farmington Canal. SEWD shall bear no responsibility nor liability caused by delays in the construction schedule, for whatever reason.

5. **Use of Facility:** SEWD agrees to utilize the canal for, among other uses, conveyance of Project Water of CSJWCD to the

service area of CSJWCD at a maximum rate of 100 CFS. Nothing herein shall prevent the parties from agreeing to other sharing or utilization of other available capacity. It is understood that a separate agreement will be executed by the parties setting forth the specific terms for operation and delivery of water through the Canal by SEWD on behalf of CSJWCD.

6. **Compensation for Use of Lower Farmington Canal:** CSJWCD shall pay to SEWD an amount equal to the additional bid cost for gates at the Funck Road pipe crossing, one (1) turnout structure, an amount equal to the additional cost for increased excavation and improvement to expand the canal capacity, from 200 CFS to 300 CFS, an amount equal to the additional cost for increasing the Rock Creek Diversion structure capacity from 200 to 300 CFS, and an amount equal to the cost for increasing the Highway 4 pipe crossing capacity from 200 to 300 CFS. Said increased excavation cost shall be calculated on the unit price bid for excavation multiplied by the additional excavation quantity. CSJWCD shall make payment to SEWD for said modifications during the construction of the Lower Farmington Canal and at such time as SEWD is obligated to pay under the terms of the construction contract.

Any additional unforeseen costs which may arise as a result of oversizing the project for CSJWCD participation shall be borne by CSJWCD.

Upon receipt of bids for construction and prior to award of a construction contract thereof, should CSJWCD, in its sole discretion, deem the bided costs to be excessive or unacceptable

then CSJWCD may withdraw from this agreement and the terms and conditions herein will be void.

7. **Additional Compensation:** Notwithstanding any other provision of this Agreement, if, and only if, the amounts paid by CSJWCD pursuant to Paragraph 6 of this Agreement are less than Two Hundred Thousand Dollars ($200,000.00), then CSJWCD shall pay to SEWD an additional sum, which shall be Two Hundred Thousand Dollars ($200,000.00) less the amount paid pursuant to Paragraph 6 of this Agreement. CSJWCD shall pay the additional compensation within thirty (30) days of SEWD acceptance of completion of the Lower Farmington Canal.

8. **Operation and Maintenance:** The operation and maintenance expense for the first fourteen thousand (14,000) feet of the Canal shall be determined annually by multiplying the actual operation and maintenance cost by the quotient of total acre feet wheeled for CSJWCD divided by the total acre feet wheeled for CSJWCD plus the total acre feet conveyed for SEWD. Operation and maintenance costs shall not include costs for repair and replacement due to faulty or negligent construction of the Canal or negligent operation and maintenance. Annual review of all operation and maintenance costs shall be provided to CSJWCD. CSJWCD shall be notified of any Committee and Board Meetings when operation and maintenance procedures and costs are discussed. CSJWCD shall pay operation and maintenance costs annually on January 31, for the previous calendar year.

9. **Term of Contract:** This Contract shall be effective on

the date first above written and shall remain in effect through December 21, 2022 or until such time as both parties Water Service Contract with the United States shall terminate; provided, however, that this Contract shall automatically renew for a period of one (1) year, and at the expiration of such renewal period, or any subsequent renewal period, for one (1) year, unless either party shall give notice of non-renewal in writing prior to thirty (30) days before the commencement of any renewal period.

10. **Attorneys fees and Costs:** In any case where court action is instituted by one or more parties against one or more other parties to interpret this Agreement, the rights of the respective parties hereunder, or to enforce a right or obligation created by this Agreement, the prevailing party or parties shall receive costs and reasonable attorneys fees to be set by the court.

11. **Specific Performance:** By reason of the specialized nature of the water service to be rendered, and for the further reason that the extent of any damage caused to any party by another by reason of any breach of this Agreement may be extremely difficult to determine, it is agreed by the parties hereto that an action for damages is an inadequate remedy for any breach, and that specific performance, without precluding any other remedy available in equity or at law, will be necessary to furnish any party hereto with an adequate remedy for the breach by any other party hereto of any covenant or obligation for the benefit of the aggrieved party.

12. **Partial Invalidity:** If any term of this Agreement is held by a court of competent jurisdiction to be void or unenforceable,

the remainder of the contract terms shall remain in full force and effect and shall not be affected.

13. **Assignability:** The provisions of this contract shall apply to and bind the successors and assigns of the parties hereto, but no assignment or transfer of this contract or any part or interest therein shall be valid until approved in writing by the parties.

14. **Notices:** Any notice, demand, or request authorized or required by this contract shall be deemed to have been given, on behalf of the Contractor, when mailed, postage prepaid, or delivered to the Central San Joaquin Water Conservation District, 311 East Main Street, Suite 202, Stockton, California , 95202, and on behalf of SEWD when mailed postage prepaid, or delivered to Stockton East Water District, 6767 East Main Street, Stockton, California, 95205. The designation of the addressee or the address may be changed by notice given in the same manner as provided in this article for other notices.

IN WITNESS WHEREOF, the parties hereto have executed this contract the day and year hereinabove written.

CENTRAL SAN JOAQUIN WATER CONSERVATION DISTRICT

By:

GRANT THOMPSON, President

STOCKTON EAST WATER DISTRICT

By:

JACK TONE

CONTRACT BETWEEN
CENTRAL SAN JOAQUIN WATER CONSERVATION DISTIRCT
AND STOCKTON EAST WATER DISTRICT

This Contract, made this 4th day of January, 2000, BETWEEN CENTRAL SAN JOAQUIN WATER CONSERVATION DISTRICT (CSJWCD), a public agency of the State of California, duly organized, existing and acting pursuant to the laws thereof, with its primary place of business in Stockton, California, and the STOCKTON EAST WATER DISTRICT (SEWD), a public agency of the State of California, duly organized, existing and acting pursuant to the laws thereof, with its primary place of business in Stockton, California.

1. Recitals.

   a. CSJWCS has executed a Water Service Contract with the United States Bureau of Reclamation, providing for the delivery and purchase of Project water from the New Melones Unit of the Central Valley Project in the annual quantity of 80,000 acre feet.

   b. SEWD has executed a Water Service Contract with the United States Bureau of Reclamation, providing for the delivery and purchase of water from the New Melones Unit of the Central Valley Project in the annual quantity of 75,000 acre feet.

   c. SEWD has constructed a water conveyance system to bring water from the New Melones Project into its service area.

   d. CSJWCD and SEWD have executed a Contract dated January 30, 1990, wherein SEWD has agreed to transport and convey water from the New Melones Project for CSJWCD to its service area (1990 Wheeling Agreement).

   e. SEWD has constructed a Lower Farmington Canal for the conveyance of water from Farmington Dam into its service area.

   f. CSJWCD and SEWD have executed a second Contract dated August 29, 1991, providing for the conveyance of CSJWCD water from the New Melones Project through the Lower Farmington Canal and into the Duck Creek system of its service area (1991 Wheeling Agreement).

   g. CSJWCD and SEWD wish to cooperate and utilize facilities to the joint and mutual benefit of each of the parties for the conveyance of water from the New Melones Project.

NOW, THEREFORE, in consideration of the covenants herein contained, it is agreed as follows:

2. Definitions. When used herein, unless otherwise distinctly expressed or manifestly incompatible with the intent hereof, the term:

   a. "Internal Distribution Facility" shall mean such channel clearing, crossing, piping, check dams and other improvements within the CSJWCD service area owned, operated and maintained by CSJWCD.

   b. "Lower Farmington Canal" shall mean a canal approximately 9.6 miles in length from Farmington Dam to the SEWD service area owned, operated and maintained by SEWD.

   c. "CJWCD Project Water" shall mean irrigation water available to CSJWCD pursuant to the terms of its water service contract with the United States for delivery of water from the New Melones Unit of the Central Valley Project.

   d. "SEWD Project Water" shall mean irrigation water available to SEWD pursuant to the terms of its water service contract with the United States for delivery of water from the New Melones Unit of the Central Valley Project.

   e. "Year" shall mean the calendar year.

3. Purpose of Agreement. The purpose and intent of this Contract is to specify the terms on which CSJWCD and SEWD will convey water belonging to the other party through their respective facilities to the service area of the other party. The parties intend that each party will convey a like amount of water for the other party, that actions will be taken by the parties to insure equivalency and that the parties will try to maximize the use of surface water within their respective service areas.

4. Covenant of Cooperation. The parties to this Contract do hereby covenant to cooperate in good faith each to enable the other to take delivery of water in conformance with this Contract.

5. Use of Lower Farmington Canal. SEWD agrees to utilize the Lower Farmington Canal for conveyance of quantities of CSJWCD Project Water into the service area of CSJWCD below the turnout for Duck Creek, in accordance with the terms and conditions of this Contract.

6. Use of Internal Distribution Facilities. CSJWCD agrees to utilize its Internal Distribution Facilities for conveyance of quantities of SEWD Project Water into the service area of SEWD in accordance with the terms and conditions of this Contract.

7. Quantities of Water. The quantity of wheeling capacity available in each facility for the use of the other party shall be that capacity not being utilized at the time of conveyance by the party owning the facility, up to the design capacity of the facility.

8. Prior Approval. The quantity and timing of water to be conveyed pursuant to this Contract each Year shall be approved in writing by the conveying party. The party requesting conveyance shall submit requests in writing to the other party by February 1 of each Year, and written response shall be provided by March 1 of each Year. Such written request shall include the total quantity of water to be conveyed, location and purpose of use, facilities to be utilized, plans and specifications for any proposed facilities to be constructed, proposed method of measurement, and duration of conveyance.

9. Improvements. Upon receipt of written approval of the terms of the conveyance, as set forth above, the party to convey water shall construct any and all improvements determined to be needed by the approving party in accordance with the terms of approval.

10. Record Keeping and Accounting. Each party shall keep records of the quantities of water wheeled through its facilities for the other party hereto pursuant to this Contract. At the end of each Year, the parties shall prepare an accounting of the quantities of water conveyed ("Annual Accounting"). It is the intent of the parties that the quantities of water conveyed by each party be approximately equivalent.

11. Compensation. This is intended to be a trade of equivalent value for the conveyance of like quantities of water by each party. As a result, no monetary compensation is intended to be paid from either party to the other for the rights, duties, and obligations expressed herein, provided the Annual Accounting indicates the original intention of this agreement is being achieved.

12. Term. This Contract shall be effective upon the first date written and shall remain in effect until terminated by either party as provided herein. Either party may terminate by providing notice to the other in writing by December 31 of any year.

13. Indemnity. Each party to this Contract shall indemnify, defend, and hold harmless the other party, its employees, agents, and officers, and their respective successors and assigns, from and against any and all claims, demands, losses, liability, or damages, including, but not limited to, attorneys' fees and court costs incurred in defending against the same, for personal injury, death, or property damage arising from, or in any way connected with, that party's operation of its water conveyance system as provided in this Contract.

14. Attorneys Fees and Costs. In any case where court action is instituted by a party against another party to interpret this Contract, the rights of the respective parties hereunder, or to enforce a right or obligation created by this Contract, the prevailing party or parties shall receive costs and reasonable attorneys fees to be set by the court.

15. Assignability. The provisions of this Contract shall apply to and bind the successors and assigns of the parties hereto, but no assignment or transfer of this Contract or any part or interest therein shall be valid until approved in writing by the parties.

16. Notices. Any notice, demand, or request authorized or required by this Contract shall be deemed to have been given, on behalf of the party, when mailed, postage prepaid, or delivered to a party at the following address:

Central San Joaquin Water Conservation District
311 East Main Street, Suite 202
Stockton, California 95202

Stockton East Water District
Post Office Box 5157
6767 East Main Street
Stockton, California 95205

The designation of the addressee or the address may be changed by notice given in the same manner as provided in this article for other notices.

17. Continued Validity. Nothing in this Contract shall alter the terms of the 1990 Wheeling Agreement or the 1991 Wheeling Agreement.

CENTRAL SAN JOAQUIN WATER CONSERVATION DISTRICT

By _____

Attest: _____

STOCKTON EAST WATER DISTRICT

By _____

Attest: _____
Kevin M. Kauffman, Secretary

ATTACHMENT C

2009-2010 Temporary Water Transfer Agreements between OID and SEWD, and SSJID and SEWD

(This page left blank intentionally.)

2009-2010 TEMPORARY WATER TRANSFER AGREEMENT BY AND BETWEEN OAKDALE IRRIGATION DISTRICT AND STOCKTON EAST WATER DISTRICT

This Agreement is entered into this 20th day of October 2009, by Oakdale Irrigation District ("OID" or "District"), and Stockton East Water District ("Purchaser"). OID and Purchaser are collectively referred to hereafter as "parties."

The parties agree as follows:

RECITALS

WHEREAS, District is operating under and by virtue of Division 11 of the California Water Code; and

WHEREAS, Purchaser supplies irrigation, municipal and industrial (M&I) and domestic water to portions of eastern San Joaquin County from a combination of surface and groundwater; and

WHEREAS, Purchaser has a contract with the Department of the Interior's Bureau of Reclamation ("Reclamation") to be supplied with water from the Stanislaus River utilizing the Goodwin Dam Intake structure and other facilities owned by the Purchaser; and

WHEREAS, Purchaser anticipates that its water supply for 2010 from Reclamation will be insufficient for Purchaser's needs and Purchaser desires to purchase water from District to make up for such insufficient supply;

WHEREAS, District is the owner of certain water rights to the waters of the Stanislaus River, including pre-1914 appropriative water rights; and

WHEREAS, due to ongoing conservation practices and improvements in facilities by the District, the water to be sold to the Purchaser by this Agreement, ("Agreement-Water" or "water,") is surplus to the current needs of the landowners and water users of the District in accordance with California Water Code section 22259; and

WHEREAS, the quantity and quality of ground water within lands underlying the Purchaser and in some parts of District is threatened from over-drafting of ground water in areas of San Joaquin County, including some areas within Purchaser's boundaries and without the sale of the water to Purchaser under this Agreement, water users within Purchaser's boundaries will have to use more groundwater; and

WHEREAS, by this Agreement, the parties intend to facilitate a sale of conserved water during the 2009-2010 water year by District to Purchaser,

NOW, THEREFORE, OID and the Purchaser, on the terms and conditions herein set forth, agree as follows:

AGREEMENT

1. **TERM:** This Agreement shall commence upon the Effective Date and shall terminate on September 30, 2010.

2. **QUANTITY:** District will sell and deliver 15,000 acre-feet of water to Purchaser.

3. **PURCHASE PRICE:** The Purchaser Price for the Agreement-Water is $150 an acre foot of water, for a total price of $2,250,000. Purchaser shall make payment pursuant to the following schedule: $750,000 on January 1, 2010, $750,000 on June 1, 2010, and $750,000 on September 1, 2010.

4. **BENEFICIAL USE OF WATER BY PURCHASER:** District will sell and make Agreement-Water available to Purchaser for reasonable and beneficial uses within its boundaries in the quantities described and subject to the terms and conditions of this Agreement. The Purchaser shall be solely responsible for putting the Agreement-Water to beneficial use.

5. **WATER QUALITY:** District makes no warranty or representation as to the quality or fitness for use of Agreement-Water sold and delivered to Purchaser.

6. **COMMENCEMENT OF DELIVERY:** Purchaser may begin taking water when this Agreement has been signed by both parties and a copy delivered to both parties and when Purchaser and District have agreed on a delivery schedule to be attached to this Agreement as Exhibit A.

7. **WATER DELIVERY AND MEASUREMENT:** Agreement-Water will be delivered or otherwise made available to Purchaser for diversion at the Goodwin Intake Facility during the term of this Agreement. Diversions shall not exceed 100 cubic feet per second without District's prior approval. Tri-Dam Project personnel will determine the water measurements using the measuring device installed on the Goodwin Tunnel and such other means as are customarily used by them to measure water taken by Purchaser through the Goodwin Tunnel. No water may be diverted after September 30, 2010.

8. **NO RESALE:** The Agreement-Water is being sold to Purchaser for M&I and domestic use within its boundaries. Purchaser will not resell Agreement-Water without the prior written consent of District, which approval may be withheld in District's sole and unlimited discretion.

9. **NOTICES:** All notices that are required, either expressly or by implication, to be given by any party to the other under this Agreement shall be delivered or mailed, United States first-class postage prepaid, addressed as follows:

Oakdale Irrigation District
1205 East "F" Street
Oakdale, CA 95361
Attn: General Manager/Secretary
Fax: (209) 847-3468

Stockton East Water District
6767 E. Main St.
Stockton, CA 95215
Attn: General Manager
Fax: (209) 948-0423

Notice shall be deemed given (a) two calendar days following mailing via regular or certified mail, return receipt requested, (b) one business day after deposit with any one-day delivery service assuring "next day" delivery, (c) upon actual receipt of notice, or (d) upon transmission, if by facsimile, whichever is earlier. The parties shall promptly give written notice to each other of any change of address, and mailing or shipment to the addresses stated herein shall be deemed sufficient unless written notification of a change of address has been received.

10. **ENTIRE AGREEMENT:** This Agreement constitutes the entire Agreement between the parties, and supersedes any oral agreement, statement or promise relating to the subject matter of the Agreement. No other agreement, statement, or promise made to any party, or to any employee, officer, or agent of a party to this Agreement, or to any other person, that is not in writing and signed by all parties to this Agreement shall be binding upon them. Any amendment, including oral modifications, must be reduced to writing and signed by all parties to be effective.

11. **COOPERATION:** To the extent reasonably required, each party to this Agreement shall, in good faith, cooperate and assist each of the other parties in meeting such requirements of federal and/or state law and such requirements of regulatory agencies as may be applicable to performance of any terms of the Agreement. Should there be any lawsuit or regulatory challenge filed concerning any aspect of this Agreement, either party may terminate this Agreement and Purchaser shall pay District for water it diverted at the contract price before termination of the Agreement. Should the parties decide not to terminate the Agreement but defend against the action, the parties agree to cooperate in the defense and to equally share the attorneys and costs incurred in defending the legal challenge.

12. **EFFECTIVE DATE:** The effective date of this Agreement shall be the date first above written which shall be the date this Agreement is signed by both parties, or if signed on different dates, the later of the two dates.

OAKDALE IRRIGATION DISTRICT

By _____
Its General Manager

Dated: 10/20/09

STOCKTON EAST WATER DISTRICT

By _____
Its General Manager

Dated: 10/14/09

EXHIBIT A

DELIVERY SCHEDULE

MONTH	ACRE-FEET	AVE DAY CFS
October	1,550	25
November	0	0
December	0	0
January	0	0
February	0	0
March	1,500	24
April	2,000	33
May	2,450	40
June	2,350	38
July	1,850	30
August	1,850	30
September	1,450	24

Total 15,000 AF/yr

2009-2010 TEMPORARY WATER TRANSFER AGREEMENT BY AND BETWEEN SOUTH SAN JOAQUIN IRRIGATION DISTRICT AND STOCKTON EAST WATER DISTRICT

This Agreement is entered into this 19th day of October 2009, by South San Joaquin Irrigation District ("SSJID or District"), and Stockton East Water District ("Purchaser".) SSJID and Purchaser are collectively referred to hereafter as "parties".

The parties agree as follows:

RECITALS

WHEREAS, District is operating under and by virtue of Division 11 of the California Water Code; and

WHEREAS, Purchaser supplies irrigation, municipal and industrial (M&I) and domestic water to portions of eastern San Joaquin County from a combination of surface and groundwater; and

WHEREAS, Purchaser has a contract with the Department of the Interior's Bureau of Reclamation ("Reclamation") to be supplied with water from the Stanislaus River utilizing the Goodwin Dam Intake structure and other facilities owned by the Purchaser; and

WHEREAS, Purchaser's anticipates that its water supply for 2010 from Reclamation will be insufficient for Purchaser's needs and Purchaser desires to purchase water from District to make up for such insufficient supply;

WHEREAS, District is the owner of certain water rights to the waters of the Stanislaus River, including pre-1914 appropriative water rights; and

WHEREAS, due to ongoing conservation practices and improvements in facilities by the District, the water to be sold to the Purchaser by this Agreement, ("Agreement-Water or "water,") is surplus to the current needs of the landowners and water users of the District in accordance with California Water Code section 22259; and

WHEREAS, the quantity and quality of ground water within lands underlying the Purchaser and in some parts of District is threatened from over-drafting of ground water in areas of San Joaquin County, including some areas within Purchaser's boundaries and without the sale of the water to Purchaser under this Agreement, water users within Purchaser's boundaries will have to use more groundwater; and

WHEREAS, by this Agreement, the parties intend to facilitate a sale of conserved water during the 2009-2010 water year by District to Purchaser,

NOW, THEREFORE, SSJID and the Purchaser, on the terms and conditions herein set forth, agree as follows:

AGREEMENT

1. **TERM:** This Agreement shall commence upon the Effective Date and shall terminate on September 30, 2010.

2. **QUANTITY:**

a. District agrees to sell and deliver to Purchaser 15,000 acre-feet of water if the United States Bureau of Reclamation's forecast of inflow to New Melones Reservoir ("forecast") equals 550,000 acre-feet or more. District agrees to sell and deliver to Purchaser 6,250 acre-feet of water if the forecast is less than 550,000 acre-feet but more than 500,000 acre-feet. District agrees to sell and deliver to Purchaser 4,000 acre-feet of water if the forecast is below 500,000 acre-feet.

b. The amount of Agreement-Water is based on the water supply forecast using actual inflow through April 1st and using forecasted inflow at the 90% exceedance level for the year.

3. **PURCHASE PRICE**: The Purchaser Price for the Agreement-Water is $150 an acre foot for water to be used for M&I and domestic purposes. SSJID shall bill Purchaser on a monthly basis for water delivered in the preceding month. Purchaser shall pay within thirty days of receipt of invoice.

4. **BENEFICIAL USE OF WATER BY PURCHASER:** District will sell and make Agreement-Water available to Purchaser for reasonable and beneficial uses within its boundaries in the quantities described and subject to the terms and conditions of this Agreement. The Purchaser shall be solely responsible for putting the Agreement-Water to beneficial use.

5. **WATER QUALITY:** District makes no warranty or representation as to the quality or fitness for use of Agreement-Water sold and delivered to Purchaser.

6. **COMMENCEMENT OF DELIVERY:** Purchaser may begin taking water when this Agreement has been signed by both parties and a copy delivered to both parties and when Purchaser and District have agreed on a delivery schedule to be attached to this Agreement as Exhibit A.

7. **WATER DELIVERY AND MEASUREMENT:** Agreement-Water will be delivered or otherwise made available to Purchaser for diversion at the Goodwin Intake Facility during the term of this Agreement. Diversions shall not exceed 100 cubic feet per second without District's prior approval. Tri-Dam Project personnel will determine the water measurements using the measuring device installed on the Goodwin Tunnel and such other means as are

customarily used by them to measure water taken by Purchaser through the Goodwin Tunnel. No water may be diverted after September 30, 2010.

8. **NO RESALE:** The Agreement-Water is being sold to Purchaser for M&I and domestic use within its boundaries. Purchaser will not resell Agreement-Water without the prior written consent of District, which approval may be withheld in District's sole and unlimited discretion.

9. **ENVIRONMENTAL COMPLIANCE:** This Agreement is made on the bases that the sale is exempt under Water Code section 1729 and because no significant adverse impacts will occur under the California Environmental Quality Act. Should this position be challenged, either party may terminate this Agreement in which Purchaser shall pay District for the water it diverted at the contract price before termination of the agreement. The parties agree to cooperate in the defense of any legal challenge and to share the attorneys and costs incurred in defending the legal challenge.

10. **NOTICES:** All notices that are required, either expressly or by implication, to be given by any party to the other under this Agreement shall be delivered or mailed, United States first-class postage prepaid, addressed as follows:

South San Joaquin Irrigation District
11011 East Highway 120
Manteca, CA 95336
Attn: General Manager/Secretary
Fax: (209) 823-8406

Stockton East Water District
6767 E. Main St.
Stockton, CA 95215
Attn: General Manager
Fax: (209) 948-0423

Notice shall be deemed given (a) two calendar days following mailing via regular or certified mail, return receipt requested, (b) one business day after deposit with any one-day delivery service assuring "next day" delivery, (c) upon actual receipt of notice, or (d) upon transmission, if by facsimile, whichever is earlier. The parties shall promptly give written notice to each other of any change of address, and mailing or shipment to the addresses stated herein shall be deemed sufficient unless written notification of a change of address has been received.

11. **ENTIRE AGREEMENT:** This Agreement constitutes the entire Agreement between the parties, and supersedes any oral agreement, statement or promise relating to the subject matter of the Agreement. No other agreement, statement, or promise made to any party, or to any employee, officer, or agent of a party to this Agreement, or to any other person, that is not in writing and signed by all parties to this Agreement shall be binding upon them. Any amendment, including oral modifications, must be reduced to writing and signed by all parties to be effective.

12. **COOPERATION:** To the extent reasonably required, each party to this Agreement shall, in good faith, cooperate and assist each of the other parties in meeting such requirements of federal and/or state law and such requirements of regulatory agencies as may be applicable to performance of any terms of the Agreement.

13. **EFFECTIVE DATE:** The effective date of this Agreement shall be the date first above written which shall be the date this Agreement is signed by both parties, or if signed on different dates, the later of the two dates.

SOUTH SAN JOAQUIN IRRIGATION DISTRICT

By _____
Its General Manager

Dated: 10/18/09

STOCKTON EAST WATER DISTRICT

By _____
Its General Manager

Dated: 10/14/09

EXHIBIT A
Delivery Schedule

MONTH	ACRE-FEET	AVE DAY CFS
October	1,550	25
November	0	0
December	0	0
January	0	0
February	0	0
March	1,500	24
April	2,000	33
May	2,450	40
June	2,350	38
July	1,850	30
August	1,850	30
September	1,450	24

Total 15,000 AF/yr

Letter of Transmittal

mailing address:
P.O. Box 747
RIPON, CA 95336

physical address:
1011 E. Hwy 120
MANTECA, CA 95336

South San Joaquin
Irrigation District
11011 East Hwy. 120
Manteca, CA

(209) 249-4623
Fax: (209) 249-4652

RECEIVED
OCT 23 2009
WATER DIST.

To:	Date: October 19, 2009
Kevin Kauffman, GM Stockton East Water District 6767 East Main Street Stockton, CA 95215	**RE: 2009-2010 Temporary Water Transfer Agr.**

GENTLEMEN:

WE ARE SENDING YOU ☒ **Attached** ☐ Prints ☐ Plans ☐ Specifications
☒ Original documents
☐ Change Order
☐ Copy of agreement

DESCRIPTION
Fully executed original 2009-2010 Temporary Water Transfer Agreement

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ For review and comment
☒ For your records ☐ Returned for corrections
☒ As requested ☐ Signature needed ☐ For your information

REMARKS: _____

COPY TO _____

SIGNED Cheryl Burke
Cheryl Burke
Executive Secretary
209-249-4623

ADDENDUM TO
2009-2010 TEMPORARY WATER TRANSFER AGREEMENT
BY AND BETWEEN
OAKDALE IRRIGATION DISTRICT, SOUTH SAN JOAQUIN IRRIGATION DISTRICT
AND
STOCKTON EAST WATER DISTRICT

This Agreement is entered into this 28th day of June 2010, by Oakdale Irrigation District and South San Joaquin Irrigation District ("OID" "SSJID" or "Districts"), and Stockton East Water District ("Purchaser"). OID, SSJID and Purchaser are collectively referred to hereafter as "parties."

The parties agree as follows:

RECITALS

WHEREAS, OID and Purchaser entered into the 2009-2010 Temporary Water Transfer Agreement dated October 20, 2009 for the transfer of 15,000 acre feet of Stanislaus River water for the 2009-2010 water year. SSJID and Purchaser entered into the 2009-2010 Temporary Water Transfer Agreement dated October 19, 2009 for the transfer of up to 15,000 acre feet of Stanislaus River water for the 2009-2010 water year (collectively referred to as 2009-2010 Contracts).

WHEREAS, Districts have entered into an Agreement with San Luis and Delta-Mendota Water Authority; and

WHEREAS, it is uncertain if San Luis and Delta-Mendota Water Authority will be able to take delivery of the water through Banks, Tracy or both pumping facilities by September 30, 2010; and

WHEREAS, Purchaser is intending to Reschedule up to its entire 2010 water allocation with United States Bureau of Reclamation (Reclamation).

NOW, THEREFORE, Districts and the Purchaser have agreed to the terms and conditions herein set forth below as an addendum to the 2009-2010 Contracts:

AGREEMENT

1. On or before June 15, 2010 the District shall know the determination of its amount of water under the 1988 Stipulated Agreement. The District shall determine at the time the amount of additional water it has available, up to 50,000 acre feet, to sell. It shall inform SEWD on that day of such amount.

2. On or before June 15, 2010 San Luis and Delta-Mendota Water Authority will inform the District of its ability to take the transfer water through Banks, Tracy or both,

and the amount of water San Luis and Delta-Mendota Water Authority will be able to take. The District will inform Purchaser of the quantity of water to be transferred to San Luis and Delta-Mendota Water Authority.

3. As of June 15, 2010 Purchaser will know what amount of water Districts has to supply to Purchaser. (Paragraph 13 minus Paragraph 14)

4. On or before June 30, 2010 Purchaser shall inform Districts of what amount of water it will purchase under Paragraph 1.

5. The price for the water will be Fifty Dollars ($50.00) per acre foot.

6. The District and Purchaser will arrive at a mutually agreeable delivery schedule.

7. The purchase of water pursuant to this Addendum is contingent upon the Reclamation approving Rescheduling and/or Carryover Guidelines for New Melones Reservoir.

8. All terms and conditions of the 2009-2010 Contracts remain in effect.

OAKDALE IRRIGATION DISTRICT

By _____
Steve Knell-General Manager
Dated: 6/24/10

STOCKTON EAST WATER DISTRICT

By _____
Kevin Kauffman-General Manager
Dated: 6/22/10

SOUTH SAN JOAQUIN IRRIGATION DISTRICT

By _____
Jeff Shields-General Manager
Dated: 6/25/10

ATTACHMENT D

District Facilities Maps

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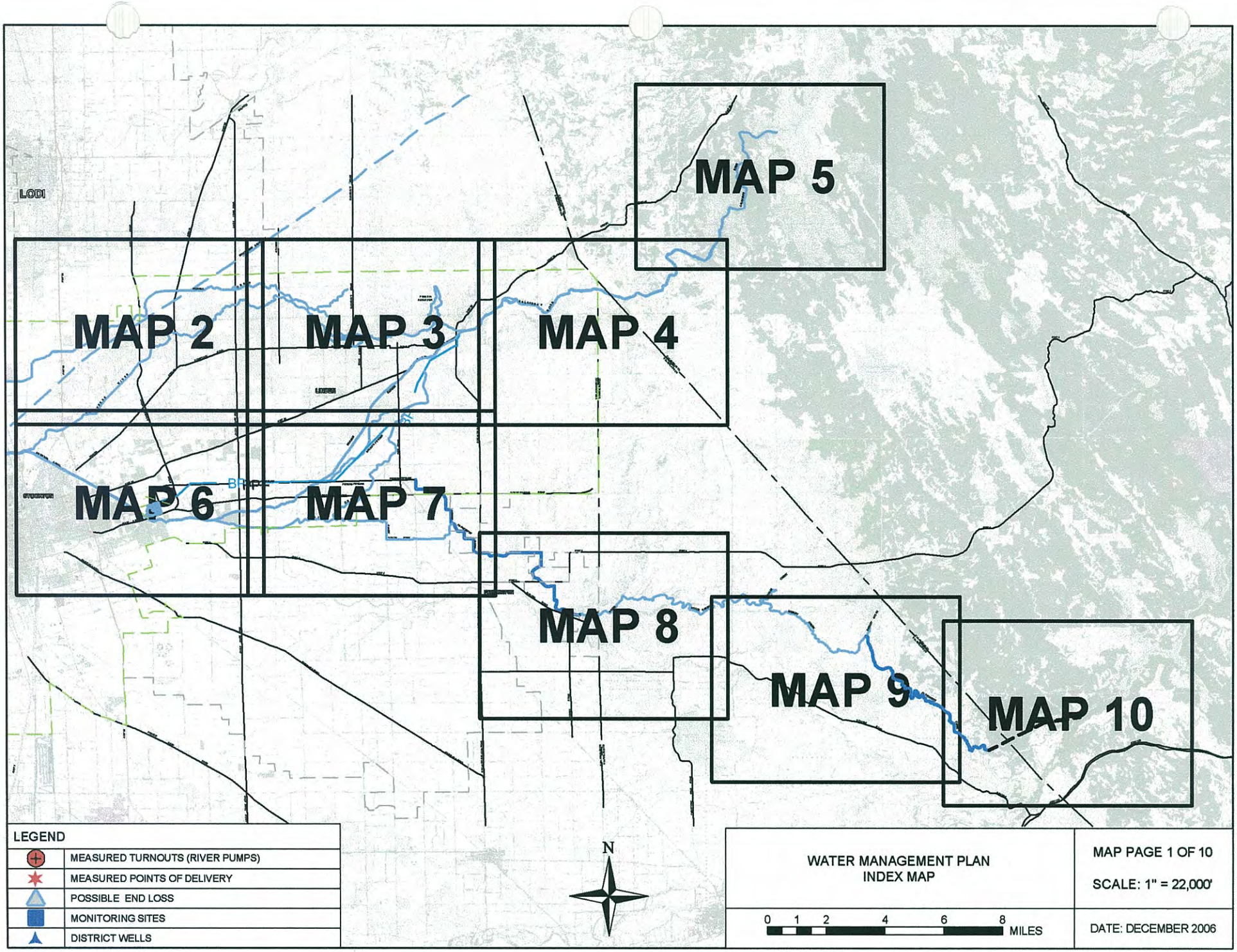
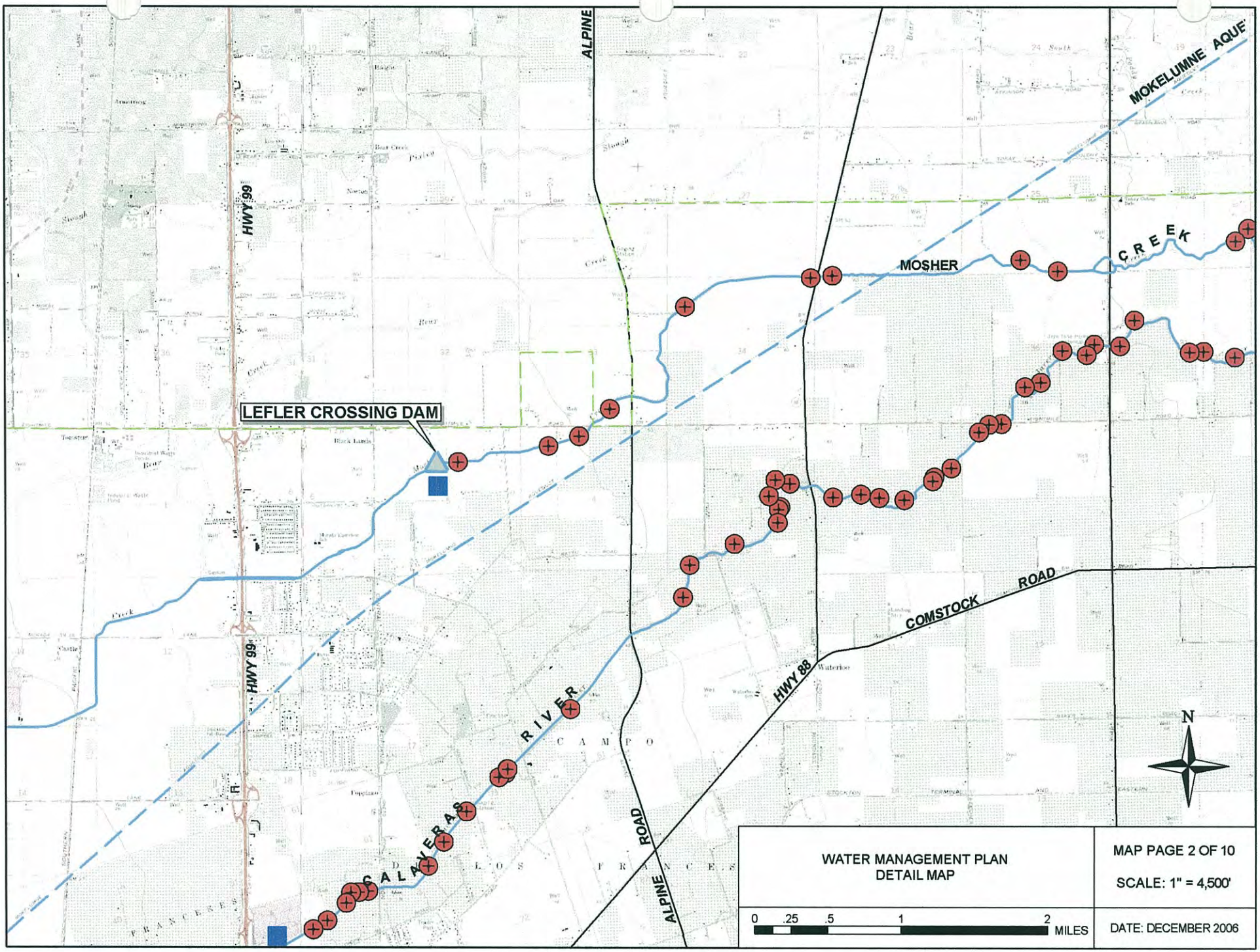
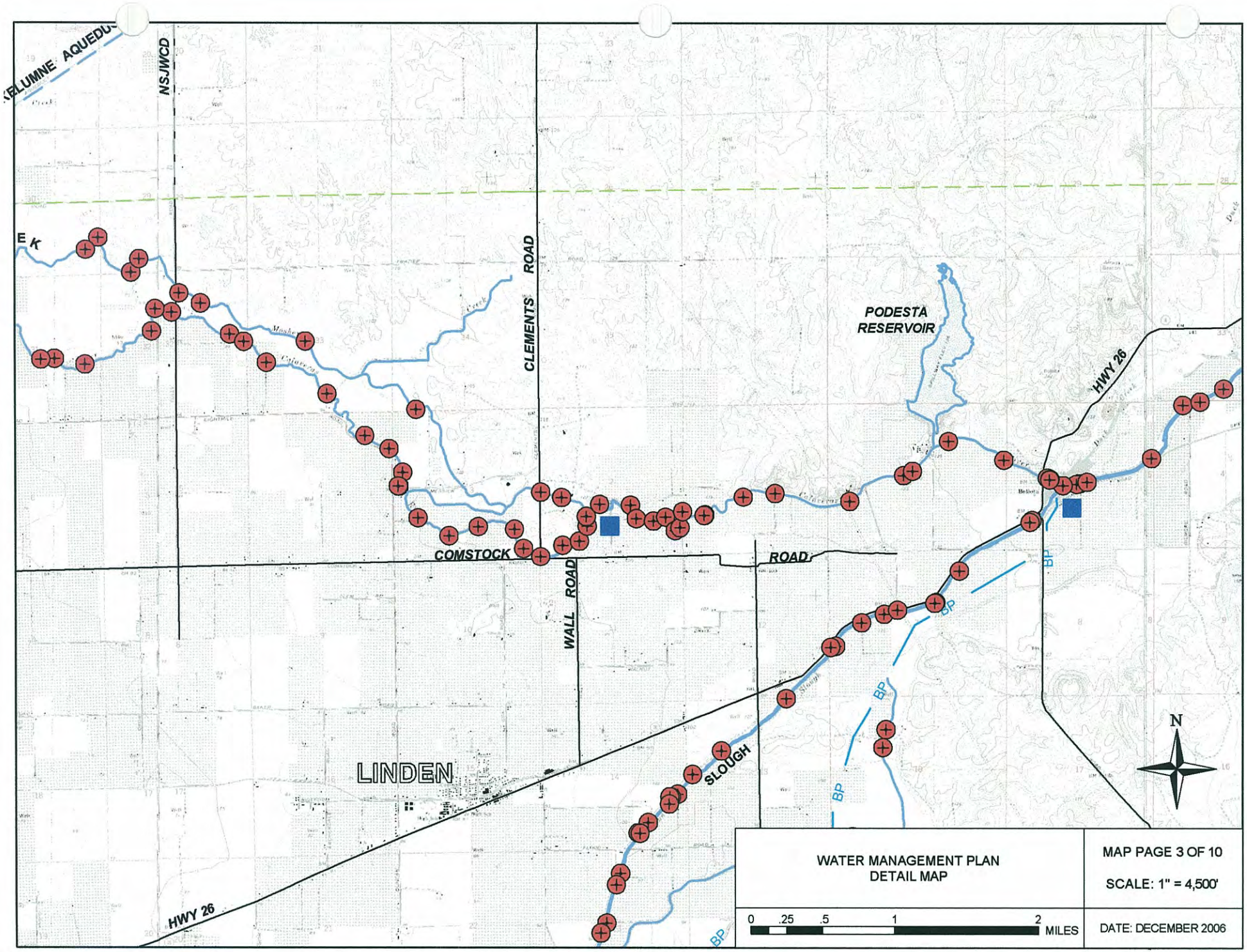
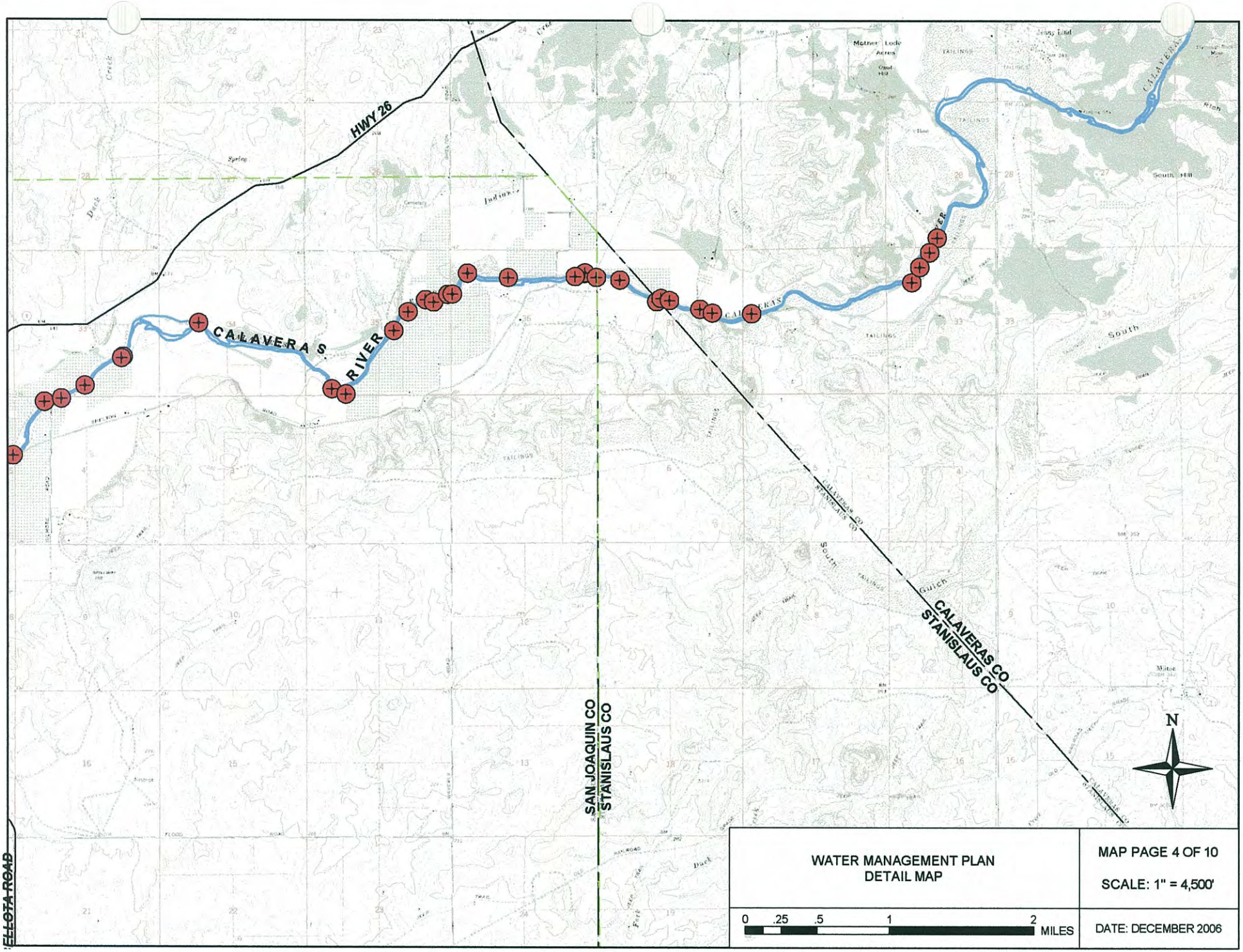

MAP 5
MAP 2
MAP 3
MAP 4
MAP 6
MAP 7
MAP 8
MAP 9
MAP 10
LODI
LEGEND
MEASURED TURNOUTS (RIVER PUMPS)
MEASURED POINTS OF DELIVERY
POSSIBLE END LOSS
MONITORING SITES
DISTRICT WELLS
N
WATER MANAGEMENT PLAN
INDEX MAP
0 1 2 4 6 8 MILES
MAP PAGE 1 OF 10
SCALE: 1" = 22,000'
DATE: DECEMBER 2006


ALPINE
MOKELUMNE AQUE
HWY 99
MOSHER
CREEK
LEFLER CROSSING DAM
HWY 99
COMSTOCK
ROAD
HWY 88
CALAVERAS
RIVER
ALPINE
ROAD
N
WATER MANAGEMENT PLAN
DETAIL MAP
MAP PAGE 2 OF 10
SCALE: 1" = 4,500'
0 .25 .5 1 2 MILES
DATE: DECEMBER 2006


NSJWCD
CLEMENTS ROAD
PODESTA RESERVOIR
HWY 26
COMSTOCK ROAD
WALL ROAD
LINDEN
SLOUGH
BP
N
WATER MANAGEMENT PLAN
DETAIL MAP
MAP PAGE 3 OF 10
SCALE: 1" = 4,500'
0 .25 .5 1 2 MILES
DATE: DECEMBER 2006



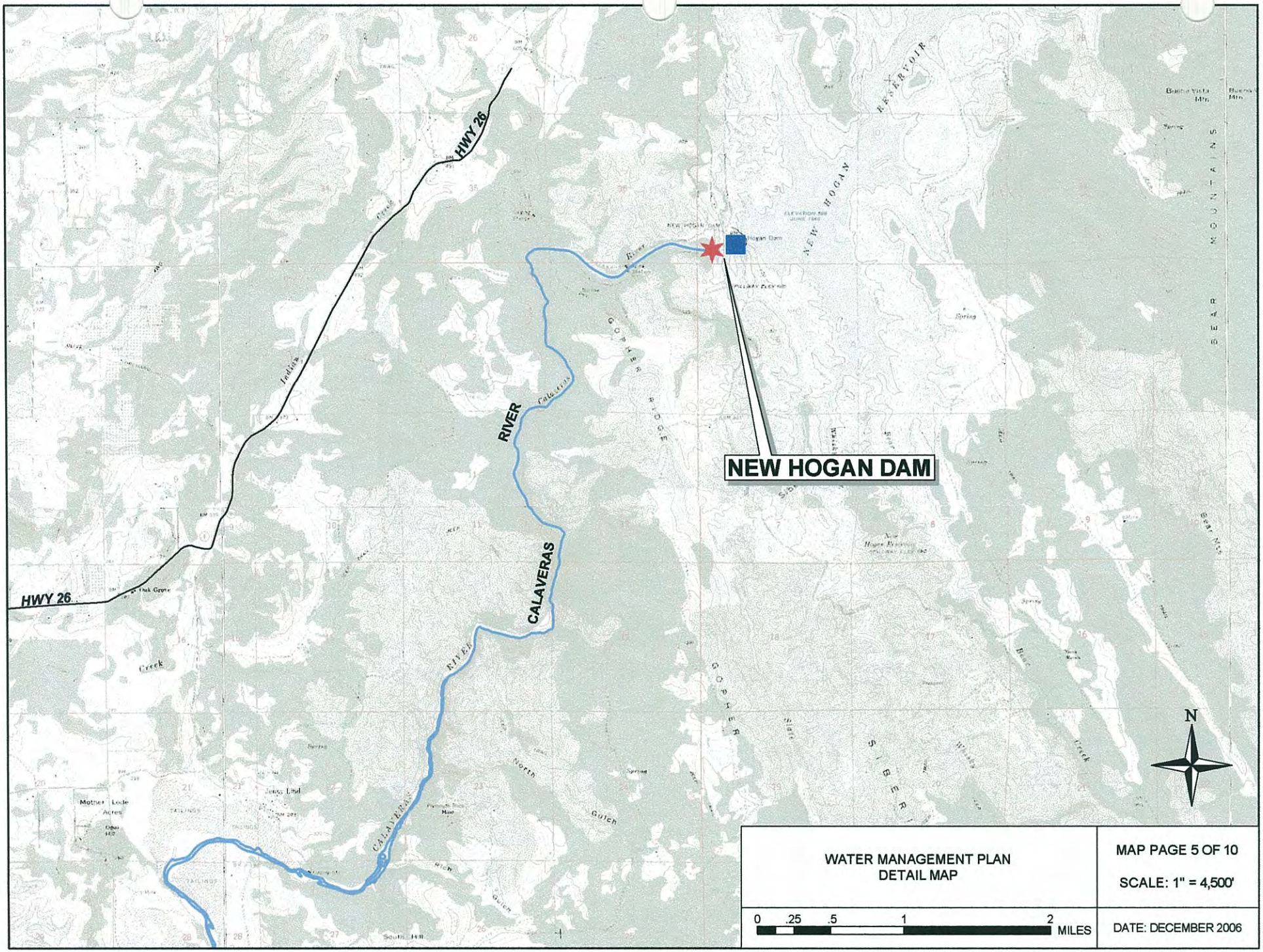
WATER MANAGEMENT PLAN
DETAIL MAP

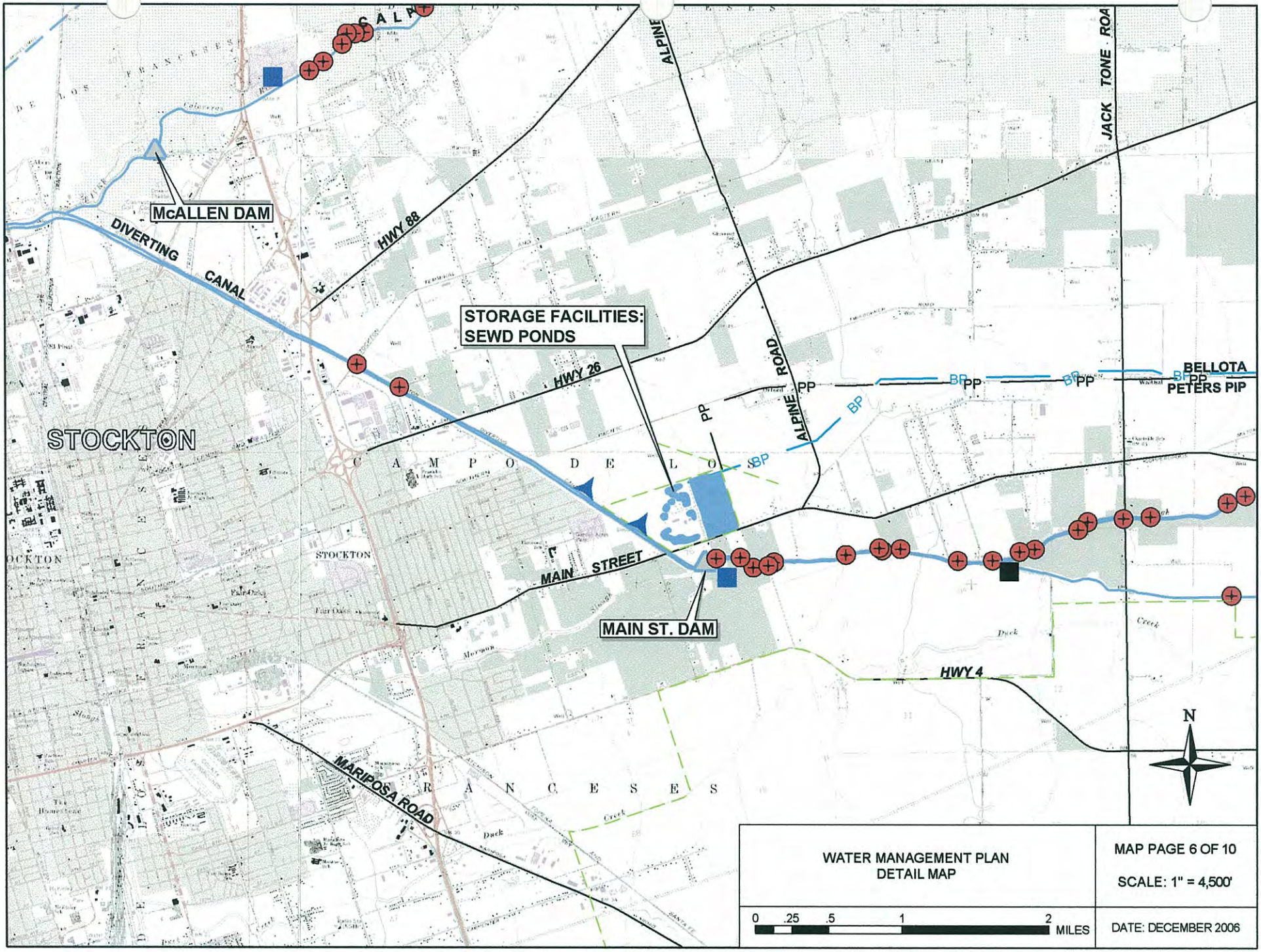
MAP PAGE 4 OF 10

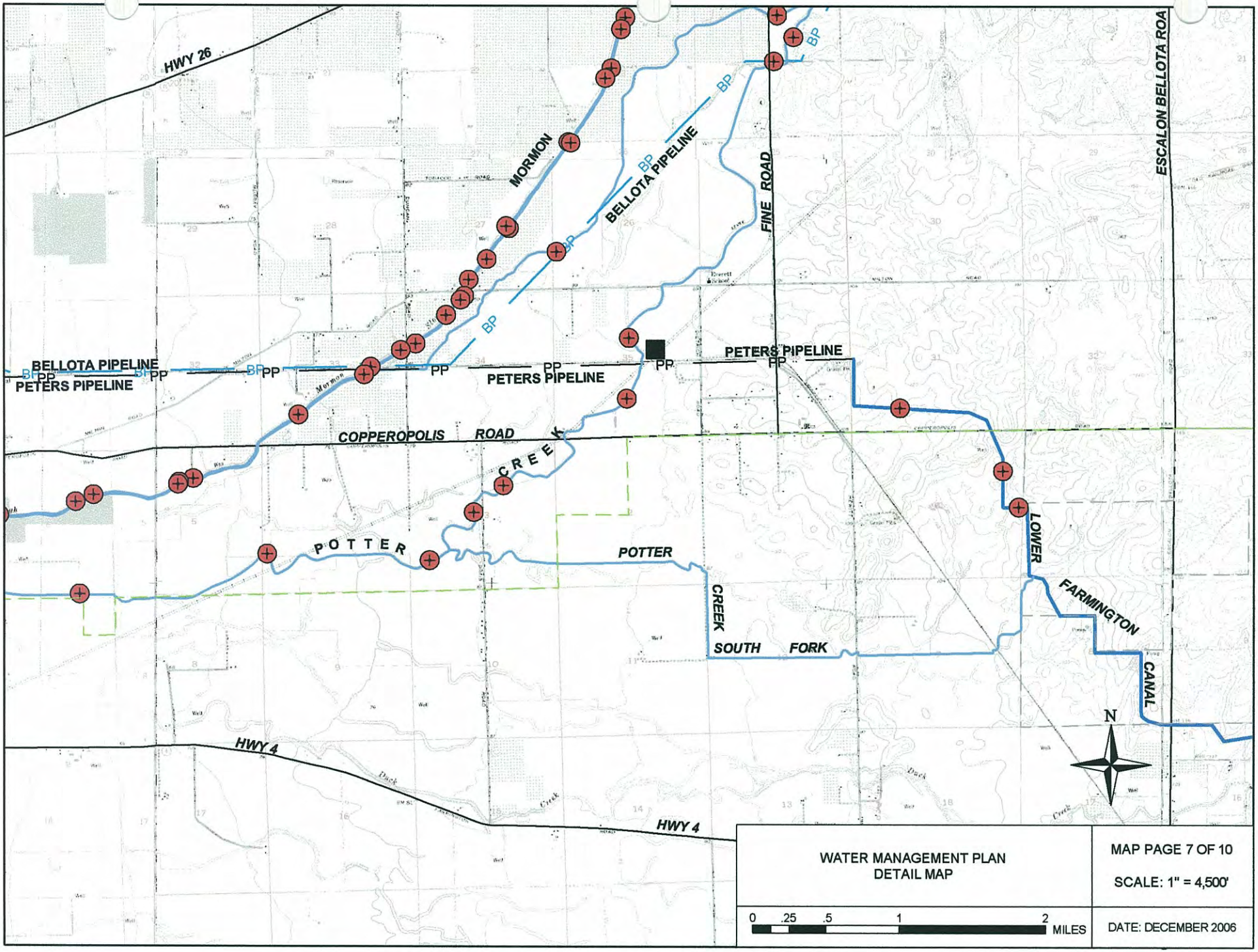
SCALE: 1" = 4,500'

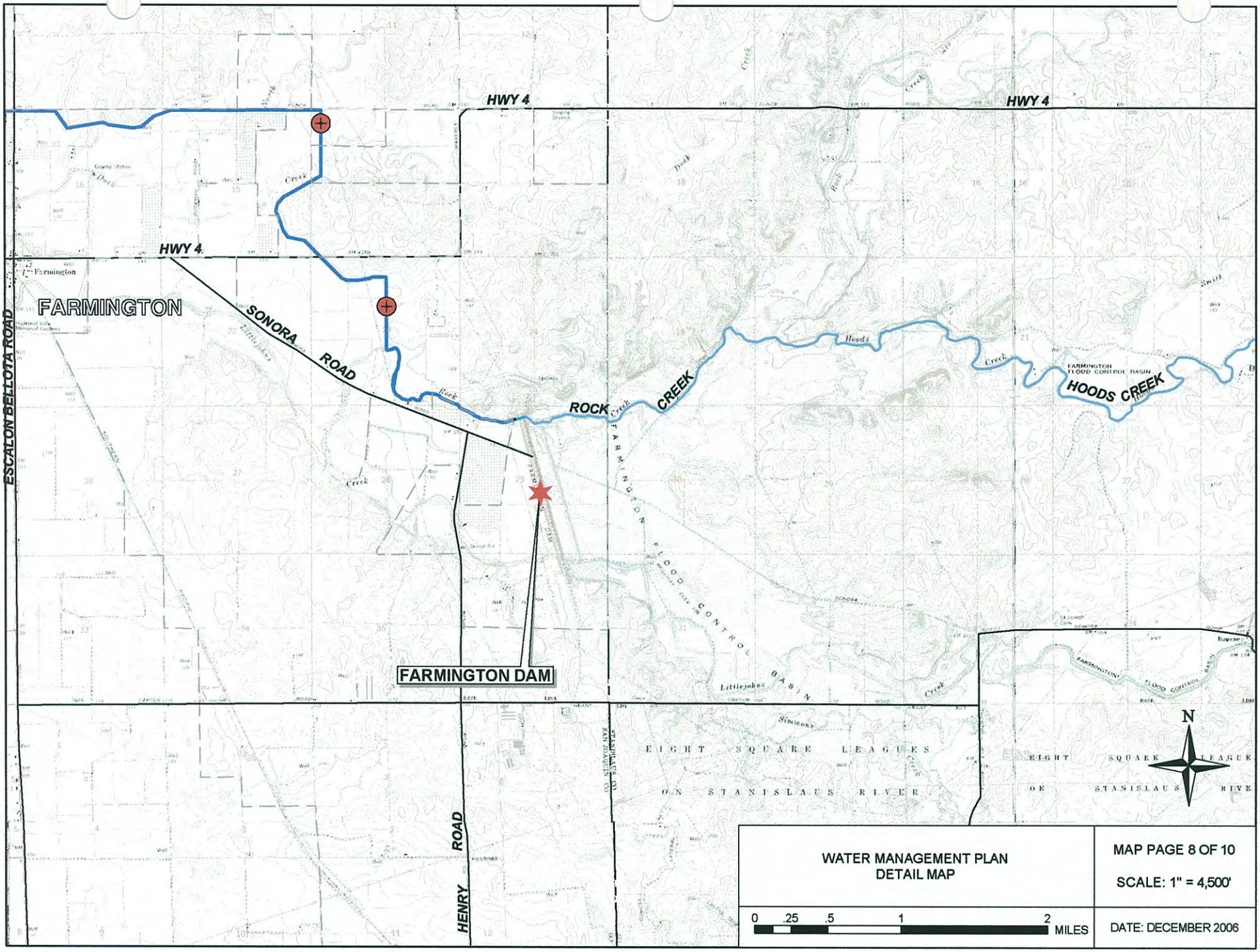
0 .25 .5 1 2 MILES

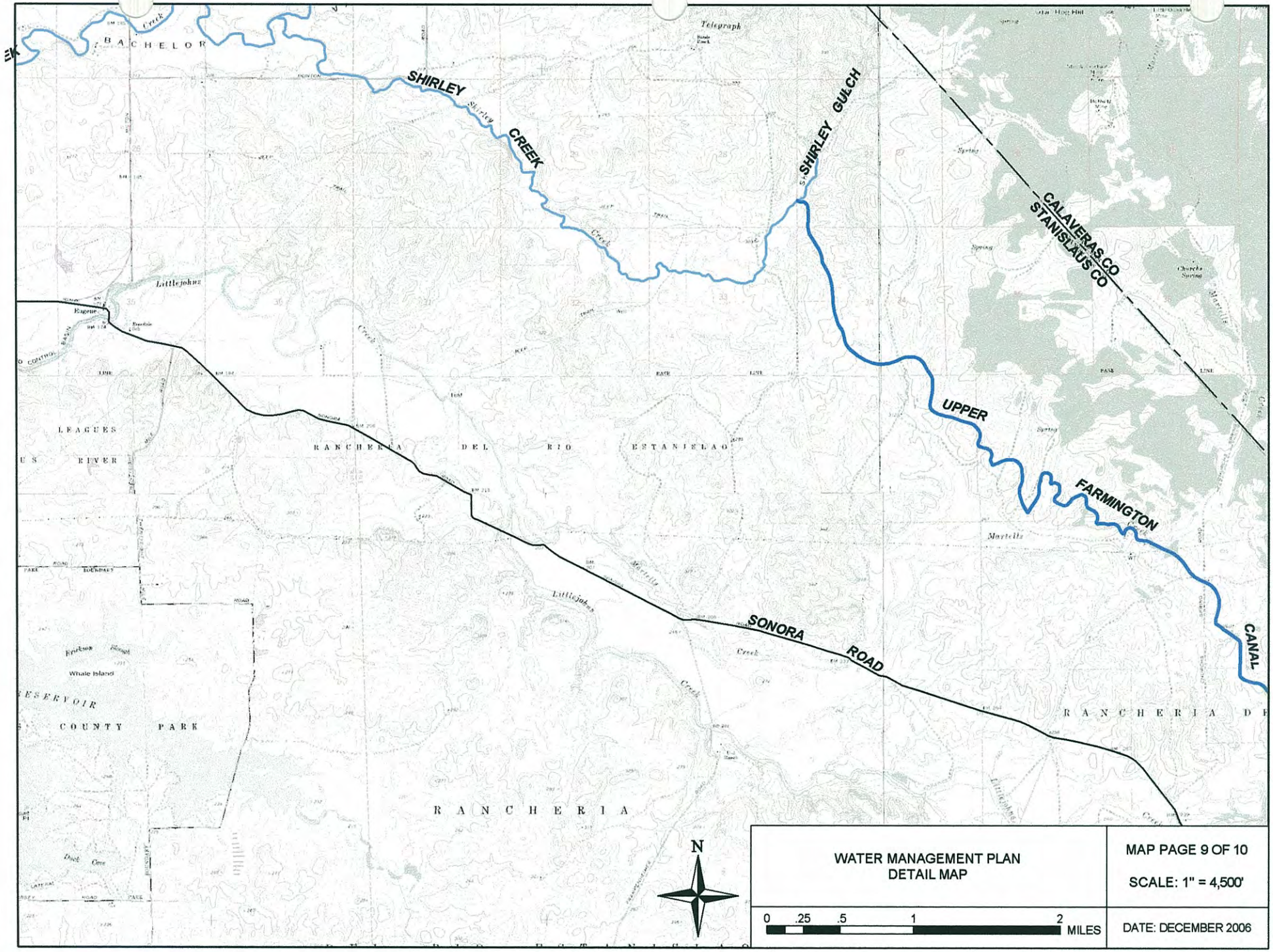
DATE: DECEMBER 2006


HWY 26
HWY 26
NEW HOGAN DAM
CALAVERAS RIVER
NEW HOGAN RESERVOIR
GOPHER RIDGE
SIERRA FOOTHILLS
BEAR MOUNTAINS
N
WATER MANAGEMENT PLAN
DETAIL MAP
MAP PAGE 5 OF 10
SCALE: 1" = 4,500'
0 .25 .5 1 2 MILES
DATE: DECEMBER 2006


McALLEN DAM
DIVERTING CANAL
HWY 88
STORAGE FACILITIES:
SEWD PONDS
HWY 26
ALPINE ROAD
ALPINE
JACK TONE . ROA
BELLOTA
PETERS PIP
PP
BP
STOCKTON
MAIN STREET
MAIN ST. DAM
HWY 4
MARIPOSA ROAD
CAMPO DE LOS FRANCESES
N
WATER MANAGEMENT PLAN
DETAIL MAP
MAP PAGE 6 OF 10
SCALE: 1" = 4,500'
0 .25 .5 1 2 MILES
DATE: DECEMBER 2006


HWY 26
MORMON
BELLOTA PIPELINE
FINE ROAD
ESCALON BELLOTA ROA
BELLOTA PIPELINE
PETERS PIPELINE
PETERS PIPELINE
PETERS PIPELINE
COPPEROPOLIS ROAD
CREEK
POTTER
POTTER
CREEK
SOUTH FORK
LOWER FARMINGTON CANAL
HWY 4
HWY 4
N
WATER MANAGEMENT PLAN
DETAIL MAP
MAP PAGE 7 OF 10
SCALE: 1" = 4,500'
0 .25 .5 1 2 MILES
DATE: DECEMBER 2006


HWY 4
HWY 4
HWY 4
FARMINGTON
SONORA ROAD
ESCALON BELLOTA ROAD
ROCK CREEK
HOODS CREEK
FARMINGTON FLOOD CONTROL BASIN
FARMINGTON DAM
HENRY ROAD
EIGHT SQUARE LEAGUES ON STANISLAUS RIVER
N
WATER MANAGEMENT PLAN
DETAIL MAP
MAP PAGE 8 OF 10
SCALE: 1" = 4,500'
0 .25 .5 1 2 MILES
DATE: DECEMBER 2006

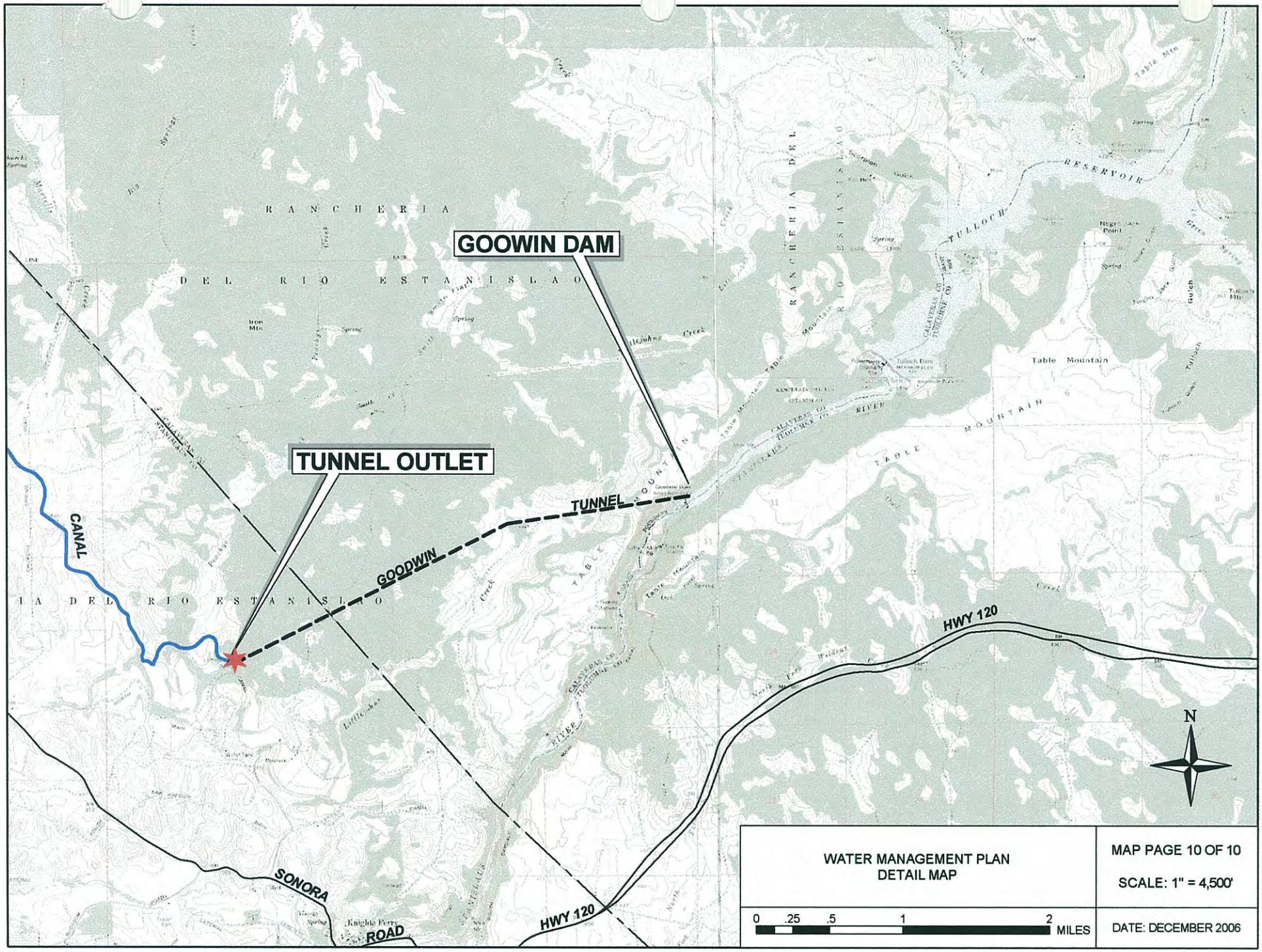


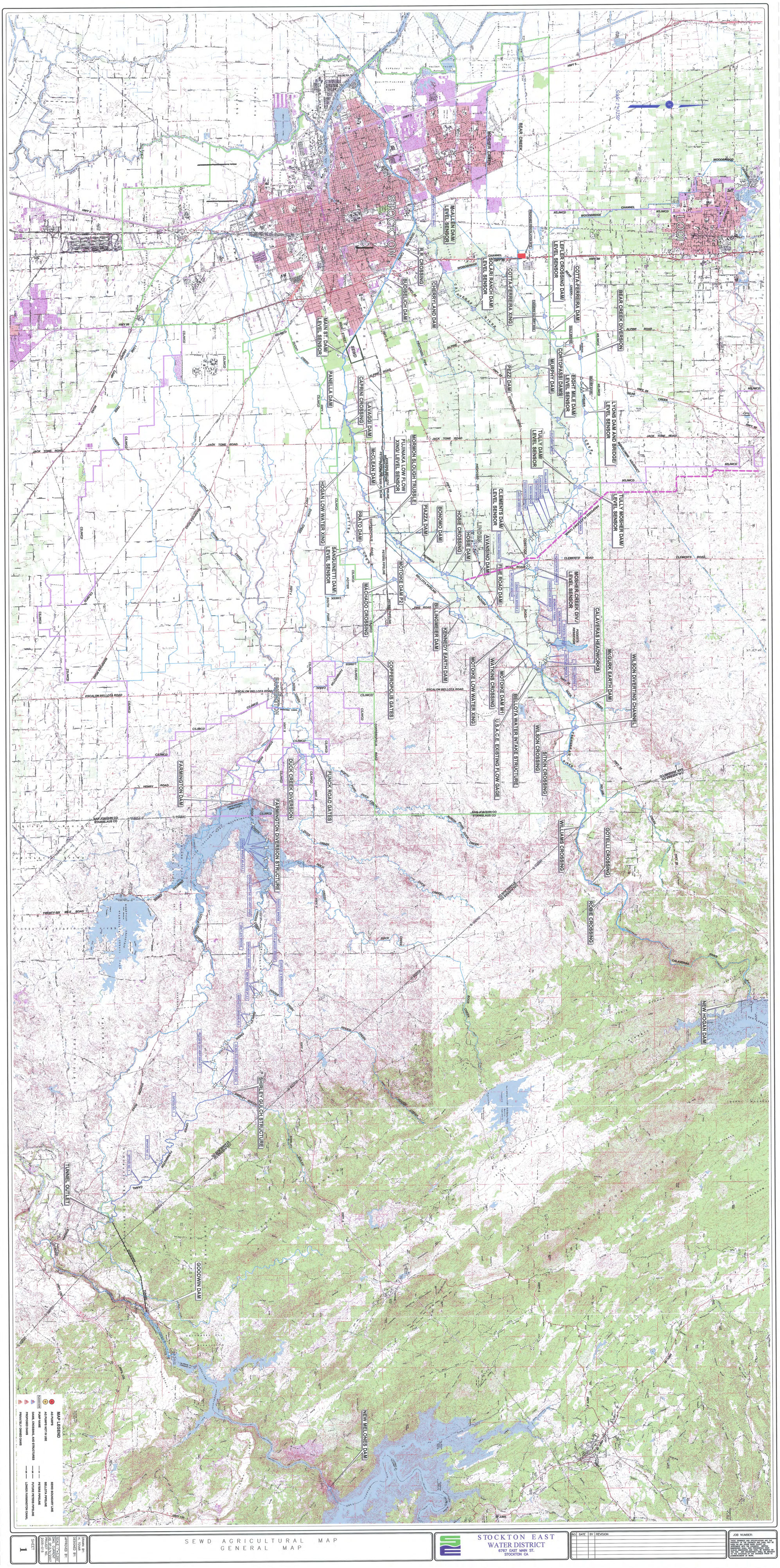
WATER MANAGEMENT PLAN
DETAIL MAP

MAP PAGE 9 OF 10

SCALE: 1" = 4,500'

DATE: DECEMBER 2006


GOOWIN DAM
TUNNEL OUTLET
TUNNEL
GOODWIN
CANAL
HWY 120
HWY 120
SONORA
ROAD
RANCHERIA
DEL RIO ESTANISLAO
TABLE MOUNTAIN
Table Mountain
TULLOCH
RESERVOIR
N
WATER MANAGEMENT PLAN
DETAIL MAP
MAP PAGE 10 OF 10
SCALE: 1" = 4,500'
0 .25 .5 1 2 MILES
DATE: DECEMBER 2006



SHEET 1

SEWD AGRICULTURAL MAP
GENERAL MAP

SCALE: 1"=3,250'
AS OF: 5/14/2007
PROJECT NO: 2005-015

DRAWN BY: H. TOVAR
DESIGNED BY:
APPROVED BY:

STOCKTON EAST WATER DISTRICT
6767 EAST MAIN ST.
STOCKTON CA

NO	DATE	BY	REVISION

JOB NUMBER:

THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF THE ENGINEER AND SHALL NOT BE REPRODUCED OR COPIED IN WHOLE OR IN PART IN ACCORDANCE WITH THE ENGINEER'S WRITTEN AGREEMENT. SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS AND DETAILS NOT SHOWN ON THE DRAWINGS. ANY DISCREPANCY SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO COMMENCEMENT OF WORK.

ATTACHMENT E

District Soils Map

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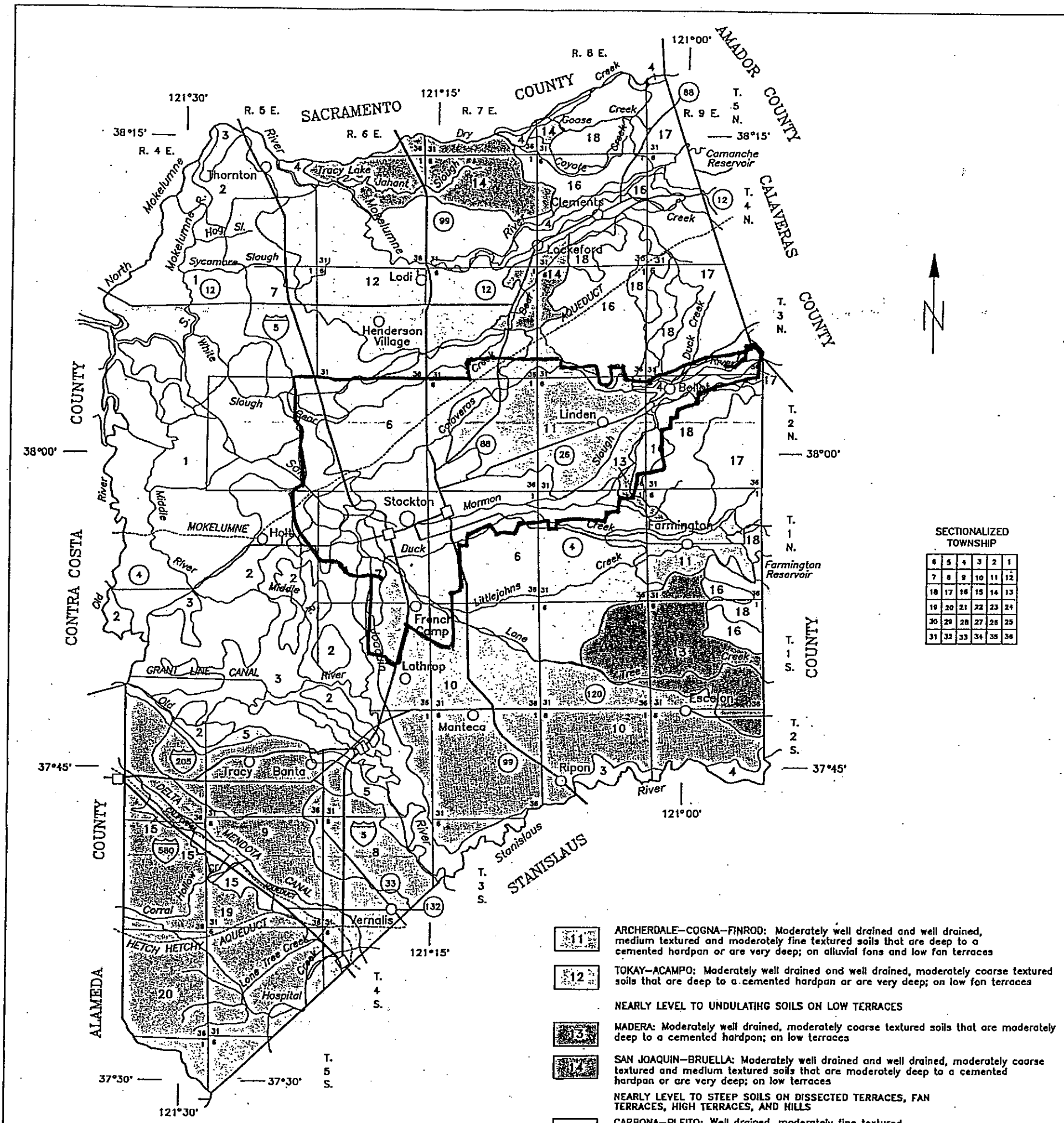

SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

SOIL LEGEND*

NEARLY LEVEL SOILS ON DELTAS AND FLOOD PLAINS

1 RINDGE–KINGILE–RYDE: Very poorly drained, organic soils and very poorly drained, highly organic, moderately fine textured, mineral soils, all of which are very deep and have been partially drained; on deltas and flood plains

2 PELTIER–EGBERT: Poorly drained, highly organic, moderately fine textured soils that are very deep and have been partially drained; on deltas and flood plains

3 MERRITT–GRANGEVILLE–COLUMBIA: Poorly drained and somewhat poorly drained, moderately coarse textured and moderately fine textured soils that are very deep and have been partially drained or drained; on flood plains

4 COLUMBIA–VINA–COYOTECREEK: Somewhat poorly drained and well drained, moderately coarse textured and medium textured soils that are very deep and are subject to flooding or protected by levees; on flood plains

NEARLY LEVEL SOILS IN BASINS AND ON BASIN RIMS

5 WILLOWS–PESCADERO: Poorly drained, moderately fine textured and fine textured, saline–sodic soils that are very deep and have been partially drained; in basins

6 JACKTONE–HOLLENBECK–STOCKTON: Somewhat poorly drained and moderately well drained, fine textured soils that are moderately deep and deep to a cemented hardpan and that have been drained in some areas; on basin rims and in basins

7 GUARD–DEVRIES–RIOBLANCHO: Poorly drained and somewhat poorly drained, moderately coarse textured and moderately fine textured soils that are moderately deep to a cemented hardpan or are very deep and that have been drained in most areas; on basin rims

NEARLY LEVEL SOILS IN INTERFAN BASINS AND ON ALLUVIAL FANS, LOW FAN TERRACES, STREAM TERRACES, AND DUNES

8 CAPAY: Moderately well drained, fine textured soils that are very deep and have been subject to artificial wetness; mainly in interfan basins

9 CAPAY–STOMAR–ZACHARIAS: Moderately well drained and well drained, moderately fine textured, gravelly moderately fine textured, and fine textured soils that are very deep; in interfan basins and on alluvial fans and stream terraces

10 DELHI–VERITAS–TINNIN: Moderately well drained to somewhat excessively drained, coarse textured and moderately coarse textured soils that are deep to a cemented hardpan or are very deep; on dunes, alluvial fans and low fan terraces

11 ARCHERDALE–COGNA–FINROD: Moderately well drained and well drained, medium textured and moderately fine textured soils that are deep to a cemented hardpan or are very deep; on alluvial fans and low fan terraces

12 TOKAY–ACAMPO: Moderately well drained and well drained, moderately coarse textured soils that are deep to a cemented hardpan or are very deep; on low fan terraces

NEARLY LEVEL TO UNDULATING SOILS ON LOW TERRACES

13 MADERA: Moderately well drained, moderately coarse textured soils that are moderately deep to a cemented hardpan; on low terraces

14 SAN JOAQUIN–BRUELLA: Moderately well drained and well drained, moderately coarse textured and medium textured soils that are moderately deep to a cemented hardpan or are very deep; on low terraces

NEARLY LEVEL TO STEEP SOILS ON DISSECTED TERRACES, FAN TERRACES, HIGH TERRACES, AND HILLS

15 CARBONA–PLEITO: Well drained, moderately fine textured soils that are very deep; on dissected terraces

16 COMETA–SAN JOAQUIN–ROCKLIN: Moderately well drained, moderately coarse textured soils that are moderately deep to weakly cemented sediments or a cemented hardpan; on dissected terraces

17 PENTZ–PAROEE–KEYES: Moderately well drained and well drained, moderately coarse textured and gravelly medium textured soils that are shallow to sandstone, conglomerate, or a cemented hardpan; on hills and high terraces

18 REDDING–YELLOWLARK: Moderately well drained, gravelly medium textured soils that are moderately deep and deep to a cemented hardpan; mainly on fan terraces and high terraces

ROLLING TO VERY STEEP SOILS ON UPLIFTED, DISSECTED TERRACES AND MOUNTAINS

19 CALLA–CARBONA–WISFLAT: Well drained, moderately coarse textured and moderately fine textured soils that are very shallow, shallow, deep, and very deep; on uplifted, dissected terraces and mountains

20 GONZAGA–HONKER–VALLECITOS: Well drained, medium textured and gravelly medium textured soils that are shallow and moderately deep; on mountains

* Texture terms in the descriptive headings refer to the surface layer of the major soils in the map units.

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning

Compiled 1990

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
REGENTS OF THE UNIVERSITY OF CALIFORNIA
(AGRICULTURAL EXPERIMENT STATION)
CALIFORNIA DEPARTMENT OF CONSERVATION

GENERAL SOIL MAP

SAN JOAQUIN COUNTY, CALIFORNIA

Scale 1:380,160

0 2 4 6 8 10

ATTACHMENT F

District Rules and Regulations

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ORDINANCE NO.30
ADOPTED 4/11/06

AN ORDINANCE ESTABLISHING MUNICIPAL GROUNDWATER ASSESSMENTS, AGRICULTURAL GROUNDWATER ASSESSMENTS, DOMESTIC GROUNDWATER ASSESSMENTS, AND CHARGES FOR STREAM-DELIVERED WATER FOR CALENDAR YEAR 2006

The Board of Directors of Stockton East Water District does ordain as follows:

Section 1: The Municipal Groundwater Assessment for calendar year 2006 shall be One Hundred Twenty-Seven Dollars and Four Cents ($127.04) for Rate Equalization and Three Dollars and Sixty Cents ($3.60) for base Groundwater Production Assessment ($127.04+$3.60=$130.64) per acre foot of water.

Section 2: The Agricultural Groundwater Assessment for calendar year 2006 shall be Four Dollars and Sixteen Cents ($4.16) per acre foot of water.

Section 3: The Domestic Groundwater Assessment for calendar year 2006 shall be Thirty-Two Dollars and Fifty Cents ($32.50) per Domestic use unit.

Section 4: The rate for sales of stream-delivered water for calendar year 2006 shall be Sixteen Dollars and Seventy-Five Cents ($16.75) per acre foot of water.

Section 5: This ordinance shall take effect thirty (30) days after its final passage, and shall be published at least once in a newspaper of general circulation within fifteen (15) days after its final passage, with the names of the members of the Board of Directors voting for and against the same.

AYES:	McGaughey, McGurk, Panizza, Polk, and Sanguinetti
NOES:	Latimer
ABSTENTIONS:	Watkins
ABSENT:	None

PAUL SANGUINETTI, President
Board of Directors
Stockton East Water District

ATTEST:

KEVIN M. KAUFFMAN, Secretary
Board of Directors
Stockton East Water District

(SEAL)

RULE NO. 155

ADOPTED 03/29/05

RULE FOR RATE EQUALIZATION - CALENDAR YEAR 2005

WHEREAS, the District Act authorizes the Board to adopt rules and regulations as it deems necessary and proper for carrying out the provisions of the Act; and

WHEREAS, paragraph 6D (3) of the Second Amended Contract among SEWD; City of Stockton, County of San Joaquin and California Water Service Company states that "Stockton East shall annually levy a municipal groundwater assessment, pursuant to its enabling legislation such that the cost of groundwater use is equivalent to the cost of surface water use";

NOW, THEREFORE, THE BOARD OF DIRECTORS OF STOCKTON EAST WATER DISTRICT HEREBY ENACTS AND ESTABLISHES THE FOLLOWING RULES TO LEVY A GROUNDWATER ASSESSMENT TO EQUALIZE THE COST OF GROUNDWATER AND SURFACE WATER FOR 2005:

1. POWER COST -- Use actual power costs submitted by owner to accommodate for differences in water depth, pumping efficiency, system pressure, etc. In the absence of actual power costs, the cost of $70 per acre foot will be assumed.

2. OPERATION AND & MAINTENANCE COST -- Includes labor, repairs, chemicals, treatment costs and the current $3.60 assessment. The cost of $30 per acre foot will be assumed.

3. AMORTIZATION AND DEPRECIATION COST -- Includes well and equipment replacement. The cost of $10 per acre foot will be assumed.

4. FORMULA FOR RATE EQUALIZATION -- Surface water costs plus Groundwater costs divided by total M & I water production equals cost per acre foot. The assumed costs and water production for 2005 are as follows:

Ground water	26,435 AF X $110.00 =	$2,907,850
Surface water	42,000 AF X $293.73 =	$12,336,602
Totals	68,435 AF	$15,244,452

The total cost of $15,244,452 divided by total use of 68,435 AF equals $222.76 per acre foot. The assumed 2005 additional groundwater assessment is $222.76 less $110 (total of items 1-3 above), or $112.76.

5. Any municipal groundwater user has the right to appeal the amount of this additional $112.76 per acre foot rate equalization assessment if it can be demonstrated that actual groundwater production costs are higher than the assumed $110 per acre foot. The appeal process will begin with the Administration Committee of the District Board and if necessary can be appealed to the full Board.

6. Any appeal which is granted shall entitle the appellant to a refund of the amount demonstrated to have been over-collected, less the actual costs to the District of processing the appeal and refund, provided that no overpayment shall be refunded unless the request for appeal has been filed with the Secretary of the District within three years of such overpayment.

SELECTED OPERATING RULES, ORDINANCES, AND RESOLUTIONS

STANDARD PROCEDURES	
-Definitions and Rules of Interpretation	Rule 100
-Board and District Procedures and Organization	Resolution 92-93-01A
-Amendment to PERS Contract to include Directors	Resolution 92-93-01
-Procedure for Enacting Ordinances	Rule 126
-Policy for the Purchase of Services, Supplies, and Equipment; and for the surplusing of Supplies and Equipment	Rule 130
-Regulating Waste of Surface Water (1992)	Rule 139
WATER DIVERSIONS	
-Flash Board Dams	Rule 103
-Maintenance of Live Stream	Rule 113
-Required Notice to District by Owner of Diversion of Stream Delivered Water	Rule 120
-Stream Diversion Call-In Rule (4/86)	
-Stream Diversion Access Rule (4/86)	
-Allocation of New Hogan Water, May-Oct. 1992	Rule 140
WATER MEASUREMENT	
-The Measurement of Water Produced from Both Ground and Surface Sources and Used on One Parcel of Land	Rule 104
-The Measurement of Water Produced by Water Producing Facilities Without Approved Water Measuring Devices	Rule 107
-Alternate Procedures, Water Producing Facilities Equipped With Water Measuring Devices	Rule 110
-Meters	Rule 123
-Revised Rule for Meters (6/92)	Rule 142
WATER RATES	
-Refunds of Overpayments	Rule 111
-Municipal Ground Water Assessments, Domestic Ground Water Assessments, and Charges for Stream-Delivered Water for Calendar Year 1993	Ordinance No. 16
-Rates for Use of Agricultural Water Produced by Districted Operated Deep Well Pumping Plants	Rule 128
-Procedures and Regulations for Establishing Flat Rate and Special Class Water Production	Rule 131
-Base Monthly Payment for Period April 1, 1993 to March 31, 1994	Resolution 92-93-05
-Revised Base Monthly Payment for Period April 1, 1993 to March 31, 1994	Resolution 92-93-20
-Rate Equalization - Calendar Year 1993	Rule 143
-No Groundwater Benefit, No Groundwater Assessment Assessed	Resolution 90-91-02
WATER RIGHTS	
-Water Rights Claims	Rule 109

ADOPTED June 20, 1972

RULE 100. DEFINITIONS AND RULES OF INTERPRETATION.

WHEREAS, the Act authorizes the Board to make such rules and regulations as it deems necessary and proper for carrying out the provisions of the Act;

NOW, THEREFORE, THE BOARD OF DIRECTORS OF THE STOCKTON-EAST WATER DISTRICT HEREBY ENACTS AND ESTABLISHES THE FOLLOWING RULE:

For the purposes of construction and interpretation of all subsequent rules adopted by the Board, the following rules of construction and interpretation are adopted:

A. Definitions in Act. Unless otherwise provided, any word defined by Chapter 819 of the Statutes of 1971 shall have the meaning set forth in Chapter 819 of the Statutes of 1971.

B. Act. "Act" means Chapter 819 of the Statutes of 1971.

C. Domestic Water Producing Facility. "Domestic Water producing facility" means a water producing facility which produces water used solely upon a parcel of two (2) acres or less.

D. Continuation of Prior Rules. The provisions of any rule adopted by the Board, insofar as they are substantially the same as provisions contained in a prior or existing rule, are restatements and continuations of such existing rule or rules and not new enactments.

RESOLUTION NO. 92-93-01A

SECRETARY'S CERTIFICATE

I, EDWARD M. STEFFANI, Secretary of the Board of Directors of the STOCKTON EAST WATER DISTRICT, Stockton, California, do hereby certify as follows:

The foregoing is a full, true and correct copy of a resolution duly adopted at a Regular (Regular/Special) Meeting of the Board of Directors of said District duly and regularly and legally held at the regular meeting place thereof on April 14, 1992, of which meeting all of the members of said Board of Directors had due notice and at which a majority thereof were present.

I have carefully compared the same with the original minutes of said meeting on file and of record in my office, and the foregoing is a full, true, and correct copy of the original resolution adopted at said meeting and entered in said minutes.

Said resolution has not been amended, modified, or rescinded since the date of its adoption, and the same is now in full force and effect.

Dated: 4/14/92

EDWARD M. STEFFANI
Secretary of the Board
STOCKTON EAST WATER DISTRICT

(SEAL)

2-RESCER

THIS COPY SHOWS CHANGES MADE

RESOLUTION NO. 92-93-01A

TO REVISE RESOLUTION NO. 83-84-17
WITH RESOLUTION NOS. 84-85-08
AND 90-91-13 INCORPORATED

RELATING TO BOARD AND DISTRICT
PROCEDURES AND ORGANIZATION

WHEREAS, it is necessary and desirable to reevaluate and revise certain Board procedures, certain administrative procedures, and the administrative organization for the operation and government of the District;

NOW, THEREFORE, BE IT RESOLVED AS FOLLOWS:

I

REPEAL OF CONFLICTING RESOLUTIONS

Resolution 79-80-19 and all other Resolutions, or portions thereof, in conflict with this Resolution are hereby repealed; and

II

1. **Regular Meetings.** The Board of Directors of the Stockton East Water District (hereinafter referred to as Board) shall hold regular meetings at its office at ~~2526//East//Fremont~~ 6767 East Main Street, Stockton, California on the first and third Tuesday of each month. Said regular meetings shall be at ~~7:30//P.M.~~ noon during the portion of the year in which Standard time is in effect and at ~~8:00~~ 7:00 P.M. during the portion of the year in which Daylight Savings time is in effect.

2. **Adjournment of Meetings.** The Board may adjourn any regular, adjourned regular, special or adjourned special meeting to a time and place specified in the order of adjournment. Less

than a quorum may so adjourn from time to time. If all Directors are absent from any regular or adjourned regular meeting, the Secretary of the Board may declare the meeting adjourned to a stated time and place and shall cause a written notice of the adjournment to be given in the same manner as provided in Section 3 below for special meetings, unless such notice is waived as provided for special meetings. A copy of the order or notice of adjournment shall be conspicuously posted on or near the door of the place where the regular, adjourned regular, special or adjourned special meeting was held within 24 hours after the time of the adjournment. When a regular or adjourned regular meeting is adjourned as provided in this section, the resulting adjourned regular meeting is a regular meeting for all purposes. When an order of adjournment of any meeting fails to state the hour at which the adjourned meeting is to be held, it shall be held at the hour specified for regular meetings.

3. **Special Meetings.** Special meetings may be ordered by the President, or by a majority of the members of the Board, specifying in writing the business to be transacted. Any order calling for a special meeting shall be entered in the minutes of the Board. The Secretary shall give three days' notice of any special meeting to any member of the Board not joining in the order calling the special meeting by mailing written notice to the member at the member's address as disclosed by the District records. Such written notice may be waived by any Director by filing a written waiver of notice with the Secretary. Additionally, such written notice is waived as to any Director who is actually present at the meeting at the time it convenes.

On the day prior to any special meeting, or earlier if possible, but at least 24 hours before the time of such special meeting, the Secretary shall mail a notice of the special meeting to the Stockton Record. The Secretary shall also give notice to any other parties as may be required by law. Only the business specified in the notice may be considered at such special meeting.

4. **Oath of Office, Bonds and Effective Date of Taking Office.** Elected officials of the District shall take office effective upon the taking and subscribing to an official oath and executing and filing the bond required by law; the newly elected official shall take the Oath of Office and execute the required bond at ~~the/next/regular~~ a meeting ~~held~~ of the Board after the ~~date/of~~ general district election, but in no event later than the last day ~~in/November~~ of December.

5. **Organization Meetings.** At the ~~next///regularly scheduled~~ first meeting of the Board following the time of taking office of the directors elected in the general District election, but in no event later than the last day of ~~November~~ December, the Directors then holding office shall meet and organize as a Board.

5.1 **Annual Organization Meetings.** Notwithstanding any other provision of this Resolution, the Directors shall hold an organizational meeting at least annually.

6. **Officers.** At each of its organizational meetings, the Board shall elect a President and a Vice-President from among their number and shall appoint a Secretary, who need not be a member of the Board. Unless otherwise specifically provided by

the Board, the General Manager of the District shall automatically serve as Secretary. Each of the foregoing officers shall hold office at the pleasure of the Board. The duty of the Vice-President shall be to preside at any meeting, or portion thereof, at which the President is not present.

It is the intention of the Board that the offices of President and Vice-President shall be rotated annually among members of the Board. The President shall be chosen from those Directors serving the last two years of his or her term.

7. **Voting at Board Meetings.**

A. All voting members of the Board present shall vote on all questions coming before the Board either in the affirmative or in the negative, except that on any matter coming before the Board which may present a conflict of interest to one or more members, such member or members shall announce that they have a conflict of interest at the time of the commencement of discussion on the question and said member or members having a conflict shall thereafter refrain from discussion and voting on anything pertaining to such a matter; and further, except that any member of the Board who has not been present to participate in all, or a portion, of the discussion relating to a matter may abstain for that reason. If a member of the Board chooses not to vote on a question coming before the Board when there is no conflict of interest with respect to that member, by absenting himself or herself from the meeting room at the time of the vote, then that member shall not be entitled to discuss the matter either prior to or after the vote. Any member who chooses to discuss a matter shall vote on that matter. Any member who

chooses to discuss a matter and then absents himself or herself to avoid the vote shall be considered, and his or her vote shall be recorded, as voting with the majority, or in the case of no majority, in the affirmative.

B. All votes may be by voice vote with both the "ayes" and "nays" being called. In the event that upon a voice vote being taken it appears to the President, or to any member of the Board, that the vote is not unanimous, a roll call shall then be taken.

8. **Agendas.** On or before the Friday preceding each regular or adjourned regular meeting, the Secretary shall mail an agenda for the forthcoming meeting. Said agenda shall be prepared by the Secretary and upon mailing the same, the Secretary shall accompany the agenda with as much explanatory material relating to the items on the agenda as is reasonably possible. An agenda for each special meeting shall be mailed as early in advance of the special meeting as is reasonably possible and shall be accompanied by such explanatory material as is necessary to advise the Board of the nature of the matter or matters coming before the Board at the special meeting.

9. **Records.** The Secretary of the Board shall keep, and make available to the public, accurate minutes of all proceedings of the Board. The proceedings of the Board shall be recorded by a tape recorder and the Secretary shall then, from the tape record, prepare minutes in summary form. Minutes shall not be read at Board meetings but shall be mailed in advance of meetings to the Board members, so that the same may be considered for approval without being read aloud at Board meetings. Tapes

of Board meetings shall be kept by the Secretary for two years and thereafter may be erased or otherwise destroyed.

10. **Order of Business.** The order of business at each meeting of the Board, unless suspended or varied, upon order of the President or by majority vote of the board, shall be as follows:

A. Roll Call;

B. Consent Calendar;

C. Public Comment (for non-agenda items);

D. Scheduled presentations and agenda items (to be considered in this order:

1. Staff report

2. Board discussion

3. Public comment on the specific item, with time limitations determined by the chairperson

4. Board action);

E. Committee Reports (eliminate the committee summary, but increase the detail of the committee minutes);

F. Report of the General Manager (continue to list the information items on the agenda, but bind this material separately from the other agenda material);

G. Report of the Counsel, if any;

H. Communications;

I. ~~Other Business~~ Agenda planning for next meeting;

J. ~~Agenda/planning/for/next/meeting~~ Director Reports;

K. Adjournment.

All items of business which, in the judgment of the Secretary require neither Board discussion nor a public hearing, shall be included in the Consent Calendar; provided that the agenda indicate on its face for each such items that such items is included in the Consent Calendar, and provided further that a written report and recommendation of the General Manager on each item so included has been mailed to the Board members with the agenda. The Consent Calendar may include the approval of minutes and expenses. Any Board member or the General Manager may request that any item on the Consent Calendar be removed therefrom for discussion and separate consideration.

11. Committees. There shall be standing committees of the Board as follows: ~~The/Water/Contract/Committee//the/Finance Committee//the/Agricultural/Operations/Committee///the//Municipal Operations//Committee//the/Water/Action/Committee//the/Personnel Committee//the/Administration/Committee//and/the/Legislative//and Public////Relations////Committee~~ Administration, Agricultural Operations and Municipal Operations. ~~Special~~ Other committees may be established from time to time by the President as ~~is~~ required in the opinion of the President. The members of all committees shall be appointed by the President from among the members of the Board. All Directors shall serve on at least one committee, and should there be a minimum of five committees, Directors shall serve on at least two committees.

12. **Quorum and Tie Votes.** In conducting the business of the Board, the following shall apply with respect to quorum requirements:

A. A majority of the Board shall constitute a quorum for the transaction of business;

B. All board actions shall require a vote of the majority of the members present unless other wise provided by law or this Resolution; and

C. A tie vote shall be considered a negative vote, provided that in the event of a tie vote, while the matter shall be considered determined in the negative, the General Manager shall place the matter on the agenda for reconsideration at the next succeeding meeting.

13. **Conduct of Business.** The procedure for the conduct of business shall be as follows:

A. Each agenda item shall be taken up in order by the presiding officer except that all items designated as consent items shall be taken up under the Consent Calendar;

B. The presiding officer shall call upon the General Manager or such other person or persons as may be appropriate to the present the matter to the Board;

C. The matter shall then be discussed by the Board members and such other Staff persons or consultants as may be called upon by the President;

D. As to all matters not included within the Consent Calendar, and including those matters which have been removed from the Consent Calendar as provided herein, if a motion is made in connection with a matter, prior to vote on the motion,

the President shall call for comments on the proposed motion from members of the public. Public comments shall be limited to the motion then before the Board. The President shall have the authority to limit the duration of or refuse to permit public comment if such public comment is repetitive, disorderly, or otherwise not in furtherance of a reasonably expeditious review of the merits of the pending motion;

E. It shall be understood that any member of the public desiring further discussion on an item after a vote is taken, or on an item on which no motion is made, shall take the matter up with the Board member representing the division of the District in which said member of the pubic resides, or owns or operates property, or with any other Board member after adjournment of the meeting;

F. At the conclusion of public comment on any pending motion, the President shall announce that the time for public discussion of the matter is closed;

G. The foregoing procedure shall not apply to the conduct of "public hearings", and in the case of "public hearings", the requirements of statutes and the duly adopted rules of the District shall prevail;

H. Prior to the commencement of any "public hearing", the President shall request that an attorney for the District, and in the attorney's absence the General Manager, outline the procedure to be observed in the conduct of the "public hearing";

I. The foregoing procedure shall not apply to the Consent Calendar which shall be governed by this subparagraph.

the Consent Calendar shall be approved without discussion by a single vote of those Board members present, except as to items removed from the Consent Calendar as provided herein. In the event of removal, any such items shall be considered in accordance with the procedures outlined in the foregoing subparagraph of this section at the appropriate place on the agenda; and

J. The foregoing procedure shall not apply to the Public Comment Section of the Agenda, which shall be governed by this subparagraph. The Public Comment Section of the Agenda shall be reserved for any member of the public wishing to comment on any matter pertaining to District business other than matters which appear on the same agenda. The President shall have the authority to limit the duration of or refuse to permit public comment if it is repetitive, disorderly, or otherwise not in furtherance of a reasonably expeditious review of District business.

14. **Roberts Rules of Order.** Roberts Rules of Order Revised are hereby adopted by the Board in all cases not otherwise provided for in this Resolution and not otherwise provided for by applicable law.

III

DUTIES OF THE GENERAL MANAGER

1. **Responsibility.** The General Manager shall be directly responsible to the Board and subject to the general supervision of the Board. The General Manager shall carry out and execute all policies and directives of the Board. As to matters concerning District policies (as opposed to

non-substantive matters of detail), it is understood that the General Manager is subject to the direction of the Board, acting as a Board, and not to the direction of an individual Board member or group of Board members not acting as a committee.

2. **Duties.** The General Manager shall, among other things, do the following:

A. Have charge of all activities and functions of the District and all of the office and field personnel of the District;

B. In her or his discretion, appoint and discharge all employees of the District and from time to time, as she or he deems proper, make salary and wage change recommendations to the Board;

C. Receive all communications addressed to the District;

D. Unless another person has been appointed as Secretary, fulfill the duties of Secretary of the District as prescribed by law and in that capacity, have authority to appoint Deputy Secretaries;

E. When he or she deems it necessary, request the President to call special meetings of the Board;

F. Enforce all rules of the District;

G. Prepare and present proposed budgets and recommend replenishment and assessment rates and surface water charges to the Board, in accordance with the requirements of statutes;

H. From time to time, recommend to the Board proposed capital improvements necessary to carry out the purposes and programs of the District;

I. Advise the Board as to when engineering and legal services are required by the District;

J. On behalf of the District, without further action of the Board, be authorized to file protests to any application filed with the State Water Resources Control Board for appropriation of water from the Calaveras River or any tributary or distributary thereof. Any such protest so filed shall thereafter be subject to the control and direction of the Board; and

K. Be authorized to call such committee meetings as from time to time may be necessary, to carry on the business of the District.

IV

POLITICAL ACTIVITY

It is hereby declared by this Board that the General Manager of this District, the General Counsel for the District, and all of their subordinate employees are employed for the purpose of administering and executing the policies, rules, programs, and directives established by the Board as the policy making agency of the District. They shall not be subjected to personal or political pressure nor shall they participate in any of the political affairs of the District, including but not limited to any election campaign for a District office.

V

FLEXIBILITY

The foregoing policies, procedures, and requirements are intended to be applied flexibly to meet the needs of the District and it is intended by the Board that they shall be revised from time to time as is necessary and appropriate to further meet the needs of the District.

PASSED AND ADOPTED by the Board of Directors of the Stockton East Water District on the 14th Day of April, 1992, by the following vote:

AYES: Directors Alonzo, Clayton, Dondero, Laven, Tone and MacNear

NOES: None

ABSTENTIONS: None

ABSSENT: Director George

JACK LAVEN, President
Board of Directors
Stockton East Water District

ATTEST:

EDWARD M. STEFFANI, Secretary
Board of Directors
Stockton East Water District

STOCKTON EAST WATER DISTRICT

(Name of Agency)

RESOLUTION No. 92-93-01

AUTHORIZING AN AMENDMENT TO THE CONTRACT

WHEREAS, the BOARD OF ADMINISTRATION of the PUBLIC EMPLOYEES' RETIREMENT SYSTEM

and the BOARD OF DIRECTORS of
(Name of Governing Body)
the STOCKTON EAST WATER DISTRICT entered
Name of Public Agency)
into a Contract effective on AUGUST 26, 1968,
providing for the participation of said STOCKTON EAST WATER DISTRICT
(Name of Public Agency)
in the Public Employees' Retirement System; and

WHEREAS, it is now desirable to take advantage of certain benefits provided under said Retirement System and not included in said contract;

NOW, THEREFORE, BE IT RESOLVED, that said BOARD OF DIRECTORS
(Name of Governing Body)
authorized, and it does hereby authorize, an amendment to said Contract, a copy of said amendment being attached hereto marked Exhibit and by such reference made a part hereof as though herein set out in full; and

NOW, THEREFORE, BE IT FURTHER RESOLVED, that the presiding officer of said BOARD OF DIRECTORS
(Name of Governing Body)
be, and the presiding officer is hereby authorized, empowered and directed to execute said amendment for and on behalf of said STOCKTON EAST WATER DISTRICT.
(Name of Public Agency)

Adopted this 7th day of April, 1992.

Jack Lavon
Presiding Officer

Attest:

lward M. Steffani, Secretary

FCSD-CON-13 (Amendment)
C0318 (Rev. 2/91)

AMENDMENT TO CONTRACT
BETWEEN THE
BOARD OF ADMINISTRATION
OF THE
PUBLIC EMPLOYEES' RETIREMENT SYSTEM
AND THE
BOARD OF DIRECTORS
OF THE
STOCKTON EAST WATER DISTRICT

The Board of Administration, Public Employees' Retirement System, hereinafter referred to as Board, and the governing body of above public agency, hereinafter referred to as Public Agency, having entered into a contract effective August 26, 1968, and witnessed August 20, 1968, and as amended effective November 19, 1979, December 27, 1982, July 11, 1983, August 18, 1986 and July 15, 1989, which provides for participation of Public Agency in said System, Board and Public Agency hereby agree as follows:

A. Paragraphs 1 through 10 are hereby stricken from said contract as executed effective July 15, 1989, and hereby replaced by the following paragraphs numbered 1 through 11 inclusive:

1. All words and terms used herein which are defined in the Public Employees' Retirement Law shall have the meaning as defined therein unless otherwise specifically provided. "Normal retirement age" shall mean age 60 for local miscellaneous members.

2. Public Agency shall participate in the Public Employees' Retirement System from and after August 26, 1968 making its employees as hereinafter provided, members of said System subject to all provisions of the Public Employees' Retirement Law except such as apply only on election of a contracting agency and are not provided for herein and to all amendments to said Law hereafter enacted except those, which by express provisions thereof, apply only on the election of a contracting agency.

3. Employees of Public Agency in the following classes shall become members of said Retirement System except such in each such class as are excluded by law or this agreement:

   a. Employees other than local safety members (herein referred to as local miscellaneous members).

4. In addition to the classes of employees excluded from membership by said Retirement Law, the following classes of employees shall not become members of said Retirement System:

   a. SAFETY EMPLOYEES; AND
   b. ALL HOURLY RATED OR HOURLY BASIS EMPLOYEES.

5. The percentage of final compensation to be provided for local miscellaneous members for each year of credited prior and current service shall be determined in accordance with Section 21251.13 of said Retirement Law, subject to the reduction provided therein for service prior to December 31, 1982, termination of Social Security, for members whose service has been included in Federal Social Security (2% at age 60 Full and Modified).

6. Public Agency elected to be subject to the following optional provisions:

   a. Section 20862.8 (Credit for Unused Sick Leave).

   b. Section 20614, Statutes of 1978, (Reduction of Normal Member Contribution Rate). From November 19, 1979 and until July 11, 1983, the normal local miscellaneous member contribution rate shall be 0%. Legislation repealed said Section effective September 29, 1980.

   c. Sections 21380-21387 (1959 Survivor Benefits) including Section 21382.4 (Third Level of 1959 Survivor Benefits).

   d. Section 20614, Statutes of 1980, (To Prospectively Revoke Section 20614, Statutes of 1978).

   e. Section 20024.2 (One-Year Final Compensation).

   f. Section 20492.1 (To Remove the Exclusion of ELECTED OFFICIALS, Prospectively, from the effective date of this amendment to the contract).

7. Public Agency, in accordance with Government Code Section 20740, ceased to be an "employer" for purposes of Section 20759 effective on November 19, 1979. Accumulated contributions of Public Agency shall be fixed and determined as provided in Government Code Section 20759, and accumulated contributions thereafter shall be held by the Board as provided in Government Code Section 20759.

8. Public Agency shall contribute to said Retirement System the contributions determined by actuarial valuations of prior and future service liability with respect to local miscellaneous members of said Retirement System.

9. Public Agency shall also contribute to said Retirement System as follows:

   a. Public Agency shall contribute $2.50 per employee, per month on account of the liability for the 1959 Survivor Benefits provided under Section 21382.4 of said Retirement Law. (Subject to annual change.) In addition, all assets and liabilities of Public Agency and its employees shall be pooled in a single account, based on term insurance rates, for survivors of all local miscellaneous members.

   b. A reasonable amount, as fixed by the Board, payable in one installment within 60 days of date of contract to cover the costs of administering said System as it affects the employees of Public Agency, not including the costs of special valuations or of the periodic investigation and valuations required by law.

c. A reasonable amount, as fixed by the Board, payable in one installment as the occasions arise, to cover the costs of special valuations on account of employees of Public Agency, and costs of the periodic investigation and valuations required by law.

10. Contributions required of Public Agency and its employees shall be subject to adjustment by Board on account of amendments to the Public Employees' Retirement Law, and on account of the experience under the Retirement System as determined by the periodic investigation and valuation required by said Retirement Law.

11. Contributions required of Public Agency and its employees shall be paid by Public Agency to the Retirement System within fifteen days after the end of the period to which said contributions refer or as may be prescribed by Board regulation. If more or less than the correct amount of contributions is paid for any period, proper adjustment shall be made in connection with subsequent remittances. Adjustments on account of errors in contributions required of any employee may be made by direct payments between the employee and the Board.

B. This amendment shall be effective on the _____ day of _____, 19___.

BOARD OF ADMINISTRATION
PUBLIC EMPLOYEES' RETIREMENT SYSTEM

BY _____
CHIEF, CONTRACT SERVICES DIVISION
PUBLIC EMPLOYEES' RETIREMENT SYSTEM

BOARD OF DIRECTORS
OF THE
STOCKTON EAST WATER DISTRICT

BY _____
Presiding Officer

April 7, 1992
Witness Date

Attest:

Edward M. Steffani, Secretary

PERS-CON-702 (AMENDMENT)
(Rev. 1/92)

PERS
Contract Services Division
P.O. Box 942709
Sacramento, CA 94229-2709
(916) 326-3420
326-3000 (Telecommunications
Device for the Deaf)

CERTIFICATION
OF
FINAL ACTION OF GOVERNING BODY

DATE: April 7, 1992

I hereby certify:

That the Board of Directors of
(Governing Body)

the Stockton East Water District adopted
(Public Agency)

on - April 7, 1992, by an affirmative vote of a majority of the
(Date)

members of said Governing Body, Resolution No. 92-93-01
(Ordinance or Resolution)

approving the attached contractual agreement between the Governing Body of said Agency and the Board of Administration of the Public Employees' Retirement System, a certified copy of said Resolution in the form
(Ordinance or Resolution)

furnished by said Board of Administration being attached hereto.

(Clerk or Secretary)
Edward M. Steffani, Secretary

Stockton East Water District
(Public Agency)

PERS-CON-5
C0614 (Rev. 4/89)

ADOPTED April 1, 1980

RULE 126 . PROCEDURE FOR ENACTING ORDINANCES.

WHEREAS, Chapter 819 of the Statutes of 1971, as amended (hereinafter "Act"), gives the District the power to enact ordinances to establish water rates but provides no standard procedure for enacting ordinances; and

WHEREAS, said Chapter 819 authorizes the Board to make such rules and regulations as it deems necessary and proper for carrying out the provisions of the Act;

NOW, THEREFORE, THE BOARD OF DIRECTORS OF STOCKTON-EAST WATER DISTRICT DOES HEREBY ENACT AND ESTABLISH THE FOLLOWING RULE:

A. The enacting clause of ordinances shall be: "The Board of Directors of Stockton-East Water District does ordain as follows:".

B. Ordinances shall be signed by the President of the Board of Directors and attested by the Secretary of the Board of Directors.

C. Ordinances shall require a vote of the majority of the voting members present for passage.

D. Ordinances shall be introduced only at a regular or adjourned regular meeting of the District. On introduction, ordinances shall be read in full, except when, after reading the title, further reading is waived by regular motion adopted by unanimous vote of the voting members of the Board present. The Board may direct such changes in the introduced ordinance as it deems necessary. The Board shall set a time and place of public hearing on the ordinance, which shall be no less than 10 days from the date of introduction of the ordinance, and the Secretary of the Board shall publish notice of the public hearing in the same manner as for a public hearing on the adoption of a rule of the District, except that such notice shall include the text of the proposed ordinance, unless at the time of introduction, the Board shall determine that a summary of the proposed ordinance may be published. If such determination is made, the full text of the proposed ordinance shall be posted in the District office and shall be available for inspection during normal working hours.

E. Within 15 days after its passage, the Secretary of the Board shall cause each ordinance to be published at least once in a newspaper of general circulation published and circulated in the District.

F. The ordinance establishing water rates shall take effect 30 days after its final passage, and shall set rates for the calendar year in which it is passed, in accordance with the Act.

G. The ordinance setting water rates shall be subject to referendum, provided, however, that no referendum shall modify or affect the terms of any bond resolution issuing bonds approved by the voters.

H. If a petition, signed by a number of voters residing within the District which is equal to or greater in number than 10 percent of the entire vote cast within the District for all candidates for Governor at the last gubernatorial election, protesting the adoption of the ordinance setting water rates, is presented to the Board of Directors prior to the effective date of the ordinance, the ordinance shall be suspended and the Board of Directors shall reconsider the ordinance. If the Board of Directors does not entirely repeal the ordinance, the Board of Directors shall submit the ordinance to the voters of the District either at a regular election or a special election called for the purpose. The ordinance shall not become effective unless and until a majority of the voters vote in favor of it.

I. If the ordinance is repealed by the Board of Directors, or is not approved by the voters, the water rates for the previous year shall be in effect.

J. The petition shall be preserved until eight months after the certification of the result of the election for which the petition qualified or attempted to qualify for placement on the ballot. Public access to any such petition shall be restricted in accordance with the provisions of Section 6253.5 of the Government Code. At the end of the eight-month period, the petition shall be destroyed as soon as practicable unless it is in evidence in some action or proceeding then pending, or unless the Secretary of the Board of Directors of the District has received a written request from the Attorney General, the Secretary of State, the Fair Political Practices Commission, a district attorney, a grand jury, the Board of Supervisors of San Joaquin County, or the Board of Directors, that the petition be preserved for use in a pending or ongoing investigation into election irregularities, or in a pending or ongoing investigation into a violation of the Political Reform Act of 1974 as set forth in Title 9 (commencing with Section 81000) of the Government Code.

K. All elections shall be conducted in accordance with the California Elections Code.

ADOPTED SEPTEMBER 7, 1982

RULE NO. 130

STOCKTON-EAST WATER DISTRICT POLICY FOR THE PURCHASE OF SERVICES, SUPPLIES AND EQUIPMENT; AND FOR THE SURPLUSING OF SUPPLIES AND EQUIPMENT

WHEREAS, Stockton-East Water District has no formal policy for the purchase of services, supplies, and equipment; or for the surplusing of supplies and equipment; and

WHEREAS, Sections 54201 through 54204 of the Government Code of the State of California requires a purchasing policy.

NOW, THEREFORE, the Board of Directors of the Stockton-East Water District, acting in compliance with Sections 54201 through 54204 of the Government Code of the State of California enacts and establishes the following rule;

1. The following procedures shall be followed for purchases made within the approved annual Fiscal Year Budget:
   A. Contracts for purchase of professional services in excess of $7,500 shall be awarded by the Board of Directors. Competitive bids shall be solicited when appropriate;
   B. Purchase of supplies and equipment in excess of $7,500 per item shall be awarded by the Board of Directors after solicitation of competitive bids; and
   C. Major chemical purchases shall be solicited by the competitive bid process and shall be awarded annually by the Board of Directors.
2. Except for <u>emergency</u> and <u>urgent</u> necessity, all purchases outside the approved annual Fiscal Year Budget shall be approved by the Board of Directors. Emergency and urgent necessity mean interruptions in the service or operations of the District which require immediate action before Board approval can be obtained.

OVER

3. The following procedures shall be followed for surplusing supplies and equipment:

   A. An item shall be declared surplus by the General Manager when the District has no present or future use for such item;

   B. A surplus value shall be established as an appropriate percentage of new replacement cost, scrap value, public bid or auction where appropriate, or other generally accepted methods for establishing surplus value; and

   C. The General Manager shall use methods and procedures for disposing of surplus items which in his judgment will return the greatest value to the District.

RULE NO. 139

ADOPTED 4/21/92

RULE REGULATING WASTE OF SURFACE WATER

The Board of Directors of the Stockton East Water District finds and determines that:

1. The Act authorizes the Board to make such rules and regulations as it deems necessary and proper for carrying out the provisions of that Act.

2. The District finds and determines that proper notice of the need for, and regulation of, provision of surface water provided to agricultural irrigators is a means of conserving water, and therefore of benefit to all water users within the District.

3. The District therefore establishes the following procedures:

(a) Any person desiring to use surface water provided by the District shall first inform the District by telephone of the desired place, time, and amount of use.

(b) The information must be received at least 24 hours before the intended use.

(c) Any person desiring to cease use of such surface water shall inform the District of the time of intended cessation of use.

(d) The information must be received at least 24 hours before the intended cessation.

(e) The District will receive such calls 7 days a week at the following numbers: Monday through Friday (8:00 a.m. to 5:00 p.m.) 948-0333; all other times, 948-0337.

4. Failure to follow the above procedure is, and will be conclusively presumed to cause a waste of water, which will cause loss of a valuable resource in limited supply, affecting the District and all other water users in the District, in an amount which cannot be accurately determined but shall be conclusively presumed to cause the loss of $500.00 worth of water.

5. For the first such failure by any person, such person will be charged for $100 worth of water, and such amount will be added to such person's account with the District.

6. For the second such failure by any person, that person will be charged for $200 worth of water, and such amount will be added to such person's account with the District.

7. For the third and any subsequent such failure by any person, that person will be charged for the full $500 worth of water, conclusively presumed to be wasted, and such amount will be added to such person's account with the District.

8. Upon the determination of any failure, the District shall notify the person who failed to follow this rule of the failure.

9. The amount added to such person's account shall be collected as part of such person's account in the manner provided in the Act.

10. Notwithstanding the above, the minimum time required for notice to the District when the surface water taken or used is used for frost protection purposes shall be upon the commencement of such use, or as soon thereafter as possible, rather than 24 hours ahead of time.

11. In the event any person who has been deemed to have wasted water under this rule shall request water, and it shall not be provided, that person shall inform the District of the facts and circumstances, and all such facts and circumstances shall be reviewed, with the possible application of a credit to such person's account at the end of the irrigation season.

12. Any person charged under this rule may appeal to the District's Agricultural Committee which committee may waive any charge imposed by this rule which would be inequitable under the circumstances the committee determines.

RULE 103. FLASH BOARD DAMS.

WHEREAS, the Act authorizes the Board to make such rules and regulations as it deems necessary and proper for carrying out the provisions of that Act;

NOW, THEREFORE, THE BOARD OF DIRECTORS OF THE STOCKTON-EAST WATER DISTRICT HEREBY ENACTS AND ESTABLISHES THE FOLLOWING RULE:

A. Operating Levels. The Secretary-Manager shall determine the safe operating water level at each of the flash board dams under the District's jurisdiction. The selected safe operating water levels shall be at levels which will reduce any danger of property damage to a reasonable minimum and to allow the efficient operation of the District's distribution system with a maximum conservation of water. As circumstances require in the opinion of the Secretary-Manager, the safe operating water levels so established may be changed from time to time without notice.

B. Gravity Diversions Permitted if Within Safe Operating Levels. The taking of irrigation water by means of gravity diversion shall be permitted only if such diversion can be accomplished within the limits of such safe operating water levels established pursuant to this rule.

C. Intake Levels of Pumps. The intake level of all pumping units within the District shall be approved by the Secretary-Manager.

RULE 113. MAINTENANCE OF LIVE STREAM.

WHEREAS, the Act authorizes the Board to make such rules and regulations as it deems necessary and proper for carrying out the provisions of the Act;

NOW, THEREFORE, THE BOARD OF DIRECTORS OF THE STOCKTON-EAST WATER DISTRICT ENACTS AND ESTABLISHES THE FOLLOWING RULE:

In its operation of the Calaveras River and its distributaries, to the extent of its jurisdiction and control, the District shall observe the following policies:

A. No water shall be diverted to storage in New Hogan Reservoir at any time when a live stream does not exist in Mormon Slough from Bellota to the Stockton Diverting Canal.

B. Diversions of water into the Old Calaveras River Channel at Bellota shall be limited to times when a live stream exists in Mormon Slough from Bellota to the Stockton Diverting Canal.

C. The application of Paragraphs A and B above shall be subject to modification when necessary for purposes of repairs, maintenance, and construction.

ADOPTED February 15, 1977

RULE 120. REQUIRED NOTICE TO DISTRICT BY OWNER OF DIVERSION OF STREAM DELIVERED WATER.

WHEREAS, the Act authorizes the Board to make such rules and regulations as it deems necessary and proper for carrying out the provisions of that Act;

NOW, THEREFORE, THE BOARD OF DIRECTORS OF THE STOCKTON-EAST WATER DISTRICT HEREBY ENACTS AND ESTABLISHES THE FOLLOWING RULE:

A. Notification Required. No person shall divert water from the Calaveras River, Mormon Slough, Mosher Creek, or Stockton Diverting Canal within the District unless notice is given to the District at its office (2526 East Fremont Street, Stockton, California), by telephone (466-3114) or in person, at least forty-eight (48) hours prior to the start of such diversion. Such notice shall include the place of diversion, the rate of diversion, and the estimated irrigation time. The District shall also be notified in the same manner as set forth above upon the actual completion of such diversion. Notification as to completion shall be given as soon as practicable after completion.

B. Continuous Use. Upon beginning use of water the diversion shall be continued without interruption, twenty-four (24) hours per day, until the noticed irrigation is completed.

ADOPTED 4/07/86

STREAM DIVERSION CALL-IN RULE

1. Purpose. In order that SEWD may reward surface water diversion owners and operators for providing the District with prior notice of use, it is necessary that a uniform procedure be established for such provision of notice. This rule is intended to establish that uniform procedure.

2. General. In order for surface water diversion owners or operators to be rewarded for providing notice, they must call the District office 48 hours prior to each irrigation (absolute minimum 24 hours).

3. Call-In Information. The owner or operator shall provide the following information; 1) Diversion Identification Number; i.e., P-1 (Potter Creek #1), 2) Name of owner or operator, 3) Beginning time, 4) pumping rate (gallons per minute) (current PG&E test recommended, and 5) Ending time.

4. Call-In Procedure. 1) During regular office hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, your call will be taken by the SEWD staff person answering the phone (your call will not be shuttled around). You will be asked to provide the information shown on the enclosed sample water order form.

2) During non-office hours, (nights and weekends) your call will be taken by the District's answering service. Non-emergency call information will be obtained from the answering service every morning (seven days a week) by the District's field person on duty at that time.

Emergency call information will be handled one of these two ways:

a. 5:00 p.m. to 7:00 a.m. weekdays, and 3:30 p.m. to 7:00 a.m. on weekends, the answering service will contact Superintendent Sam Weaver, or in his absence, General Manager Ed Steffani.

b. 7:00 a.m. to 3:30 p.m. on weekends and holidays, the answering service will contact the field person by radio.

WATER ORDER (TURN ON/OFF) FORM

DATE: _____ TIME: _____ INFO TAKEN BY: _____

PUMP OWNER OR OPERATOR: _____

DIVERSION I.D. # _____ DIVERSION RATE: _____ gpm

_____

TURN ON INFO:

DATE AND TIME IRRIGATION WILL BEGIN _____

_____

TURN OFF INFO:

DATE AND TIME IRRIGATION WILL END _____

_____

COMMENTS/PROBLEMS: _____

_____

CALLER'S PHONE # _____

RULE NO. 140

ADOPTED 4/21/92

ALLOCATION OF NEW HOGAN WATER -.1992

WHEREAS, the District Act authorizes the Board to adopt rules and regulations as it deems necessary and proper for carrying out the provisions of the Act; and

WHEREAS, the current six-year drought has caused groundwater levels to fall, and has decreased the amount of New Hogan Reservoir water available for treatment plant and irrigation purposes; and

WHEREAS, approximately 25,240 acre feet (AF) of New Hogan water (17,000 acre feet net after percolation losses) are available for irrigation use, and 22,700 AF will be required for the treatment plant; and

WHEREAS, delivery of these amounts of water can be made efficiently with minimum conveyance losses if irrigation releases are made during ten-day periods each month during the months of May through August, and if treatment plant releases are made continuously during the months of May through October; and

WHEREAS, controls are necessary, to assure no irrigation use of water released for the treatment plant;

NOW, THEREFORE, THE BOARD OF DIRECTORS OF STOCKTON EAST WATER DISTRICT HEREBY ENACTS AND ESTABLISHES THE FOLLOWING RULES TO ASSURE NO IRRIGATION USE OF WATER RELEASED FROM NEW HOGAN RESERVOIR FOR THE TREATMENT PLANT DURING THE PERIOD OF MAY 1, 1992 - OCTOBER 31, 1992:

1. Diversion of water from the Calaveras River above Bellota for agricultural irrigation shall be prohibited except during ten-day periods designated by the District each month, during the months of May through August.

2. The District, through it's Board of Directors, General Manager and General Counsel, may take such legal actions as may be necessary to enjoin the taking of water contrary to this rule.

RULE 104. THE MEASUREMENT OF WATER PRODUCED FROM BOTH GROUND AND SURFACE SOURCES AND USED ON ONE PARCEL OF LAND.

WHEREAS, the Act authorizes the Board to make such rules and regulations as it deems necessary and proper for carrying out the provisions of that Act;

NOW, THEREFORE, THE BOARD OF DIRECTORS OF THE STOCKTON-EAST WATER DISTRICT HEREBY ENACTS AND ESTABLISHES THE FOLLOWING RULE:

A. Volumetric Water Meter. In any case in which a diverter diverts surface water from the Calaveras River or one of its distributaries and also diverts ground water for use on a single parcel, the Collector may require that there be installed upon the water producing facility or facilities diverting surface water a volumetric water meter.

B. When Required. The Collector shall only require the installation provided for in Paragraph A in cases in which in his judgment it is impossible to determine the quantities of surface water diverted without the installation of such a volumetric water meter.

C. Ownership and Maintenance. All volumetric water meters required by this rule shall be purchased, installed, and owned by the District. The District shall maintain such meters and may read them from time to time.

D. Action if Meter Refused. In any case in which a diverter refuses to allow the installation of a volumetric water

meter as provided in this rule, and after the Collector has given thirty (30) days written notice to such diverter of the provisions of this rule, the Collector may compute the charge for all water used thereafter on such a parcel entirely at the surface water rate.

E. Parcel. As used in this rule, "parcel" means any San Joaquin County assessor's parcel or any two or more San Joaquin County assessor's parcels which are contiguous and in identical ownership.

ADOPTED June 20, 1972

RULE 107. THE MEASUREMENT OF WATER PRODUCED BY WATER PRODUCING FACILITIES WITHOUT APPROVED WATER MEASURING DEVICES.

WHEREAS, the Act authorizes the Board to make such rules and regulations as it deems necessary and proper for carrying out the provisions of the Act;

NOW, THEREFORE, THE BOARD OF DIRECTORS OF THE STOCKTON-EAST WATER DISTRICT HEREBY ENACTS AND ESTABLISHES THE FOLLOWING RULE:

The calculation of the amount of water produced from a water producing facility, other than a domestic water producing facility, which is not measured by a water measuring device approved by the Collector, shall be based upon the following factors:

A. Actual Efficiency of Water Producing Facility. The actual efficiency of the water producing facility as determined by the Collector.

B. Energy Consumed. The total energy consumed in pumping based upon meter kilowatt energy consumed in pumping as measured by meter, or if another source of energy is utilized, based upon metered or volumetric fuel consumption records maintained in a manner approved by the Board of Directors.

C. Acres Irrigated and Crops Produced. The actual number of acres irrigated and the crops produced.

D. Elapsed Time Meter. Information furnished by an elapsed time meter installed and maintained by the District and metering the Collector's current requirements for such meters.

RULE 110. ALTERNATE PROCEDURES, WATER PRODUCING FACILITIES EQUIPPED WITH WATER MEASURING DEVICES.

WHEREAS, subdivision (c) of Section 11 of the Act authorizes the Board, by rule, to establish alternate procedures for the computation and payment of progress bills in the case of water producing facilities within the District, the water production of which is measured by a water measuring device approved by the Collector;

NOW, THEREFORE, THE BOARD OF DIRECTORS OF THE STOCKTON-EAST WATER DISTRICT ENACTS AND ESTABLISHES THE FOLLOWING RULE:

A. Approved Water Measuring Devices to be Read by Owner. All owners of water producing facilities within the District, the water production of which is measured by a water ~~producing~~ measuring device approved by the Collector, and who elect to report their water production based on the record maintained by such water measuring device shall on June 30 and December 31 of each calendar year, record the then current reading of such approved measuring device.

B. Readings to be Reported to Collector. The readings taken pursuant to the provisions of Paragraph A above shall be reported under penalty of perjury by the owner of the water producing facility, and shall be transmitted by the owner to the Collector within one month following the taking of such readings.

C. Progress Billing. At the time next designated for the mailing of progress bills in the Act, the Collector shall mail to the owner of a facility equipped with an approved water

measuring device, a bill stating the exact amount owed by the owner based upon the current reported reading of his measurement device.

D. Payment of Progress Bill. The owner must pay the amount indicated on this bill within the same time period applicable to the payment of progress bills for non-volumetric water producing facilities under the provisions of Section 11 of the Act, and a failure to do so will subject him to penalties identical to those enumerated in said Section 11 of the Act.

E. Annual Bill. Submission and payment of the annual bill in the case of water producing facilities equipped with a water measuring device approved by the Collector shall be as provided in Section 13 of the Act.

F. Water Measuring Devices to be Read by District. The District may read all water measuring devices from time to time whether such water measuring devices were originally installed by the District or by the owner of a water producing facility.

G. Maintenance and Inspection. No water measuring device shall be deemed to be a "water ~~producing~~ measuring device approved by the Collector" unless the owner of the water producing facility on which such water measuring device is installed permits periodic inspection and maintenance of such water measuring device by the District.

RULE 123. METERS.

WHEREAS, the Act authorizes the Board to make such rules and regulations as it deems necessary and proper for carrying out the provisions of the Act; and

WHEREAS, Section 5 of the Act allows the Board to require such measuring devices as may be necessary;

NOW, THEREFORE, THE BOARD OF DIRECTORS OF THE STOCKTON-EAST WATER DISTRICT HEREBY ENACTS AND ESTABLISHES THE FOLLOWING RULE:

A. The staff of Stockton-East Water District shall recommend to the Board installation of a meter or water-measuring device on any agricultural water-producing facility, except as noted in Paragraph G herein, where such meter or device is necessary to carry out the purposes of the Act, in the discretion of the District. This recommendation shall be accompanied by a plan for physically installing the meter and necessary engineering drawings for such installation. Prior to making such recommendations to the Board the staff shall notify the owner of the water-producing facility of the proposed recommendations so that the owner may appear and comment at the meeting in which the Board will hear that recommendation.

B. The Board shall consider the recommendations of the staff, the comments of the owner of the agricultural

water-producing facility, and shall by resolution direct the staff to proceed with installation of its meter or water-measuring device, if in the judgment of the Board such installation is necessary to carry out the purposes of the Act.

C. Such installation, if directed by the Board, shall take place in two steps:

1. The District shall provide to the owner of the agricultural water-producing facility a meter containment tube which shall be complete with a pre-cut hole for installation of the meter or water-measuring device and shall have straightening vanes installed. Within thirty (30) days after provision of such meter containment tube (unless such time is extended by the Board) the owner shall install it in accordance with the engineering drawing and plan submitted by the staff.

2. As soon as possible thereafter the staff of the District shall install the meter or water-measuring device.

D. In the event such a meter or water-measuring device is placed on any agricultural water-producing facility, an annual charge for the installation, so long as such meter or water-measuring device is in place and operable, shall be charged to the owner as a separate charge on his annual water bill. Said charges shall be in accordance with the

following schedule. For meters or water-measuring devices which are of sizes different from those shown on the schedule, the staff shall recommend an annual charge consistent with the schedule:

Size of Meter	Annual Charge
4" Meter	$37.00
6" Meter	$38.00
8" Meter	$40.00
10" Meter	$43.00
12" Meter	$45.00
14" Meter	$47.00
16" Meter	$51.00
18" Meter	$63.00
20" Meter	$67.00
22" Meter	$70.00
24" Meter	$73.00
30" Meter	$80.00

E. The meter shall remain the property of the District and shall be maintained and inspected by the District thereafter. Any person who injures, alters, removes, resets, adjusts, manipulates, obstructs or in any manner interferes or tampers with or procures, or causes or directs any person to injure, alter, remove, reset, adjust, manipulate, obstruct or in any manner interfere or tamper with any meter or water-measuring device, so as to cause such meter or water-measuring device to improperly or inaccurately measure and record water production, shall be subject to the penalties set forth in the Act.

F. If the Board determines that it is necessary in order to secure compliance with this rule by any owner,

the Board shall then direct the Secretary-Manager of the District to seek appropriate remedies with the assistance of the attorneys for the District so as to obtain full enforcement of this rule. In accordance with Section 22 of the Act, it is hereby provided that the District shall not deliver or make available water to any owner who shall fail to install the meter containment tube in accordance with the engineering drawing within thirty (30) days of the time of provision of such meter containment tube to the owner (unless such time is extended by the Board), or who shall interfere with the subsequent installation of the meter or water-measuring device.

G. Paragraphs A and B of this rule shall not apply to agricultural surface water-producing facilities installed after May 1, 1979, and the installation of meters or water-measuring devices on such facilities shall be deemed to have been judged necessary, and installation of meters or water-measuring devices on such facilities shall take place in accordance with Paragraphs C, D, E and F of this Rule.

VIC SOLARI, JR.
JOSEPH L. DONDERO
JACK H. TONE
JACK LAVEN
RICHARD L. BOZZANO
BETTY L. MacNEAR
ROGER M. HUCKINS

EDWARD M. STEFFANI
GENERAL MANAGER

JOHN W. STOVALL
GENERAL COUNSEL

STOCKTON EAST WATER DISTRICT

6767 EAST MAIN STREET P.O. BOX 5157 STOCKTON, CA 95205-0157 209/948-0333

AUTHORIZATION TO INSTALL AND MAINTAIN A VOLUMETRIC WATER METER ON RIVER PUMP

Date _____

District Account No. _____

River Pump No. _____

Name _____

I hereby authorize Stockton East Water District to install and maintain a volumetric water meter on my river pump in accordance with District Rule 123, adopted May 1, 1979. This Rule provides for an annual charge consistent with the following schedule:

Meter Size	Annual Charge
4 inch	$37
6 inch	$38
8 inch	$40
10 inch	$43
12 inch	$45
14 inch	$47
16 inch	$51
18 inch	$63
20 inch	$67
22 inch	$70
24 inch	$73
30 inch	$80

Signature _____

Address _____

_____

Phone _____

RULE NO. 142

ADOPTED 6/17/92

REVISED RULE FOR METERS

WHEREAS, the District Act authorizes the Board to make such rules and regulations as it deems necessary and proper for carrying out the provisions of the Act; and

WHEREAS, Section 5 of the Act allows the Board to require such measuring devices as may be necessary:

NOW, THEREFORE, THE BOARD OF DIRECTORS OF THE STOCKTON EAST WATER DISTRICT HEREBY ENACTS AND ESTABLISHES THE FOLLOWING RULE:

A. The staff of Stockton East Water District shall recommend to the Board installation of a meter or water-measuring device on any agricultural water-producing facility, except as noted in Paragraph G herein, where such meter or device is necessary to carry out the purposes of the Act, in the discretion of the District. This recommendation shall be accompanied by a plan for physically installing the meter and necessary engineering drawings for such installation. Prior to making such recommendations to the Board, the staff shall notify the owner of the water-producing facility of the proposed recommendations so that the owner may appear and comment at the meeting in which the Board will hear that recommendation.

B. The Board shall consider the recommendations of the staff, the comments of the owner of the agricultural water-producing facility, and shall by resolution direct the staff to proceed with installation of its meter or water-measuring device, if in the judgment of the Board such installation is necessary to carry out the purposes of the Act.

C. Such installation, if directed by the Board, shall take place in two steps:

1. The District shall provide to the owner of the agricultural water-producing facility, a meter containment tube which shall be complete with a pre-cut hole for installation of the meter or water-measuring device and shall have straightening vanes installed. Within thirty (30) days after provision of such meter containment tube (unless such time is extended by the Board) the owner shall install it in accordance with the engineering drawing and plan submitted by the staff.

2. As soon as possible thereafter, the staff of the District shall install the meter or water-measuring device.

D. In the event such a meter or water-measuring device is placed on any agricultural water-producing facility, the meter or device shall remain on the facility as long as the water-producing facility is in place. An annual charge for the installation, so long as such meter or water-measuring device is in place, is operable and is used, shall be charged to the owner as a separate charge on his annual water bill. Said charges shall be in accordance with the following schedule. For meters of water-measuring devices which are of sizes different from those shown on the schedule, the staff shall recommend an annual charge consistent with the schedule:

Size of Meter	Annual Charge
4" Meter	$37.00
6" Meter	$38.00
8" Meter	$40.00
10" Meter	$43.00
12" Meter	$45.00
14" Meter	$47.00
16" Meter	$51.00
18" Meter	$63.00
20" Meter	$67.00
22" Meter	$70.00
24" Meter	$73.00
30" Meter	$80.00

E. The meter shall remain the property of the District and shall be maintained and inspected by the District thereafter. Any person who injures, alters, removes, resets, adjusts, manipulates, obstructs or in any manner interferes or tampers with or procures, or causes or directs any person to injure, alter, remove, reset, adjust, manipulate, obstruct or in any manner interfere or tamper with any meter or water-measuring device, so as to cause such meter or water-measuring device to improperly or inaccurately measure and record water production, shall be subject to the penalties set forth in the Act.

F. If the Board determines that it is necessary in order to secure compliance with this rule by any owner, the Board shall then direct the Secretary-Manager of the District to seek appropriate remedies with the assistance of the attorneys for the District so as to obtain full enforcement of this rule. In accordance with Section 22 of the Act, it is hereby provided that the District shall not deliver or make available water to any owner who shall fail to install the meter containment tube in accordance with the engineering

drawing within thirty (30) days of the time of provision of such meter containment tube to the owner (unless such time is extended by the Board), or who shall interfere with the subsequent installation of the meter or water-measuring device.

G. Paragraphs A and B of this rule shall not apply to agricultural surface water-producing facilities installed after May 1, 1979, and the installation of meters or water-measuring devices on such facilities shall be deemed to have been judged necessary, and installation of meters or water-measuring devices on such facilities shall take place in accordance with paragraphs C, D, E and F of this Rule.

RULE 111. REFUNDS OF OVERPAYMENTS.

WHEREAS, Section 19 of the Act requires that the Board establish rules providing for the making of refunds in the event of the overpayment of any ground water assessment or stream delivered water charges;

NOW, THEREFORE, THE BOARD OF DIRECTORS OF THE STOCKTON-EAST WATER DISTRICT ENACTS AND ESTABLISHES THE FOLLOWING RULE:

A. Application for Refund. The owner of any water producing facility within the District who believes he has overpaid any ground water assessment or stream delivered water charge may apply to the Secretary-Manager of the District on forms prescribed by the Secretary-Manager of the District for a refund of the amount of such overpayment. Such application must be filed within three (3) years of the making of the overpayment in question.

B. Review by Secretary-Manager. Upon receipt of an application for refund, the Secretary-Manager shall review the same and then place the matter on the agenda of the Board and shall submit to the Board the application for refund and the recommendation of the Secretary-Manager.

C. Notice of Consideration. A notice of time at which the Board will consider an application for refund shall be mailed to the person making such application at least ten (10) days before

the date of the time of such consideration. After the Board has acted upon the application the Secretary-Manager shall mail a notice of the action to the person filing such application.

ORDINANCE NO. 16

ADOPTED 3/16/93

AN ORDINANCE ESTABLISHING MUNICIPAL GROUNDWATER ASSESSMENTS, AGRICULTURAL GROUNDWATER ASSESSMENTS, DOMESTIC GROUNDWATER ASSESSMENTS, AND CHARGES FOR STREAM-DELIVERED WATER FOR CALENDAR YEAR 1993

The Board of Directors of Stockton East Water District does ordain as follows:

Section 1: The Municipal Groundwater Assessment for calendar year 1993 shall be Fifty-eight Dollars and Fourteen Cents ($58.14) per acre foot of water.

Section 2: The Agricultural Groundwater Assessment for calendar year 1993 shall be Two Dollars and Thirty-Nine Cents ($2.39) per acre foot of water.

Section 3: The Domestic Groundwater Assessment for calendar year 1993 shall be Twelve Dollars ($12.00) per Domestic use unit.

Section 4: The rate for sales of stream-delivered water for calendar year 1993 shall be Fifteen Dollars ($15.00) per acre foot of water.

Section 5: This ordinance shall take effect thirty (30) days after its final passage, and shall be published at least once in a newspaper of general circulation within fifteen (15) days after its final passage, with the names of the members of the Board of Directors voting for and against the same.

AYES: Directors Giannecchini, Dondero, Tone, Laven, MacNear, Alonzo
NOES: None
ABSTENTIONS: None
ABSENT: Director Clayton

BY: STELLA E. ALONZO, Vice President

Stella E. Alonzo

for JACK E. CLAYTON, President
Board of Directors
Stockton East Water District

ATTEST:

EDWARD M. STEFFANI, Secretary
Board of Directors
Stockton East Water District

RULE NO. 128

RATES FOR USE OF AGRICULTURAL WATER PRODUCED BY DISTRICT OPERATED DEEP WELL PUMPING PLANTS

THE BOARD OF DIRECTORS OF THE STOCKTON-EAST WATER DISTRICT FINDS AND DETERMINES THAT:

1. The Act authorizes the Board to make such rules and regulations as it deems necessary and proper for carrying out the provisions of that Act; and

2. Rule No. 119, establishing rates for charging agricultural well water produced from District operated well pumping plants is no longer equitable, since it has failed to offset District paid energy costs for said water produced as follows:

	1977	1978	1979	(8 mo.) 1980
Revenue	$2,974	$2,234	$1,519	$1,154
Energy Cost	$4,624	$4,014	$2,633	$2,599
Difference	($1,650)	($1,780)	($1,114)	($1,445)

3. The lease agreements with owner provide for a modification of rates, from time to time, by the Board of Directors; and

4. The owners have been notified by mail of the change in rates established by this Rule in accordance with the leases.

NOW, THEREFORE, the Board of Directors of the Stockton-East Water District repeals Rule No. 119 and enacts and establishes the following rule:

A. District Well Water. As used in this Rule No. 128, "District Well Water" means water produced from wells leased by the District which wells are equipped with District owned and operated pumps and motors.

B. User. As used in this Rule No. 128, "User" means the owner of a parcel of land on which District well water is being applied under the terms of a District well lease.

C. Charges. For District well water, user shall pay the following charges:

1. All P.G. & E., energy charges incurred by the District on account for water produced for owners use, plus a charge of $0.002 per K.W.H., of energy used for production of water for owners use to cover maintenance.

2. The current Pump Tax charged for all well water production.

D. Payment.

1. Energy charges incurred by the District shall be billed to the owner on a quarterly basis.

2. Pump Tax charges shall be billed on the regular District billing cycle.

STOCKTON-EAST WATER DISTRICT

Comparative Cost of Water Supply
(Using P. G. & E. statistics for average pump size, plant efficiency and Rate Schedule PA-1, effective 2/13/80)

GIVEN — A 10 H.P. river pump supplying 112 acre feet of water per year by using 57 KWH to pump an acre foot of water. COMPARED TO a 42 H.P. pump supplying 112 acre feet of water per year by using 236 KWH to pump an acre foot of water.

FIND — The comparative cost per acre foot to operate the river pump and deep well pump.

	River Pump	Deep Well Pump
Service Charge	$ .91	$ 2.97
Energy Charge	2.53	10.46
Total Power Cost	3.44	13.43
Water Charge	7.60	1.16
Total Power & Water Costs per Acre Foot	$11.04	$14.59*

*32% more than River Pump Costs

RULE NO. 131

STOCKTON-EAST WATER DISTRICT
PROCEDURES AND REGULATIONS FOR ESTABLISHING
FLAT RATE AND SPECIAL CLASS WATER PRODUCTION

WHEREAS, the Act authorizes the Board to make such rules and regulations as it deems necessary and proper for carrying out the provisions of the Act; and

WHEREAS, Section 9.4 of the Act requires that the Board, at a Regular, Special, or Continued Meeting between March 15 and April 15 of each year, after giving public notice, shall hold a public hearing to consider the necessity, amount, and rates of a municipal ground water assessment, an agricultural ground water assessment, and a domestic ground water assessment, if any, to be levied for the then current calendar year and charges to be made for stream-delivered water to the extent that such charges for stream-delivered water are not controlled by contract or agreement, and that water rates shall be established by Ordinance; and

WHEREAS, Section 9.4(d) of the Act also provides for establishment, by Rule, one or more methods to be used in computing the amount of water production from water-producing facilities which are not measured by a water-measuring device approved by the Collector.

NOW, THEREFORE, the Board of Directors of the Stockton-East Water District hereby enacts and establishes Rule No. 131 which provides procedures and regulations for computing the amount of water production from water-producing facilities which are not measured by a water-measuring device approved by the Collector, and other special classes of water. Rule No. 131 repeals Rule No. 129.

A. Agricultural Classification. "Agricultural classification" means water produced and used for the commercial production of agricultural crops or livestock on parcels of land operated in units of more than two (2) acres, and shall not include water used for agricultural product processing purposes, nor water used for household and landscaping purposes.

B. Domestic Classification. "Domestic classification" means water produced by a water producing facility located upon a parcel and used entirely upon said parcel for household and landscaping purposes.

C. Municipal and Industrial Classification. "Municipal and Industrial classification" means water produced and used for any purpose other than use classified as AGRICULTURAL in paragraph A above and use classified as DOMESTIC in paragraph B above, and includes all water used for agricultural product processing purposes.

D. Rates Established. Effective for each calendar year, all water produced within the District is subject to assessment at the rates adopted by Ordinance for the current calendar year.

SCHEDULE I

SECTION I: AGRICULTURAL CLASSIFICATION - GROUND WATER (WELL WATER)

Flat Rates

1. Rice	5.3 acre feet per acre per year
2. Grain	1.0 acre feet per acre per year
3. All other crops	2.8 acre feet per acre per year

SECTION II: AGRICULTURAL CLASSIFICATION - STREAM DELIVERED WATER (RIVER WATER)

Flat Rates

1. Rice	5.3 acre feet per acre per year
2. Grain	1.0 acre feet per acre per year
3. All other crops	2.8 acre feet per acre per year

SECTION III: AGRICULTURAL CLASSIFICATION - STREAM DELIVERED WATER (RIVER WATER) SPECIAL CLASS - POTTER CREEK

Potter Creek channels now carry water during the irrigation season provided by diversion of Calaveras River water. The District heretofore claimed, and does now claim, all water in Potter Creek channels. All water diverted from Potter Creek within the District shall be metered in accordance with Order of the Board of Directors issued March 13, 1979, and District Rule No. 123, adopted May 01, 1979. No allowance or consideration shall be granted for claims of prior diversion of drainage water not originating upon claimants property. The diversion of water into Potter Creek by the District is subject to complete termination or reduction if it becomes necessary to adopt priority schedules for water use in the event demand exceeds available supply or in the event dry year conditions limit District water supply.

SECTION IV: EXEMPTIONS FROM PUMP ASSESSMENTS

In recognition of the fact that full beneficial use of certain wells within certain portions of the District may be adversely affected by ground water conditions not under the control of the well owner or the District, exemptions to the current pump tax assessments which would otherwise be applicable to the use of an individual well may be granted by the District, on a case by case basis, under the provision of this Rule, as follows:

A. Wells otherwise subject to Municipal or Domestic pump tax assessments which produce water with specific conductivity greater than 600 micromhos per centimeter are exempted from the applicable pump tax assessment.

B. Wells otherwise subject to Agricultural pump tax assessments which produce water with specific conductivity greater than 1,300 micromhos per centimeter are exempted from the applicable pump tax assessment.

C. Wells which provide water for both Municipal or Domestic and Agricultural uses are exempted from that portion of the total pump tax assessments that would otherwise be applicable due to its use for Municipal or Domestic purposes if such well produces water with specific conductivity greater than 600 micromhos per centimeter but less than 1,300 micromhos per centimeter.

D. Determination of the specific conductivity of water produced by a well will be made by the District at no charge to the owner, except as provided in (E)(3), upon receipt from the owner of a written request for such determination, not later than June 20, of the year for which the request is being made, to permit testing during the month of July and August. Wells which supply water to a public water system, as defined in Section 64411, Title 22, California Administrative Code, may be exempted from applicable pump tax assessments based on the results of tests for specific conductivity performed by an approved water laboratory, as defined in the same Section 64411, provided to the District by the owner.

E. A well that has been tested and has been classified as either exempt or not exempt from the applicable pump tax assessment will normally retain that classification for a period of four (4) years, and not be retested during that period, except that:

(1) The District may at its sole expense, test wells more frequently than every four (4) years if more frequent testing is necessary to reflect changing conditions in local ground water quality;

(2) The District may extend to more than four (4) years the exemption status wells located in areas for which no evidence of sufficient improvement in local ground water quality exists as would indicate a change in classification to be likely;

(3) An owner may request, in writing, that water from a well be reanalyzed at an interval of less than four (4) years provided that the owner agrees, prior to the requested analysis being performed, to reimburse the District for its actual expenses for the analysis if no change in the status of the well is appropriate based on the results of the reanalysis.

F. This rule shall apply only to those wells located in the following areas of the District:

(1) That portion of the Metropolitan Stockton Area located west of Highway 99;

(2) That portion of the District designated as the South Planning Area; and

(3) That portion of the District designated as the North Planning Area.

SECTION V: UNIT VALUES FOR FLAT RATE DOMESTIC AND MUNICIPAL GROUND WATER

A. Single Family Residence; Commercial Building; First Unit of a Multiple Commercial Building, Motels, Trailer Parks, or Multiple Family Residences, including landscaping on sites two (2) acres or less	1 Unit
B. Each additional housing unit of Motels, Multiple Commercial Buildings, Multiple Family Residences, or Trailers in Trailer Parks	1/3 Unit

RESOLUTION OF THE BOARD OF DIRECTORS
OF STOCKTON EAST WATER DISTRICT

RESOLUTION NO. 92-93-05

SETTING A BASE MONTHLY PAYMENT
FOR PERIOD APRIL 1, 1993 TO MARCH 31, 1994,
PURSUANT TO THE SECOND AMENDED CONTRACT AMONG THIS DISTRICT
AND THE CALIFORNIA WATER SERVICE CO., THE CITY OF STOCKTON,
THE LINCOLN VILLAGE MAINTENANCE DISTRICT,
AND THE COLONIAL HEIGHTS MAINTENANCE DISTRICT,
PROVIDING FOR THE SALE OF TREATED WATER

WHEREAS, on September 25, 1987, the Stockton East Water District entered into a Second Amended Contract among the California Water Service Company, the City of Stockton, the Lincoln Village Maintenance District, and the Colonial Heights Maintenance District, providing for the sale of treated water; and

WHEREAS, the Board of Directors of the Stockton-East Water District has determined that the revised budgeted costs for the Contract period April 1, 1993 to March 31, 1994 should be as follows:

6A(1)	Debt Service	$3,698,448
	Debt Service Surcharge	341,361
6A(2)	Raw Water	105,871
6A(3)	Operation & Maintenance	1,837,265
6A(4)	Administration	161,048
6A(5)	Insurance	50,000
6A(7)	Reserve Fund Payment Pursuant to Paragraphs 8 & 9 of said Contract	35,000
6A(8)	Payment into the Water Treatment Facilities Reserve Fund	100,000
		$6,328,993; and

WHEREAS, paragraph 6D(3) of said Second Amended Contract states that Stockton East shall annually levy a municipal groundwater assessment, pursuant to its enabling legislation such that the cost of groundwater use is equivalent to the cost of surface water use; and

WHEREAS, the proposed 1993-94 budget estimates the amount of $5,505,881 to be paid from municipal groundwater assessments and base monthly payments as follows:

Municipal Groundwater Assessments (35,000 AF X $76.15)	$2,665,250
Base Monthly Payments	2,840,361
Total	$5,505,881

NOW, THEREFORE, BE IT RESOLVED, that pursuant to said Second Amended Contract, this Board hereby establishes the Base Monthly Payment to be paid by the Contractors pursuant to said Contract for the period April 1, 1993 to March 31, 1994, at $2,840,631/12 $236,719.25, which is the same amount as for the 1992-93 fiscal year.

PASSED AND ADOPTED BY THE BOARD OF DIRECTORS OF THE STOCKTON-EAST WATER DISTRICT ON THE 15TH DAY OF SEPTEMBER, 1993, BY THE FOLLOWING VOTE:

AYES: Directors Dondero, Tone, Laven, Clayton, MacNear, Alonzo

NOES: None

ABSENT: Director George

ABSTENTIONS: None

JACK LAVEN, President
Board of Directors
Stockton-East Water District

ATTEST:

EDWARD M. ~~STEFFANI~~, Secretary
Board of Directors
Stockton-East Water District

Agenda 3/19/93
O-3

RESOLUTION OF THE BOARD OF DIRECTORS
OF STOCKTON EAST WATER DISTRICT

RESOLUTION NO. 92-93- 20

SETTING A REVISED BASE MONTHLY PAYMENT
FOR PERIOD APRIL 1, 1993 TO MARCH 31, 1994,
PURSUANT TO THE SECOND AMENDED CONTRACT AMONG THIS DISTRICT
AND THE CALIFORNIA WATER SERVICE CO., THE CITY OF STOCKTON,
THE LINCOLN VILLAGE MAINTENANCE DISTRICT,
AND THE COLONIAL HEIGHTS MAINTENANCE DISTRICT,
PROVIDING FOR THE SALE OF TREATED WATER

WHEREAS, on September 25, 1987, the Stockton East Water District entered into a Second Amended Contract among the California Water Service Company, the City of Stockton, the Lincoln Village Maintenance District, and the Colonial Heights Maintenance District, providing for the sale of treated water; and

WHEREAS, the Board of Directors of the Stockton-East Water District has determined that the revised budgeted costs for the Contract period April 1, 1993 to March 31, 1994 should be as follows:

6A(1)	Debt Service	$3,611,022
	Debt Service Surcharge	310,364
6A(2)	Raw Water	102,301
6A(3)	Operation & Maintenance	2,527,533
6A(4)	Administration	174,115
6A(5)	Insurance	50,000
6A(7)	Reserve Fund Payment Pursuant to Paragraphs 8 & 9 of said Contract	35,000
6A(8)	Payment into the Water Treatment Facilities Reserve Fund	100,000
		$6,910,335; and

WHEREAS, paragraph 6D(3) of said Second Amended Contract states that Stockton East shall annually levy a municipal groundwater assessment, pursuant to its enabling legislation such that the cost of groundwater use is equivalent to the cost of surface water use; and

WHEREAS, the revised 1993-94 budget estimates the amount of $6,149,471 to be paid from municipal groundwater assessments and base monthly payments as follows:

Municipal Groundwater Assessments (15,000 AF X $54.54)	$ 818,100
Base Monthly Payments	5,331,371
Total	$6,149,471

NOW, THEREFORE, BE IT RESOLVED, that pursuant to said Second Amended Contract, this Board hereby establishes the Revised Base Monthly Payment to be paid by the Contractors pursuant to said Contract for the period April 1, 1993 to March 31, 1994, at $5,331,371/12 = $444,280.92.

4-BMPRER

RULE NO. 143

ADOPTED 4/6/93

RULE FOR RATE EQUALIZATION - CALENDAR YEAR 1993

WHEREAS, the District Act authorizes the Board to adopt rules and regulations as it deems necessary and proper for carrying out the provisions of the Act; and

WHEREAS, paragraph 6D (3) of the Second Amended Contract among SEWD, City of Stockton, County of San Joaquin and California Water Service Company states that "Stockton East shall annually levy a municipal groundwater assessment, pursuant to its enabling legislation such that the cost of groundwater use is equivalent to the cost of surface water use"; and

WHEREAS, SEWD has conducted a survey with the municipal groundwater users to determine the cost of groundwater production;

NOW, THEREFORE, THE BOARD OF DIRECTORS OF STOCKTON EAST WATER DISTRICT HEREBY ENACTS AND ESTABLISHES THE FOLLOWING RULES TO LEVY A GROUND WATER ASSESSMENT TO EQUALIZE THE COST OF GROUNDWATER AND SURFACE WATER FOR 1993:

1. POWER COST - Use actual power costs submitted by owner to accomodate for differences in water depth, pumping efficiency, system pressure, etc. In the absence of actual power costs, the cost of $50 per acre foot will be assumed.

2. OPERATION AND MAINTENANCE COST - Includes labor, repairs, chemicals, treatment costs and the current $3.60 assessment. The cost of $30 per acre foot will be assumed.

3. AMORTIZATION AND DEPRECIATION COST - Includes well and equipment replacement. The cost of $10 per acre foot will be assumed.

4. FORMULA FOR RATE EQUALIZATION - Surface water costs plus Groundwater costs divided by total M & I water production equals cost per acre foot. The assumed costs and water production for 1993 are as follows:

Ground water	15,000 af	X $90.00	= $1,350,000
Surface water	40,000 af	X $165.00	= $6,599,971
Totals	55,000 af		$7,949,971

The total cost of $7,949,971 divided by total use of 55,000 af equals $144.54 per acre foot. The assumed 1993 additional groundwater assessment is $144.54 less $90, or $54.54.

5. Any municipal groundwater user has the right to appeal the amount of this additional $54.54 per acre foot rate equalization assessment if it can be demonstrated that actual groundwater production costs are higher than the assumed $90 per acre foot. The appeal process will begin with the Water Policy Committee of the District Board and if necessary can be appealed to the full Board.

6. Any appeal which is granted shall entitle the appellant to a refund of the amount demonstrated to have been overcollected, less the actual cost to the District of processing the appeal and refund, provided that no overpayment shall be refunded unless the request for appeal has been filed with the Secretary of the District within three years of such overpayment

RESOLUTION 90-91-02

RESOLUTION FINDING NO GROUNDWATER BENEFIT
AND ASSESSING NO GROUNDWATER ASSESSMENT

WHEREAS, the Stockton East Water District ("District") is engaged in a project to convey water from New Melones Dam and Reservoir, via the Goodwin Dam, to the geographical area of the District in San Joaquin County, for the benefit of the inhabitants of the District, through relief of the critically overdrafted groundwater basin, of the inhabitants of San Joaquin County ("Project"); and

WHEREAS, in pursuit of the common benefit of their inhabitants, District and the County of San Joaquin, a political subdivision of the State of California, have entered into a joint exercise of powers agreement pursuant to California Government Code Section 6500 et seq., and have created the Goodwin Tunnel Financing Authority ("Authority"); and

WHEREAS, the Authority and District are purchasing real property in Stanislaus, Calaveras and San Joaquin County which is required for construction of the Project ("Property"); and

WHEREAS, the Owners of the Property wish to annex to the District in order to obtain water service; and

WHEREAS, the District is required by Section 9.4 of Chapter 819 of the Statutes of 1971, as amended, to annually determine groundwater assessments within the District; and

WHEREAS, the District's special consultant, Woodward-Clyde engineers, has completed seepage estimates for the groundwater basin along the canals and creeks (12/19/89 Study for the Upper Farmington Canal, and 1/30/90 Study for the Lower Canal and Creeks which studies are available for review at the District office and which are incorporated herein by reference) and has concluded that, ". . . the amount of seepage recovered by any pumping well will be small and will be on the order of about 5 gpm"; and

WHEREAS, since agricultural wells within the present boundaries of the District produce approximately 1000 gpm, it is reasonable to find that the owners of the potential 5 gpm wells should not be assessed,

NOW, THEREFORE, be it resolved and it is resolved by the Board of Directors of the District as follows:

1. Based upon the groundwater seepage estimates calculated by Woodward-Clyde, the New Melones/Goodwin Canal and Tunnel Project will not significantly improve groundwater conditions under property in the vicinity of the Upper and Lower Canals, and those portions of Shirley, Hoods, and Rock Creeks to be used to convey Project water.

2. No groundwater assessments will be levied on property within five miles of the Project, including such canals and creeks which may be part of the Project, and which may be annexed to the District.

3. The gro ndwater assessment will be reevaluated by the District in five (5) years to determine whether or not the Project has provided any actual benefits to the Property.

Adopted this 1st day of May, 1990, by the Board of Directors of the Stockton East Water District at a regular meeting thereof.

AYES: Dondero, Laven, Bozzano, MacNear, Huckins

NOES: George, Tone

ABSENT: None

ABSTENTIONS: None

Roger W. Huckins
PRESIDENT, Board of Directors
of Stockton-East Water
District

ATTEST:

SECRETARY, ~~Board~~ of Directors
of Stockton-East Water
District

RULE 109. WATER RIGHTS CLAIMS.

WHEREAS, the Act authorizes the Board to make such rules and regulations as it deems necessary and proper for carrying out the provisions of the Act; and

WHEREAS, various diverters of surface water from the Calaveras River and its distributaries claim that a portion of the water that is so diverted by them represents natural flow water and is diverted by them under a claim of right; and

WHEREAS, the Board of Directors of this District has recognized that in some instances such claims may have validity when made by surface water diverters from the Calaveras River upstream from the divergence of the Calaveras River and the Mormon Slough, and from the Mormon Slough downstream from said point, to the beginning of the Stockton Diverting Canal; and

WHEREAS, the Board of Directors of this District has had prepared by Murray, Burns & Kienlen, Consulting Civil Engineers, a study of water use and water rights on the Calaveras River which is dated February 7, 1969, which study is hereinafter referred to as "Water Rights Study"; and

WHEREAS, that study sets forth for each surface diverter as of the date of the report a percentage of that diverter's water demand that can be considered to be taken from the natural flow of the river under a valid claim of right;

that such computations are based on the findings of the report that based on the use of water during the year 1965, riparian lands are entitled to 30% of the surface water used on them under a claim of right, "use" (as defined on page 14 of said study) lands are entitled to 16% of the surface water used on them under a claim of right and appropriators are entitled to the percentage of water used on them as set out for each individual appropriator on page 31, Water Rights Study; that the irrigation of riparian land that is not now irrigated will lower the percentages of water that can be used by all classes of land under a valid claim of right and that these decreases in percentages can be calculated from the data contained in the Water Rights Study; and that if there is in the future surface irrigation of land not included in said study the percentage of water that can be used by such land under a valid claim of right, if any, can be calculated from data contained in said study which was adopted by Resolution 68-69-19 of the Board of Directors of this District on February 18, 1969; and

WHEREAS, subsequent to the completion and adoption of the aforementioned Water Rights Study, additional evidence was presented to the Board, at its invitation, showing that in that part of the Calaveras River east of Bellota and west of the San Joaquin-Stanislaus county line, that the riparian entitlement may be somewhat greater than set forth in said Water Rights Study, and that accordingly some landowners in that reach may have a claim to additional rights; and

WHEREAS, this Board considered said evidence and concluded that the riparian entitlement of those landowners east of Bellota and west of the San Joaquin-Stanislaus county line was greater than that contained in the said Study and therefore modified the riparian allowance provided to such landowners under the Study;

NOW, THEREFORE, THE BOARD OF DIRECTORS OF THE STOCKTON-EAST WATER DISTRICT HEREBY ENACTS AND ESTABLISHES THE FOLLOWING RULE:

A. (1) All assessments and charges levied for the period subsequent to January 1, 1972 shall contain allowances for the water rights of each surface water diverter from the Calaveras River as shown by the findings of the Water Rights Study, modified as follows:

(a) The entitlement of riparian diverters between the east line of the Escalon-Bellota Road Bridge and the west line of Section 4, Township 2 North, Range 9 East, M.D.B.& M. is 35%;

(b) The entitlement of riparian diverters between the west line of Section 4, Township 2 North, Range 9 East, M.D.B.& M. and the west line of Section 35, Township 3 North, Range 9 East, M.D.B.& M. is 40%;

(c) The entitlement of riparian diverters between the west line of Section 35, Township 3 North, Range 9 East, M.D.B.& M. to the San Joaquin-Stanislaus county line is 45%;

(d) The entitlement of a diverter in the areas described in subparagraphs A(1) (a), (b), and (c), may be increased by resolution of the Board of Directors on a finding based on reasonable evidence in the judgment of the Board of Directors that such diverter is entitled to additional rights, whether prescriptive, riparian, appropriative, or "use", not taken into account in the Water Rights Study.

Any reference hereinafer to said Water Rights Study is to said Water Rights Study as adjudged in the manner set forth in this subparagraph (1) of Paragraph A as to said three areas east of Bellota. Payment made to this District in conformity with these assessments shall be considered payment in full to this District.

(2) Since the percentage allowance assigned to each surface water diverter in the Water Rights Study, Table 7, is based upon water use at the time of said Study, and is subject to correction if there is additional surface water irrigation of riparian land, and since there is land which is potentially surface irrigated that may have valid water rights, that is not included in the Water Rights Study, the Secretary-Manager of this District is authorized and directed to recalculate the percentage of allowance due to each individual surface diverter based on the date contained in the Water Rights Study and changes in the use of surface water along the Calaveras River System and to calculate the percentage of allowance due to diverters of water for use on lands not covered by the Water Rights Study, which such calculations become

necessary, in the opinion of the Secretary-Manager or when directed to do so by this Board. In the event of such calculation the Secretary-Manager shall recognize the ratios established by the adjustments made in the allowances granted to riparian diverters in the three areas above Bellota.

(3) Any water right allowance granted to a diverter pursuant to this Rule and pursuant to the provisions of earlier Rules adopted by this District may be modifed or abolished by a Rule adopted by this District and is granted solely for the purpose of levying a charge for surface water use and is not a determination binding either upon the District or the diverter for any other purpose.

B. Any landowner who has a water rights allowance recognized by this District may take water after October 30th and prior to the following April 1st of any consecutive years without payment and without having such taking applied in satisfaction of such a landowners water right allowance recognized by the District, provided that any such landowner shall provide such report necessary to substantiate the actual time of water use as are satisfactory to the Collector.

C. This rule succeeds former Rules 10, 15, 21, 23, and 26 of this District, and any question or dispute between an owner and the District over charges or assessments made prior to the effective date of this Rule shall be governed by the appropriate former Rule to the extent that it would have applied prior to the adoption of this Rule.

CHAPTER 819

An act to repeal Chapter 1775 of the Statutes of 1963, to change the name of the Stockton and East San Joaquin Water Conservation District to the Stockton-East Water District, and to grant certain powers to such district, relating to water conservation and water supply, and declaring the urgency thereof, to take effect immediately.

[Approved by Governor September 29, 1971. Filed with Secretary of State September 29, 1971.]

CHAPTER 553

An act to amend Section 4 of, and to add Section 21.5 to, Chapter 819 of the Statutes of 1971, relating to the Stockton-East Water District.

[Approved by Governor September 5, 1975. Filed with Secretary of State September 6, 1975.]

CHAPTER 1126

(Senate Bill No. 1120)

An act to repeal and add Sections 4 and 9 of, and to add Sections 9.2, 9.3 and 9.4 to, Chapter 819 of the Statutes of 1971, relating to the Stockton-East Water District, and declaring the urgency thereof, to take effect immediately.

[Approved by Governor September 27, 1979. Filed with Secretary of State September 28, 1979.]

CHAPTER 1287

SENATE BILL NO. 1449

An act to amend Sections 4247, 4402, 5019, 5020, and 5021 of the Education Code, to amend Sections 75, 318, 512, 1007, 1017, 1340, 1508.5, 1515, 3520, 3521, 4011, 4055, 5353, 6460, 10211, 14213, and 35006 of, to repeal Section 6509 of, and to repeal and add Section 14000 of, the Elections Code, to amend Sections 24001 and 31105.2 of the Government Code, and to amend Section 34 of Chapter 819 of the Statutes of 1971, relating to elections, and declaring the urgency thereof, to take effect immediately.

The people of the State of California do enact as follows:

SECTION 1. Chapter 1775 of the Statutes of 1963 is repealed.

SEC. 2. (a) The name of the Stockton and East San Joaquin Water Conservation District is changed to the Stockton-East Water District.

(b) In all respects not inconsistent with this act, the Stockton-East Water District shall continue to be organized under, and governed by, the Water Conservation District Law of 1931, Division 21 (commencing with Section 74000) of the Water Code as the same now exists and as it may be amended hereafter. The provisions of Division 21 (commencing with Section 74000) of the Water Code and all other acts of the Legislature applicable to the district and not inconsistent with the provisions of this act shall remain in full force and effect and shall be fully applicable to the district.

(c) In all cases in which it may be otherwise required that the district be described as a "water conservation district" it shall be sufficient to describe the district as a "water district."

SEC. 3. (a) The Legislature finds and declares that the problems of providing for the management of the underground water basin and the provision of supplemental water supplies, in the area of the Stockton-East Water District are peculiar to that district and that area and for that reason it is necessary to deal specially with such area and to provide special provisions for the government and operation of that district.

(b) The Legislature further finds and declares that this act is necessary to the solution of a problem arising out of the following unique and special circumstances: The water supplies in the underground basin in the area of the Stockton-East Water District are insufficient to meet the water demands of the area, and, because of the geologic conditions peculiar to the area and because excessive

pumping has seriously depleted the underground water storage, there has been an intrusion of saline waters into the underground water basin causing serious water quality deterioration and the destruction of the usefulness of a portion of the underground water basin. Further excessive pumping, without proper management of the underground water basin and the provision of supplemental water supplies, is certain to destroy the usefulness of a major portion of the underground water basin and endanger the health and welfare of the district.

(c) The Legislature further finds and declares that the district includes within its territory a large urban area, a large agricultural area, and territory formerly within an irrigation district, and that for these reasons it is necessary in order to accommodate the various interests within the district to provide special procedures to be observed by the district in its government and operation.

(d) The Legislature further finds and declares that only a portion of the City of Stockton and only a portion of the Metropolitan Stockton Planning Area as defined by the City of Stockton and the County of San Joaquin are within the district, and that unless all of such city and all of the Metropolitan Stockton Planning Area are within the district there will be uneconomic duplications and inefficiencies and it will be both more costly and more difficult to solve the grave and urgent water problems of the Stockton Metropolitan Area and the existing Stockton-East Water District. The Legislature further finds and declares that the territory that is outside the district but within the Metropolitan Stockton Planning Area includes territory that is within the City of Stockton, within county maintenance districts, within other water conservation districts, and within an irrigation district. The Legislature further finds and declares that the special problems of including all of the City of Stockton and the Metropolitan Stockton Planning Area within the Stockton-East Water District are peculiar to that district and that area, and for that reason it is necessary to deal specially with such inclusion and to provide special provisions and procedures for such inclusion and the necessary adjustment of district boundaries.

Sec. 4. (a) The definition of a word applies to any of its variants.

(b) The following words and phrases shall have the following meanings:

(1) "Accumulated overdraft" means the aggregate amount by which the quantity of ground water removed from the ground water supplies within the district during all preceding water years shall have exceeded the quantity of water replaced therein by the replenishment of the ground water supplies in such water years by any natural or artificial means, based upon reports, records, and other data or evidence appropriate for the purpose of making such determination.

(2) "Administration division" means the budgeting and accounting division established by Section 9 which is primarily concerned with administration of the district and with obtaining and making available to the other divisions a supply of water.

(3) "Advisory commission" means the California District Securities Advisory Commission.

(4) "Agricultural division" means the budgeting and accounting division established by Section 9 which is primarily concerned with the supply of water for agricultural purposes.

(5) "Agricultural water" and "water used for agricultural purposes" shall mean water used primarily in the commercial production of agricultural crops or livestock on parcels of land of more than two acres and shall not include water used for agricultural product-processing purposes.

(6) "Annual overdraft" means the amount by which the production of water from the ground water supplies within the district during the water year exceeds the natural replenishment of such ground water supplies in such year.

(7) "Assessor" means the assessor of the county.

(8) "Auditor" means the auditor of the county.

(9) "Benefit review procedure" means the procedure set forth in subdivisions (g) through (i) of Section 28.

(10) "Board" means the board of directors of the Stockton-East Water District.

(11) "Board of supervisors" means the board of supervisors of the county.

(12) "Collector" means the person appointed by the board to determine and collect the accounts due the district prior to their transfer to the auditor, as set forth in this act. The collector shall be appointed by the board and hold office at the pleasure of the board. The collector may hold other offices, including, but not limited to, the office of secretary, or may perform other duties for the district but shall not be a member of the board.

(13) "Committee" means a group of directors of the district consisting of three directors, one of whom shall be appointed chairperson by the president of the board, together with an alternate member, which shall study particular areas and recommend policy to the full board. The members and alternate member shall be appointed by the president of the board. There shall be the Agricultural Operations Committee and the Municipal Operations Committee, and there may be such other committees as may be established by the board.

(14) "County" means the County of San Joaquin.

(15) "Delinquent account" means any sum or sums due the district from an owner as disclosed by an annual bill presented by the collector pursuant to Section 13 which is not paid within the times set forth in Section 15, together with all penalties applicable to such sum or sums pursuant to this act.

(16) "Delinquent landowner" means the owner or owners of a parcel of land upon which one or more delinquent water-producing facilities are located as such ownership is disclosed by the last equalized assessment roll of the county.

(17) "Delinquent parcel" means a parcel of land upon which one or more delinquent water-producing facilities are located.

(18) "Delinquent water-producing facility" means a water-producing facility for which payment is required by this act and for which payment in full has not been received by the district within the times set forth in Section 15.

(19) "Director" means a member of the board.

(20) "District" means the Stockton-East Water District.

(21) "Division" means a division of the district established pursuant to the Water Conservation District Law of 1931, Division 21 (commencing with Section 74000) of the Water Code.

(22) "Domestic ground water" means water produced from the underground on any parcel of two acres or less where the water is used and disposed of on that parcel, and also means water produced from the underground and used for residential or commercial purposes on agricultural parcels larger than two acres.

(23) "Dry year" means any year in which the board determines that there may be insufficient quantities of surface water to meet the needs of users who are dependent upon surface water sources.

(24) "Full tax area" means any area within a planning area which has been excluded from the partial tax area in the manner provided in subdivision (b) of Section 27.

(25) "Ground water" means potable water beneath the surface of the ground suitable for municipal, domestic and irrigation use.

(26) "Municipal division" means the budgeting and accounting division established by Section 9 which is primarily concerned with the supply of water for municipal and industrial purposes.

(27) "Municipal ground water" means water produced from the underground other than domestic ground water or agricultural ground water.

(28) "Owner" means the person or persons owning any water-producing facility or any interest therein other than a lien to secure the payment of a debt or other obligation. Unless there is filed with the district by an owner, information to the contrary, the district may presume that the owner of the parcel of land on which a water-producing facility is located is the owner of the water-producing facility.

(29) "Partial tax area" means all areas of the district which pursuant to the terms of subdivision (a) of Section 27 are not required to pay the taxes, assessments, and charges specified in subdivision (a) of Section 27.

(30) "Person" means any public agency or public corporation, whether federal, state, or local, or any private corporation, firm, partnership, individual, or group of individuals.

(31) "Planning area" means any one of the planning areas mentioned in subdivision (a) of Section 24 or in Section 35.

(32) "Prior act" means Chapter 1775 of the Statutes of 1963, as amended.

(33) "Production" or "producing" means the diversion or taking of stream-delivered water or the extraction or extracting of ground water, by any means, for domestic, municipal, irrigation, industrial, or other beneficial use.

(34) "Revenue sources" means those sources of expected revenue which shall be used to establish a budget, respectively, for each of the administration, agricultural, and municipal divisions. These revenue sources for each division are as follows:

(i) Administration division: General property taxes, other general revenue sources which may be provided by state law, payments from other divisions, or other sources of revenue which may be established in the future by law or by rule of the board.

(ii) Agricultural division: Stream-delivered water charges, domestic ground water

assessments, agricultural ground water assessments, penalties collected on such charges and assessments, and other sources of revenue which may be established in the future by law or by rule of the board.

(iii) Municipal division: Contract sales of treated surface water, contract sales of ground water, municipal ground water assessments, penalties collected on such sales and assessments, and other sources of revenue which may be established in the future by law or by rule of the board.

(35) "Stream-delivered water" means surface water used for agricultural purposes and taken by an owner's water-producing facility directly from the Stockton Diverting Canal, the Calaveras River, the Old Calaveras River, Mosher Creek, Mormon Slough, Potter Creek, or any other watercourse within the district except those portions of any of the foregoing watercourses which are located within the boundaries of the Sacramento-San Joaquin Delta, as such boundaries are presently defined by Section 12220 of the California Water Code.

(36) "Tax collector" means the tax collector of the county.

(37) "Treasurer" means the treasurer of the county.

(38) "Water-producing facility" means any device or method, mechanical or otherwise, for the production of ground water from the ground water supplies within the district, or for the diversion of stream-delivered water.

SEC. 5. In addition and supplemental to the powers conferred upon the district by the Water Conservation District Law of 1931, Division 21 (commencing with Section 74000) of the Water Code, and by all other laws applicable to the district, the district shall have power:

(a) To acquire, control, distribute, store, spread, sink, treat, purify, reclaim, recapture, process, and salvage any water, including sewage and storm waters for the beneficial use or uses of the district, its inhabitants, or the owners of the rights to water in the district.

(b) To sell treated and untreated water under its control to any municipal corporation, political subdivision of the State of California, public utility, or other person at such charges and rates as shall be set by the board by contract, agreement, rule, or otherwise, for use within the district.

(c) Subject to the requirements of Section 6, to sell treated and untreated water under its control to any municipal corporation, political subdivision of the State of California, public utility, or other person for use outside the district.

(d) Within or outside the district to construct, purchase, lease, or otherwise acquire, and to operate and maintain, waterworks, water treatment plants, spreading grounds, pipelines, conduits, canals and other facilities for the distribution of water, pumps and other facilities for the production of water, dams, weirs, reservoirs, and other facilities, installations, works, equipment, and machinery useful or necessary to replenish the underground water basin within the district, to manage, for the purpose of repelling saline intrusion, the underground water basin within the district for the common benefit of the district, to augment the common water supplies of the district, or to otherwise provide water for the beneficial use or uses of the district, its inhabitants, or the owners of rights to water in the district.

(e) For the common benefit of the district to store water in underground water basins or surface reservoirs within or outside the district, to appropriate and acquire water or water rights within or outside the district, to purchase or import water into the district, and to conserve water within or outside the district.

(f) Subject to the provisions of Sections 9 to 19, inclusive, to levy and collect a ground water assessment for the production of water from the ground water supplies within the district, and to fix and collect charges for stream-delivered water and to require such measuring devices as may be necessary for the purposes of this act and to inspect and test any such measuring devices whether installed by the district or by others.

(g) To maintain reserve funds in amounts deemed advisable by the board for the purpose of water for

replenishment purposes, the stream delivery of agricultural surface water, or for other district purposes.

(h) To acquire real and personal property and interests therein, but the district shall not exercise the power of eminent domain for any purpose of this act or in carrying out any power granted by this act outside the boundaries of the district unless the board of supervisors of the county in which the property to be acquired is located has consented to such acquisition.

SEC. 6. (a) The district may sell treated and untreated water under its control for use outside of the district only pursuant to a written agreement made as provided in this section.

(b) The district may make an agreement to sell water for use outside the district for periods not in excess of one year where the board prior to the district's agreement to sell such water has found and declared by resolution that such water is not required for use within the district during the period, not to exceed one year, for which the agreement is to be made. The board's resolution shall be adopted no earlier than three months preceding the commencement of the period for which the agreement is to be made. The price charged for water sold pursuant to an agreement made pursuant to this subdivision shall be sufficient to at least cover the costs of the district, as determined by the board, in furnishing and delivering the subject water to its point of delivery.

(c) The district may make agreements to sell water for use outside the district for periods in excess of one year if the board prior to the district's agreement to sell water has by resolution found and declared that the subject water will not be required for use within the district for the period for which the agreement is made and declares that the sale of the water and its use in the manner provided in the applicable agreement is for the direct and substantial furtherance of the purposes of the district. The charge for water sold pursuant to an agreement made pursuant to this subdivision shall at least be sufficient to cover the costs of the district, as determined by the board, in furnishing and delivering such water to its point of delivery, plus the equivalent of all applicable ad valorem property taxes that would be assessed by district on the property upon which such water is to be used, or in the case of a sale to a political subdivision, municipal corporation, public utility, or other operator of a common water distribution system on all of the property served by such common water distribution system, if the subject property were included within the district during the period covered by the agreement.

(d) The district may make agreements to sell water that would not be otherwise owned or possessed by the district

that comes into the district's possession due to provisions of a contract with another political subdivision that operate when such other political subdivision fails to pay for such water or the costs related to such water, on any basis the board determines if the board makes the determination that such water is not needed for sale within the district for the period of the agreement.

SEC. 7.—The board shall, from time to time, order an investigation and report to be made by an engineer or engineers employed by the district for the purpose of investigating and reporting upon the ground water conditions of the district and making recommendations as to water management practices to be followed by the district. The report shall include an estimate as to the accumulated overdraft, if any, as of the date of the report, estimates of the ground water production anticipated by years for the period covered by the report, and an estimate of the average annual overdraft, if any, for the period covered by the report. The report shall also include recommendations as to necessary and desirable surface and underground water management practices to be followed during the period covered by the report.

SEC. 8. The engineering investigation and report shall be delivered to the secretary in writing. The secretary shall publish pursuant to Section 6061 of the Government Code a notice of the receipt of such report and fixing a date for a public hearing to be held by the board, the publication to be in a newspaper of general circulation, printed and published within the district, at least 10 days prior to the date at which the public hearing is to be held. The notice, among other information which the district may include, shall contain an invitation to all owners of water-producing facilities within the district and all other interested parties to call at the office of the district to examine the engineering investigation and report.

Sec. 9. (a) There are hereby established within the district, budgeting and accounting divisions as follows: administration, agricultural, and municipal. Each such budgeting and accounting division shall have established a separate budget, and separate accounts shall be kept of the revenues and expenditures for each division.

(b) Notwithstanding the establishment of such divisions, the board shall have authority to approve temporary transfers between divisions on such terms, and with such repayment provisions, as may be approved by the board.

Sec. 9.2. (a) The board at a regular, special, or continued meeting between November 1st and December 15th of each year shall hold a public hearing to consider the budget for each of the administration, agricultural and municipal divisions, and an overall budget for the district, for the next calendar year.

(b) Notice of the hearing shall be published pursuant to Section 6061 of the Government Code at least 10 days prior to the date of the hearing. Any person interested in the district may, in person or by representative, appear and submit evidence concerning the water conditions of the district, the financial needs of the district, proposals for rates, and other relevant matters.

(c) The board shall at the hearing receive recommendations from the Agricultural Operations Committee as to the budget to be established for the agricultural division, and from the Municipal Operations Committee as to the budget to be established for the municipal division. Each of such committees shall also make recommendations to the board as to the budget of the administration division.

(d) Following the budget hearing by the full board, the board shall adopt by resolution prior to December 15 of each year, a budget for the administration division, for the agricultural division, for the municipal division and for the district overall.

Sec. 9.3. The rates to be established pursuant to Section 9.4 shall equitably divide the cost of meeting a balanced agricultural division budget among the sources of revenue for the agricultural division, but in a manner which will encourage the use of surface water available for agricultural use within the district.

Sec. 9.4. (a) The board at a regular, special, or continued meeting between March 15 and April 15 of each year shall hold a public hearing to consider the necessity, amount, and rates of a municipal ground water assessment, an agricultural ground water assessment, and a domestic ground water assessment, if any, to be levied for the then current calendar year and charges to be made for stream-delivered water to the extent that such charges for stream-delivered water are not controlled by contract or agreement.

(b) Notice of the hearing shall be published pursuant to Section 6061 of the Government Code at least 10 days prior to the date of the hearing. Any person interested in the district may, in person or by representative, appear and submit evidence concerning the water conditions of the district, the financial needs of the district, proposals for rates, and other relevant matters.

(c) Following the hearing, and prior to April 15 of that year, the board may, by adoption of an ordinance, determine, levy, and assess a municipal ground water assessment against all owners of water-producing facilities within the district which produce municipal ground water during the current year and an agricultural ground water assessment against all owners of water-producing facilities within the district which produce water from the ground during the current year for agricultural purposes and a domestic ground water assessment against all owners of water-producing facilities within the district which produce domestic ground water and shall determine and fix charges for stream-delivered water for the current year to the extent that such charges for stream-delivered water are not governed by contract or agreement.

(d) The method of computing ground water assessments and charges for stream-delivered water may be uniform for all water-producing facilities or may be uniform for each of several classes of water-producing facilities. The board shall, by rule, establish one or more methods to be used in computing the amount of water production from a water-producing facility which is not measured by a water-measuring device approved by the collector. Such methods shall be established by rule adopted by the board and may be based on any criteria which may be used to determine or estimate with reasonable accuracy the amount of water production.

(e) The board, by rule, may waive any assessment upon any class or classes of water-producing facilities which it determines because of the small amount of water produced by such facilities, would yield to the district a sum less than the estimated cost of making and collecting the assessment.

(f) Any ground water assessment or charges for stream-delivered water levied or made pursuant to this section shall be in addition to any general assessment levied by the district.

(g) Clerical errors in the name of any owner or in other recorded information, or in the making or extension of any assessment upon the records which do not affect the substantial rights of the subject owner or owners shall not invalidate the assessment.

(h) The procedure established by Sections 9 to 9.4, inclusive, shall not be applicable for calendar year 1979. The rates for calendar year 1979 only are established as follows:

(1) The domestic ground water assessment shall be ten dollars ($10) per domestic use unit, as such unit is established by the board.

(2) The rate for sales of stream-delivered water shall be seven dollars and sixty cents ($7.60) per acre-foot of water.

(3) The agricultural ground water assessment rate shall be one dollar and sixteen cents ($1.16) per acre-foot of water.

(4) The municipal ground water assessment rate shall be set at three dollars ($3) per acre-foot of water.

It is not the intent of the Legislature that the rates set for 1979 shall serve as precedent for future rates.

(i) For calendar year 1980 and thereafter, water rates shall be established in accordance with Sections 9 to 9.4 except that no rate may be established in any calendar year which exceeds the individual rates set in paragraph (1), (2), or (3) of subdivision (h) by 20 percent plus a factor to reflect the percentage increase in the federal consumer price index with calendar year 1979 as a base; provided, however, that this subdivision (i) shall not be effective from and after the date of any election in which a majority of those electors voting approve a contract by the district for new supplemental water or approve bonds for financing a distribution system for new supplemental water.

(j) During calendar year 1980 and thereafter, water rates shall be established by ordinance following public notice. Such ordinances shall be subject to referendum; provided, however, that no referendum shall modify or affect the terms of any bond resolution issuing bonds approved by the voters.

SEC. 10. All assessments and charges due for water produced within the district during the 1971 calendar year and for water produced within the district prior to 1971 shall be assessed, charged, calculated, determined, billed, and collected pursuant to the prior act and all applicable rules duly adopted by the board, and for those purposes the prior act shall remain in effect until such sums have been collected in full or otherwise discharged in the manner provided by the prior act and the applicable rules duly adopted by the board.

SEC. 11. (a) Commencing with 1972, not later than the first day of October of each year the collector shall mail progress bills to each owner of one or more water-producing facilities within the district. The progress bills shall state an amount due which shall be computed by multiplying one-half of each owner's water production for the preceding calendar year in acre-feet by the respective ground water assessment rates and the stream-delivered water charges applicable for the current year.

(b) Any progress bill may be reduced in amount or canceled by the collector, if upon good cause shown, the collector determines that the production of water from the water-producing facility or facilities of the owner during the current year, to the date of the collector's determination, is such that a progress payment based on one-half of the preceding year's water production will be substantially in excess of one-half of such owner's next succeeding annual bill as the same will ultimately be determined pursuant to Sections 12, 13, and 14.

(c) The board may, by rule, establish alternate procedures for the computation and payment of progress bills in the case of water-producing facilities within the district, the water production of which is measured by a water-measuring device approved by the collector.

(d) Should any owner of a water-producing facility fail to pay on or before the 31st day of October, or any alternate date specified in a rule adopted pursuant to subdivision (c) of this section, the amount disclosed by a progress bill the district shall impose a penalty against such owner in an amount of 5 percent of the total sum due the district for the current calendar year as such sum is finally determined in accordance with Sections 12, 13, and 14. The 5-percent penalty shall be added to the annual bill and shall be due and payable at the same time as the other amounts included in the annual bill.

(e) The board may, by rule, waive the requirement of making a progress payment as required by this section as to any one or more classes of water-producing facilities.

SEC. 12. (a) Commencing with 1973, each owner of one or more water-producing facilities within the district shall,

after January 1st and not later than January 15th, file with the collector on a form acceptable to the collector a water use statement showing the amount of water produced by the water-producing facility or facilities of such owner in the case of facilities the water production of which is measured by a water-measuring device approved by the collector and as to all other facilities the information the collector determines to be reasonably necessary to permit the determination, or estimation with reasonable accuracy, of the amount of water produced during the preceding calendar year by the subject water-producing facility or facilities. The collector may require that all statements of fact in the water use statement be verified by a written declaration that they are made under the penalties of perjury.

(b) The board, by rule, may waive the filing of water use statements as to any one or more classes of water-producing facilities.

SEC. 13. (a) Commencing with 1973, not later than the last day of February, the collector shall mail an annual bill for the preceding calendar year to each owner of one or more water-producing facilities within the district.

(b) The collector in preparing the annual bill for submission to each owner of water-producing facilities shall consider the information disclosed by the annual water use statement if one has been filed, the information disclosed by existing district records, district inspections, if any, of the water-producing facilities or the area served by such water-producing facilities, and any other information, of which the collector is aware and which is relevant to the amount of water production by each of the owner's water-producing facilities and shall determine the amount of each owner's water production.

(c) In all cases where an annual water use statement has been filed and where a water-measuring device approved by the collector is permanently attached to a water-producing facility and the water production has been reported on the basis of the approved water-measuring device, the record of water production as disclosed by such water-measuring device shall be presumed to be accurate and the burden is upon the collector to establish to the contrary.

(d) The amount of the annual bill shall be computed by multiplying the production in acre feet of water as determined by the collector by the respective ground water assessment rates and stream-delivered water charges. After determining the amount due the collector shall add the penalty provided in Section 11, if applicable, and shall also add a penalty of 5 percent of the total sum due the district for water produced during the preceding year by any water-producing facility for which an annual water use

statement was required and not filed within the time specified in Section 12.

(e) Upon the discovery by the collector of any water-producing facility within the district:

(1) For which no water use statement has been filed for any year in which the same was required by virtue of Section 12 and any applicable rules of the district and for which no annual bill was submitted pursuant to this section; or

(2) For which a water use statement was filed as required but for which the collector has good cause to believe that the production of water from such water-producing facility was in excess of that disclosed by a filed water use statement; or

(3) For which no water use statement was required to be filed by virtue of Section 12 and the applicable rules of the district but for which no annual bill has been submitted by the collector pursuant to this section;

the collector shall immediately investigate and estimate the amount of unreported or unbilled water production by such water-producing facility. In making such estimate, as to cases arising under subparagraph (3) above, the estimate of prior water production shall not include water production for more than three (3) preceding calendar years.

(f) After making an estimate of water production pursuant to subdivision (e) of this section, the collector shall calculate the amount due for ground water assessments and stream-delivered water charges during the subject years at the rates applicable during those years, and add the amount so calculated as a separate item to the next annual bill submitted to the owner of such water-producing facility together with the penalties, if any, applicable pursuant to subdivision (d) of Section 11 and subdivision (d) of this section.

(g) After computing the amount of the annual bill the collector shall allow as a credit against the amount due, and show such allowance on the annual bill, the sums paid for the subject water-producing facilities as a result of the applicable progress bill or bills for the subject year.

SEC. 14. (a) An annual bill shall be conclusive on all persons having an interest in the subject water-producing facilities unless the owner files with the secretary on or before March 15th a written objection on forms made available by the district setting forth the owner's ground or grounds for objecting to the amount of current or prior, if any, production and the assessments, charges, and penalties so fixed.

(b) Upon the filing of an objection the secretary shall schedule a hearing on the objection before the board at which time the total amount of the water production and the ground

water assessment and stream-delivered water charges thereon shall be determined together with any applicable penalties, which determinations by the board shall be conclusive if based upon substantial evidence.

(c) A notice of such hearing before the board shall be mailed to the objector at least 10 days before the date fixed for the hearing unless the form furnished by the district for the filing of the objection specifies the date, time, and place for the hearing.

(d) Notice of the final determination by the board as to his objection shall be mailed to each objector by the secretary.

SEC. 15. (a) All annual bills presented by the collector pursuant to Section 13 shall be due when mailed by the collector and shall be delinquent after April 30th with the exception of any bill as to which an objection has been filed pursuant to Section 14.

(b) Annual bills, as to which an objection is filed, shall become delinquent not later than April 30th, or 20 days from the date of mailing by the secretary to the owner a notice of the final determination by the board as to his objection, whichever is later.

SEC. 16. Any annual bill not paid when delinquent shall be subject, on the date of its delinquency, to a further penalty of 5 percent of the amount of the ground water assessment and stream-delivered water charges set forth in the annual bill.

SEC. 17. (a) Upon the delinquency of all or any portion of an annual bill the collector shall transmit to the secretary the amount of the delinquent account, together with the name of the delinquent landowner and the current description of the delinquent parcel as such is then disclosed by the applicable records of the assessor. The description provided for in this section shall be the description or other designation currently used by the assessor and shall include the tax account number and the code area of the delinquent parcel.

(b) The secretary shall maintain a list of delinquent accounts as furnished to him by the collector. If prior to the transmission of the list of delinquent accounts to the auditor pursuant to subdivision (d) of this section, all or any portion of a delinquent account is collected by the collector, the collector shall report such payment to the secretary and the secretary shall reflect such payment in his list of delinquent accounts.

(c) Annually as of August 1st the secretary shall add to each delinquent account then on the list of delinquent accounts a penalty of 5 percent of the sum of the ground water assessments and stream-delivered water charges included in each delinquent account.

(d) Annually after August 1st and on or before August 10th

the secretary shall transmit a certified copy of his current list of delinquent accounts to the auditor. The list of delinquent accounts may combine all assessments, charges, and penalties into a single sum due for each delinquent account.

(e) Upon receipt of the certified copy of the list of delinquent accounts, the auditor shall enter the amount of each delinquent account against the delinquent parcel designated in the list of delinquent accounts as such parcel appears on the then current assessment roll.

(f) The tax collector shall then include the amount of each delinquent account on bills for county taxes levied against the delinquent parcel.

(g) Thereafter the amount of each delinquent account shall be collected at the same time and in the same manner as county taxes are collected, and are subject to the same penalties and the same procedure and sale in case of delinquency, as provided for ordinary county taxes.

(h) Upon collection of delinquent accounts, within a reasonable time the auditor shall deposit the sums so collected to the account of the district, but the auditor may deduct, from time to time, an amount not to exceed one-quarter of 1 percent of the sums collected pursuant to this section to defray the costs of the county in processing such accounts.

(i) All laws applicable to the levy, collection, and enforcement of county taxes are applicable to such delinquent accounts so transmitted to the auditor pursuant to this section.

(j) All or any portion of any such delinquent accounts shall on order of the board of supervisors be canceled by the auditor if uncollected, or except in the case provided for in paragraph (5) of this subdivision, refunded by the treasurer out of district funds, if collected, if it or they were entered, charged, or paid:

(1) More than once;

(2) Through clerical error;

(3) Through the error or mistake of the collector, secretary, or board in respect to any material fact, in the course of establishing the amount of the assessments, charges, and penalties due upon said delinquent account under this act;

(4) Illegally; or

(5) On property acquired after the lien date by the State of California or by any county, city, school district, or other political subdivision of the State of California and because of such public ownership not subject to sale for delinquent taxes.

(k) No order for a refund under the subdivision (j) shall be made except on a claim:

(1) Verified by the person who paid said delinquent account and penalties or his guardian, conservator,

executor, or administrator; and

(2) Filed within three years after making the payment sought to be refunded.

The provisions of this subdivision do not apply to cancellation.

(*l*) The provisions of this Section 17 shall not be applicable to a delinquent parcel owned by the State of California or by any county, city, school district or other political subdivision of the State of California.

SEC. 18. The owner of any parcel of land within the district, two acres or more in size, on which no water is produced during any calendar year shall file an annual report stating that no water was produced on the property during the subject calendar year. The annual report shall be filed annually on or before January 15th of each year for the immediately preceding calendar year.

SEC. 19. The board shall establish rules providing for the making of refunds in the event of the overpayment of any ground water assessment or stream-delivered water charges. Such rules shall provide that no overpayment shall be refunded unless a request for refund is filed with the secretary within three years of such overpayment. Such rules may provide for the payment of a fee to cover all or a portion of the district's costs in processing a request for refund.

SEC. 20. The district may bring a suit in any court of competent jurisdiction against any person or persons indebted to the district for the collection of any delinquent sums due the district for any ground water assessment, stream-delivered water charge, penalties, or charges due for any sale or use of water by contract, or otherwise. Should the district, as a provisional remedy in bringing suit, seek an attachment against any property of any named defendant therein, the district shall not be required to provide a bond or undertaking as is otherwise provided in Chapter 4 (commencing with Section 537) of Title 7 of Part 2 of the Code of Civil Procedure. All procedures and remedies applicable to the processing, collection, and enforcement of delinquent accounts and penalties granted to the district by this act or otherwise are alternative and the utilization of one such procedure shall not bar the use of another.

SEC. 21. Any person who injures, alters, removes, resets, adjusts, manipulates, obstructs or in any manner interferes or tampers with or procures or causes or directs any person to injure, alter, remove, reset, adjust, manipulate, obstruct or in any manner interfere or tamper with any water-measuring device affixed to any water producing facility as required by this act, so as to cause such water-measuring device to improperly or inaccurately measure and record such water production, is guilty of a misdemeanor and is punishable by a fine not to exceed five hundred dollars ($500) or imprisonment in the county jail not to exceed six months, or by both such fine and imprisonment.

Sec. 21.5. The board is authorized to establish a reserve fund financed by the transfer of up to ten cents ($0.10) for each acre-foot of water to which the ground water assessment rate or the stream-delivered surface water charges levied pursuant to subdivision (a) of Section 9, in addition to ten cents ($0.10) for each acre-foot of treated water sold by the district under either an existing or future water service contract executed pursuant to Section 6. Such amounts transferred into a reserve fund created pursuant to this section shall be a part of, and not in addition to, the above-referenced ground water assessment rates, stream-delivered surface water charges, and contract prices. The reserve fund established under the authority of this section shall be a limited-purpose reserve fund. Expenditures out of such fund shall only be made for the purpose of constructing, leasing or purchasing, maintaining, and operating ground water pumping facilities capable of delivering ground water into then existing district watercourses, water supply, or distribution facilities for the purpose of insuring the availability, to the extent possible, of a full supply of water to all users during dry years.

SEC. 22. The board is authorized to adopt the rules it deems necessary and proper for carrying out the provisions of this act, including but not limited to, rules providing that the district shall not deliver or make available water to water users who fail to pay for water when required by statute, contract, or rule.

SEC. 23. No rules shall be adopted by the board without first reviewing such at a public hearing held by the board. Notice of the public hearing shall be published pursuant to Section 6061 of the Government Code at least 10 days prior to the date of such a hearing and the notice shall contain a brief description of any rule to be considered at the hearing.

SEC. 24. (a) There is hereby included within the Stockton-East Water District the following territories:

(1) The North Stockton Planning Area which shall include the following territory:

Beginning at a point on the Stockton and East San Joaquin Water Conservation District boundary, said point being on the intersection of the north line of Township Two (2) North and the centerline of State Highway 99, said Stockton and East San Joaquin Water Conservation District boundary being described in notice of election for the organization of the Stockton and East San Joaquin Water Conservation District, said election being held on June 1, 1948; thence southerly 3.5 miles, more or less, along said District boundary and along said centerline of State Highway 99 to intersection with the centerline of the Calaveras River; thence westerly six (6) miles, more or less, along said District boundary and said centerline of the Calaveras River downstream to intersection with the centerline of the Stockton Deep Water Channel; thence leaving said District boundary northwesterly one (1) mile, more or less, along said centerline of the Stockton Deep Water Channel to centerline Station 286+00, said Station 286+00 bearing southwesterly 375 feet at right angles to said centerline from U.S.E.D., B.M. 4008; thence northeasterly at right angle to said centerline 300 feet, more or less, to a point on the southerly boundary of the Elmwood Tract; thence easterly and northerly along the southerly and easterly boundary of said Elmwood Tract 1.9 miles, more or less, to the point of intersection of said easterly boundary with the southerly levee of Fourteen Mile Slough (formerly called Twelve Mile Slough); thence North 500 feet, more or less, to the Stockton City Limits Line, said City Limits Line being along the centerline of said Fourteen Mile Slough; thence westerly, northwesterly, and northeasterly 0.6 mile, more or less, along said City Limits Line and said centerline of Fourteen Mile Slough to a point on the west line of Section

19, Township 2 North, Range 6 East, Mount Diablo Base and Meridian; thence northerly 0.5 mile, more or less, along said west line of Section 19 and said City Limits Line to the southeasterly corner of Mitchell Slough-Wright Tract Annexation—A-7-67; thence along the City Limits Lines established by Annexation—A-7-67 and by Wright Tract Annexation—A-1-62 the following eight (8) courses, (1) South 57° 47' 30" West 150 feet, more or less, to a point, said point being on the water toe of levee of said Fourteen Mile Slough, (2) South 57° 47' 30" West 949.75 feet, (3) South 58° 35' 30" West 1011.25 feet to a point on the centerline of an existing drainage ditch, (4) Northerly along said drainage ditch centerline to intersection with centerline of a 75 foot wide Pacific Gas & Electric Company easement, as described in deed recorded in Book of Official Records, Volume 2076, Page 470, San Joaquin County Records, (5) continuing Northerly along said drainage ditch centerline to a point on the water toe of the south levee of said Fourteen Mile Slough, (6) meandering easterly along said water toe of the south levee to intersection with centerline of said 75 foot wide Pacific Gas & Electric Company easement, (7) continue meandering easterly along said water toe of said south levee to a point bearing South 45° 00' West from the northwest corner of said Section 19, and (8) North 45° 00' East to said northwest corner of Section 19; thence easterly 1900 feet, more or less, along the north line of said Section 19 and along Stockton City Limits Line to the southeast corner of the Shima Tract; thence leaving said City Limits Line Northerly 6600 feet, more or less, along the easterly boundary of said Shima Tract to a corner thereof; thence westerly 1500 feet, more or less, along the northerly boundary of said Shima Tract to the southeast corner of the Atlas Tract; thence northerly 3800 feet, more or less, along the easterly boundary of said Atlas Tract to the southwest corner of Section 6, Township 2 North, Range 6 East, Mount Diablo Base and Meridian; thence northerly one (1) mile, more or less, along the west line of said Section 6 to the northwest corner thereof; thence easterly six (6) miles, more or less, along said north line of Township 2 North to the point of beginning, containing 20,200 acres, more or less.

(2) The Central Stockton Planning Area which shall include the following territory:

Beginning at the point of intersection of the centerline of the Calaveras River with the centerline of the Stockton Deep Water Channel; thence southerly and easterly along the southerly and westerly line of the Stockton and East San Joaquin Water Conservation District Boundary to the point of intersection of the north line of Section 23, C. M. Weber Grant with the easterly line of McKinley Avenue, said Stockton and

East San Joaquin Water Conservation District Boundary being described in Notice of Election for the organization of the Stockton and East San Joaquin Water Conservation District, said election being held on June 1, 1948; thence southerly 0.5 mile, more or less, along the easterly line of McKinley Avenue to intersection with the centerline of Duck Creek; thence westerly 1.5 miles, more or less, along the centerline of said Duck Creek and along the centerline of Walker Slough and the southwesterly projection of said centerline of Walker Slough to a point on the southerly bank of French Camp Slough, said point being on the boundary of Reclamation District No. 17; thence westerly one (1) mile, more or less, along said boundary of Reclamation District No. 17 to the right or easterly bank of the San Joaquin River; thence northwesterly 1.0 mile, more or less, downstream along the said right or easterly bank of the San Joaquin River to a point bearing East 500 feet, more or less, from the southeast corner of the 3.55 acre parcel of Oxidation Pond Annexation No. 3—A-1-66; thence West 500 feet, more or less, to said southeast corner; thence westerly 1.6 miles, more or less, along the Stockton City Limits Line to the easterly line of Dagget Road; thence Northerly one (1) mile, more or less, along said easterly line of Dagget Road and along the Stockton City Limits Line to a point on the centerline of Burns Cutoff; thence in a general westerly, northerly, and northeasterly direction 3.09 miles, more or less, along said centerline of Burns Cutoff to intersection with said centerline of the Stockton Deep Water Channel; thence southeasterly 0.1 mile, more or less, along said centerline of the Stockton Deep Water Channel to the point of beginning, containing 4,900 acres, more or less.

(3) The South Stockton Planning Area which shall include the following territory:

Beginning at the northeast corner of Section 58, C. M. Weber Grant, said corner being a point on the boundary of the Central San Joaquin Water Conservation District; thence along said Central San Joaquin Water Conservation District boundary the following four (4) courses, (1) Southerly along the west line of Sections 68, 69, and 70 of said C. M. Weber Grant to the southerly line of said Grant being also the north line of Section 28, Township 1 North, Range 7 East, Mount Diablo Base and Meridian; (2) Westerly along said Weber Grant line and along said north line of Section 28 to the northwest corner of said Section 28; (3) Southerly along the west line of said Section 28 to intersection with the south line of Section 59, C. M. Weber Grant; and (4) Westerly along the said south line of Section 59 to a point on the easterly right-of-way line of Highway 99; thence southerly 3.4 miles, more or less, along said easterly right-of-way line of Highway

99 to the intersection of said easterly right-of-way with the southwesterly boundary of French Camp Road, also known as French Camp Toll Road or Turnpike; thence northwesterly 3 miles, more or less, along said southwesterly boundary of French Camp Road to the westerly right-of-way line of the Western Pacific Railroad Company property; thence southerly 1.8 miles, more or less, along said westerly right-of-way to a point on the southerly line of Section P of C. M. Weber Grant; thence westerly 1.2 miles, more or less, along the south line of said C. M. Weber Grant to the northeast corner of the northwest ¼ of the northwest ¼ of Section 14, Township 1 South, Range 6 East, Mount Diablo Base and Meridian, said corner being a point in the boundary of Reclamation District No. 17; thence westerly 0.75 mile, more or less, along the boundary of said Reclamation District No. 17 to the southeast corner of fractional Section 10 of said Township and Range and being the southwest corner of the C. M. Weber Grant; thence along the boundary of said Reclamation District No. 17 and the boundary of said C. M. Weber Grant the following four (4) courses, (1) Northerly 232.41 chains, more or less, along the easterly boundary of fractional Sections 10 and 3 of said Township and Range and along the easterly boundary of fractional Section 34, Township 1 North, Range 6 East, Mount Diablo Base and Meridian to the northeast corner of said fractional Section 34, (2) East 20 chains, (3) North 40 chains, and (4) East 1076 feet; thence leaving said C. M. Weber Grant boundary and continuing along the boundary of said Reclamation District No. 17 the following five (5) courses, (1) North 255.64 feet, (2) North 89° 15′ East 364.98 feet, (3) North 66° 30′ East 1246.34 feet to a point on the west line of said French Camp Road, (4) Northerly 1850 feet, more or less, along said west line of French Camp Road to the south bank of French Camp Slough, and (5) Westerly 0.75 mile, more or less, downstream along the southerly bank of French Camp Slough to the intersection of said Reclamation District No. 17 boundary with the southwesterly projection of the centerline of Walker Slough; thence Easterly 1.5 miles, more or less, along said centerline of Walker Slough and the centerline of Duck Creek to the Easterly line of McKinley Avenue; thence Northerly 0.5 mile, more or less, along said easterly line of McKinley Avenue to a point of intersection with the north line of Section 23, C. M. Weber Grant, said point being on the southerly boundary of the Stockton and East San Joaquin Water Conservation District; thence Easterly 3.6 miles, more or less, along said southerly boundary of said Stockton and East San Joaquin Water Conservation District to the point of beginning, containing 12,800 acres, more or less.

(b) The inclusion of each of such three planning areas (the

North Stockton Planning Area, the Central Stockton Planning Area, and the South Stockton Planning Area) shall occur and be complete for all purposes, subject to Section 26, unless on or before the 60th day after the effective date of this act there is filed with the secretary of the district, at the district's office, a petition requesting an election signed by at least 25 percent of the registered voters in such planning area.

(c) A petition may consist of any number of separate instruments, which identify the planning area to which it is applicable and shall contain a request that an election shall be held to determine whether such planning area shall be included within the district.

(d) Within 20 days of the date of the filing of such a petition the secretary of the district shall examine the same and ascertain whether or not such petition is signed by the requisite number of voters.

(e) When the secretary of the district has completed his examination of the petition he shall attach to the same his certificate properly dated showing the result of such examination, and if from such examination he finds that such petition is signed by the requisite number of voters or is not so signed, he shall certify that the same is sufficient or insufficient, as the case may be.

(f) If such petition is sufficient the proposition of whether or not the subject planning area shall be included within the district shall be submitted to the vote of the voters in the subject planning area at an election called by the board and held within 70 days after the filing of a sufficient petition requesting an election.

(g) The manner of holding and conducting the election, the selection of officers to conduct it, the designation of precincts and polling places, the preparation, receipt, counting, and returning of ballots, and the canvassing and determining results of the election shall be as provided in Chapter 3 (commencing with Section 74790) of Part 6 of Division 21 of the Water Code, and in particulars not so provided shall be in accordance with the general laws of the state relative to elections at which propositions are submitted and voted upon.

(h) Upon the canvassing of the votes cast in the election if it appears that a majority of all votes cast are in favor of the inclusion of the subject planning area, then the inclusion of the subject planning area shall occur and be considered completed at the conclusion of the canvass, subject to the provisions of Section 26. Upon the canvassing of the votes cast in the election if it appears that a majority of all votes cast are against the inclusion of the subject planning area within the district, the inclusion shall be of no force and effect.

(i) If on or before the 60th day after the effective date of

this act sufficient petitions have been filed with the secretary of the district requesting elections in more than one planning area, then the question of such inclusion shall be submitted to the vote of the voters in each of the subject planning areas at an election called and held on the same day.

(j) The secretary of the district may contract with the County Clerk of San Joaquin County to perform any of the duties imposed upon the secretary by this section. In such cases the costs of the county clerk in connection with such duties shall be paid by the district.

SEC. 25. (a) There is hereby excluded from the Central San Joaquin Water Conservation District the following territory:

Beginning at the intersection of the North line of Section 24, C. M. Weber Grant, with the easterly line of the Tidewater and Southern Railroad, and being a point on the Central San Joaquin Water Conservation District Boundary; thence along said Central San Joaquin Water Conservation District Boundary the following five (5) courses, (1) Southeasterly along the Easterly boundary of said railroad to its intersection with the North line of Section 39, C. M. Weber Grant, (2) Northeasterly along the northerly line of said Section 39 and its extension to a point on the west line of fractional Section 5, Township 1 South, Range 7 East, Mount Diablo Base and Meridian, (3) southerly along said westerly line of fractional Section 5 and the easterly line of C. M. Weber Grant to the North line of the property conveyed to Joe Marchesotti, a married man, by Deed recorded January 8, 1957 in Book of Official Records, Volume 1933, Page 221, San Joaquin County Records, (4) easterly along the North line of said Marchesotti property to the easterly line of Highway 99, and (5) Northerly along said easterly line of Highway 99 to the intersection of the north line of Section 4, Township 1 North, Range 7 East, Mount Diablo Base and Meridian; thence leaving said Central San Joaquin Water Conservation District Boundary northerly along said easterly line of Highway 99 to its intersection with the southerly line of Section 59, C. M. Weber Grant and being a point on the northerly boundary of said Central San Joaquin Water Conservation District; thence along said Central San Joaquin Water Conservation District Boundary the following six (6) courses, (1) westerly along the southerly lines of Sections 59 and 48 of C. M. Weber Grant to the southwest corner of said Section 48, (2) Northerly along the west line of said Section 48 and Section 47 of said C. M. Weber Grant to the northeast corner of land described in Deed to John S. Ladd, Jr. recorded September 17, 1947 in Book of Official Records, Volume 1082, Page 344, San Joaquin County Records, (3) South 72° 35′ West along the North line of said Ladd land 35 chains, (4) South 73° 10′ West 34.72 chains

to a point on the West line of Section 35, C. M. Weber Grant, (5) Southerly along said West line of Section 35 to the northeast corner of said Section 24, C. M. Weber Grant, and (6) Westerly along the northerly line of said Section 24 to the point of beginning, containing 3150 acres, more or less.

(b) Such exclusion shall take effect at the same time that the inclusion of the South Stockton Planning Area takes effect, and if the inclusion of the South Stockton Planning Area is of no force and effect by virtue of an election held pursuant to Section 24, such exclusion from the Central San Joaquin Water Conservation District shall similarly be of no force and effect.

(c) The inclusion of territory into the district pursuant to this act, except as specifically provided in this section, shall have no effect upon the continuing inclusion of the subject territory in other water conservation districts or in any irrigation district or any other special districts.

SEC. 26. (a) After the time for filing petitions pursuant to Section 24 has expired or an election has been held pursuant to Section 24, as the case may be, the board shall adopt a resolution confirming the inclusion of any planning area within the district pursuant to Section 24 and the exclusion of territory from the Central San Joaquin Water Conservation District pursuant to Section 25 if such inclusion and exclusion has not been disapproved at an election held pursuant to Section 24, and the secretary shall then prepare and execute a certificate of completion. Such certificate shall contain the following:

(1) The name of each district affected.

(2) A description of any territory included in the district and any territory excluded from the Central San Joaquin Water Conservation District, which descriptions may be made by reference to the boundary shown on a map attached to such certificate.

(3) The date of adoption of the resolution confirming the inclusion and exclusion.

(4) A statement of the fact that the territory included shall be subject to a one-half-mill tax rather than the tax permitted by Section 75357 of the Water Code, as provided in Section 27.

(b) The secretary shall file his certificate of completion with the Secretary of State. Thereupon the Secretary of State shall execute a certificate of filing identifying the certificate of completion filed with him and stating the date of such filing. The Secretary of State shall transmit to the secretary a counterpart original of the certificate of filing.

(c) After receipt of the Secretary of State's certificate of filing, the secretary shall file with the County Recorder of the County of San Joaquin:

(1) A counterpart original of the secretary's certificate of

completion; and

(2) The original or a counterpart original of the Secretary of State's certificate of filing.

(d) After recordation of the secretary's certificate of completion the Recorder of the County of San Joaquin shall file with the County Surveyor of the County of San Joaquin a copy of each of the boundary descriptions included in the certificate of completion.

(e) Any inclusion or exclusion confirmed by resolution of the board adopted pursuant to this section shall be completed from the date of filing the certificate of completion with the Secretary of State and shall be effective upon the date of the recordation made with the county recorder.

(f) The secretary shall also make such filings as may be provided for by Chapter 8 (commencing at Section 54900) of Part 1 of Division 2 of Title 5 of the Government Code, and for such purpose the inclusion and exclusion shall be deemed to be effective from the date of filing of the certificate of completion with the Secretary of State.

SEC. 27. (a) Upon the effective date of the inclusion of a planning area into the district pursuant to this act, each planning area shall thereafter be treated in all respects as a part of the district, except that the following special provisions shall apply within each planning area included within the district:

(1) The assessment permitted by Section 75357 of the Water Code shall not exceed one-half mill ($0.0005) on each one hundred cents ($1) of the assessed value of the lands within such planning area according to the last assessment lls instead of the maximum two and one-half mills ($0.0025) mitted by Section 75357 of the Water Code.

(2) No ground water assessment or stream-delivered water charge shall be levied.

(b) A parcel of land within a planning area shall cease to be excluded from the full taxes, assessments, and charges, as such exclusions are set forth in subdivision (a) in the event of either of the following:

(1) A parcel within a planning area is within the service area of a publicly or privately owned water utility which distributes domestic and industrial water which is all or in part furnished to such utility as treated surface water by the district; or

(2) The independent benefit commission pursuant to procedures set forth in Section 28 determines that a subject parcel is receiving a substantial benefit from district operations.

(c) In the case of the North Stockton Planning Area, the Central Stockton Planning Area, and the South Stockton Planning Area, no removal from the partial tax area shall take

effect for any purpose prior to July 1, 1974.

(d) As used in this act "substantial benefit" means an actual raising, by prior district operations, of ground water levels under a subject parcel or the actual retarding, by prior district operations, of the lowering of ground water levels under a subjest parcel.

(e) Whenever one or more parcels are transferred from a partial tax area to a full tax area, the secretary shall file a statement as to all parcels which are transferred to a full tax area, as required by Chapter 8 (commencing at Section 54900) of Part 1 of Division 2 of Title 5 of the Government Code.

(f) After a parcel has been excluded from a partial tax area such exclusion shall be permanent.

SEC. 28. (a) If any one or more of the planning areas are finally included within the district, then following such final inclusion the board shall give written notice to the California District Securities Advisory Commission, and the advisory commission shall thereupon appoint a three-member commission, one of whom shall be a civil engineer whose practice encompasses irrigation, and one of whom shall be a civil engineer whose practice encompasses municipal water supply. Such independent benefit commission shall serve at the pleasure of the advisory commission. When a vacancy occurs in the membership of the independent benefit commission the secretary shall give notice to the advisory commission, and the advisory commission shall promptly appoint a successor. If the advisory commission fails to appoint a successor or to initially appoint the three members of the independent benefit commission, then after 60 days' notice in writing to the advisory commission by the board, the board may fill such vacancy or make such appointments and the person so appointed by the board shall serve until such time as they are replaced by the advisory commission. The advisory commission may charge the district for the actual cost of performing the services required of the State Treasurer by this section.

(b) It shall be the duty of the independent benefit commission from time to time, in the manner set forth in this section, to determine whether a parcel within a planning area is receiving a substantial benefit from district operations.

(c) No member of the independent benefit commission shall have any interest in any land in the district, either directly or indirectly.

(d) Each member of the independent benefit commission, before entering upon his duties, shall take and subscribe an oath that he is not in any manner interested either directly or indirectly in any land in the district, and that he will perform the duties of commissioner to the best of his ability.

(e) The members of the independent benefit commission shall be paid by the district compensation for the services rendered by them in the amount or amounts fixed by the State Treasurer from time to time.

(f) The members of the independent benefit commission, upon their appointment and thereafter from time to time, shall select one of their members as chairman.

(g) Within 60 days of its appointment, and thereafter as provided in subdivision (j) of this section, the independent benefit commission shall meet at the district office. At the time of such initial meeting and thereafter as requested by the independent benefit commission the board shall furnish or make available to the independent benefit commission all data and information possessed by the district and which in the judgment of the independent benefit commission is relevant to the determinations to be made by it.

(h) After its initial meeting the independent benefit commission within the next succeeding 120 days shall determine which parcels within the partial tax areas are receiving a substantial benefit by the operations of the district and shall prepare a preliminary report of its findings. Upon its completion the preliminary report of the independent benefit commission shall be delivered to the secretary in writing. Such preliminary report shall list and identify each parcel which the independent benefit commission has determined is receiving a substantial benefit from district operations by the current description of such parcel as such description is then disclosed by the applicable current records of the assessor, and accordingly should be transferred from the partial tax area to the full tax area. Upon receipt of such preliminary report of the independent benefit commission the secretary shall publish pursuant to Section 6061 of the Government Code a notice of the receipt of such preliminary report. Such notice shall fix a date for a public hearing to be held on the report. Such publication shall be by a display advertisement in a newspaper of general circulation printed and published within the district, at least 20 days prior to the date at which the public hearing is to be held. The notice, among other information, shall contain an invitation to all interested persons to call at the office of the district and to examine said report of the independent benefit commission. At the time appointed in the notice, the independent benefit commission shall meet in the district office and hold a public hearing on its preliminary report. At the hearing any person interested in the district, including the board and members of the board, may, in person or by representative, appear and submit evidence concerning the matters contained in the preliminary report and the matters pending before the independent benefit commission. Within 30 days of the

conclusion of its public hearing the independent benefit commission shall deliver its final report to the secretary.

(i) Upon receipt of the final report of the independent benefit commission the secretary shall publish a notice that such final report has been received and that the same is available for inspection by all interested persons at the office of the district. The notice shall be published pursuant to Section 6061 of the Government Code by display advertisement in a newspaper of general circulation printed and published within the district, and shall advise interested persons of their right to request review pursuant to this paragraph. Within 30 days of the publication of the notice required by this paragraph any person interested in a parcel affected by the final report of the independent benefit commission who is dissatisfied with the action of the independent benefit commission in connection with such parcel may file a request for review in writing on forms provided by the secretary requesting review by the board of the action of the independent benefit commission as to the parcel in which such person is interested. Upon the filing of a request for review the secretary shall set the matter for hearing by the board. At least 20 days prior to the hearing the secretary shall mail notice of such hearing to the person or persons requesting review. At the hearing the board shall hear evidence concerning the subject parcel and whether it is receiving a substantial benefit by the operations of the district. At the conclusion of the hearing the board may modify the report of the independent benefit commission by excluding one or more parcels from the list of parcels to be transferred from the partial tax area to the full tax area, but the board shall have no power to include any parcel within the full tax area which was not initially so included by the final report of the independent benefit commission. A final report of the independent benefit commission shall be final and shall take effect for all purposes upon either the expiration of 30 days after the publication of the notice provided for in this subdivision or upon the final action of the board in modifying the final report or determining not to modify the final report following the public hearing of the board in the event of the filing of a request for review pursuant to this subdivision.

(j) After the initial hearing of the independent benefit commission so long as any portion of the district is not within the full tax area the independent benefit commission shall again hold an initial meeting as provided in subdivision (i) of this section during the fifth year next succeeding the year of the final adoption of the last final report of the independent benefit commission or at more frequent intervals upon written request of the board, and after such initial meeting shall proceed to the adoption of a new final report of the

independent benefit commission in the manner set forth in subdivisions (g) to (i), inclusive, of this section.

SEC. 29. Failure of the district at any time to take action to collect any delinquent replenishment assessment or charge shall not be a waiver of the right of the district to collect such account at any time in the future by the utilization of such procedures and remedies as are granted to the district by this act.

SEC. 30. Whenever the district is required to mail any bill or notice to any owner the requirement of mailing shall be satisfied by deposit of such bill or notice in any postal facility regularly maintained by the government of the United States, with postage paid, addressed to the owner at his address as disclosed by the most recent record of the district. If the records of the district do not contain an address for such owner, such mailing shall be to his address as disclosed by the most recent equalized tax roll of the county. Any owner may, from time to time, file notices of change of address with the district.

SEC. 31. Notwithstanding Section 74223 of the Water Code and any other provisions of law in conflict with this section, the board shall hold regular meetings on the third Tuesday of each month. The board may by resolution change the frequency of, and the day for, holding regular meetings. Notice of any such change shall be published once a week for at least two consecutive weeks before the time for a regular meeting on the new meeting date in a newspaper of general circulation circulated in the district.

SEC. 32. Notwithstanding Section 74091 of the Water Code and any other provisions of law in conflict with this section, one director, who shall be an elector of the division in which such director resides, shall be elected for such division, by vote of the electors of the entire district. This section shall be applicable to voting at any district election held after January 1, 1972.

SEC. 33. The boundaries of the divisions of the district are relocated as follows:

Division No. 1

Beginning at a point on the Stockton and East San Joaquin Water Conservation District boundary, said point being the southwest corner of the Northeast ¼ of Section 25, Township 2 North, Range 8 East, Mount Diablo Base and Meridian, said Stockton and East San Joaquin Water Conservation District boundary being described in notice of election for the organization of the Stockton and East San Joaquin Water Conservation District, held June 1, 1948; thence along said Stockton and East San Joaquin Water Conservation District

boundary the following thirty-five (35) courses, (1) East 1.0 mile, more or less, along the south line of the northeast ¼ of said Section 25 and along the south line of the northwest ¼ of Section 30, Township 2 North, Range 9 East to the center of said Section 30, (2) North 2½ miles, more or less, along the half section line running north and south through Sections 30, 19, and 18, Township 2 North, Range 9 East to the southwest corner of the Southeast ¼ of Section 7, Township 2 North, Range 9 East, (3) East ½ mile, more or less, along the south line of said Section 7 to the southeast corner thereof, (4) North ¼ mile, more or less, along the east line of said Section 7 to the southwest corner of the northwest ¼ of the Southwest ¼ of Section 8, Township 2 North, Range 9 East, (5) East ¼ mile, more or less, along the south line of said northwest ¼ of the southwest ¼ of said Section 8 to the centerline of the Escalon-Bellota Road, (6) North ¼ mile, more or less, along said centerline of the Escalon-Bellota Road to its intersection with the South line of the North one-half of said Section 8, (7) East ¾ mile, more or less, along the south line of the north ½ of said Section 8 to the southeast corner of the north ½ of said Section 8, (8) North ¼ mile, more or less, along the east line of Section 8 to the southwest corner of the northwest ¼ of the northwest ¼ of Section 9, Township 2 North, Range 9 East, (9) East ¼ mile, more or less, along the south line of the northwest ¼ of the northwest ¼ of Section 9 to the southeast corner thereof in the center of the Gilmore Road No. 616, (10) North along the ¼, ¼ section line and along the center of said Gilmore Road No. 616 to a point 300.0 feet southerly from the south line of Section 4, Township 2 North, Range 9 East, Mount Diablo Base and Meridian, (11) East 750.0 feet, (12) North 300.0 feet to a point on said south line of Section 4, (13) East along the south line of Section 4 to the southeast corner of the southwest ¼ of said Section 4, (14) North ½ mile, more or less, along the east line of the southwest ¼ of Section 4 to the center of said Section 4, (15) East ½ mile, more or less, along the south line of the northeast ¼ Section 4 to the southeast corner of the northeast ¼ of said Section 4, (16) North ½ mile, more or less, along the east line of said northeast ¼ of Section 4 to the southwest corner of Section 34, Township 3 North, Range 9 East, (17) East 1.0 mile, more or less, along the south line of Section 34 to the southeast corner thereof, (18) South, along the west line of Section 2, Township 2 North, Range 9 East, to the center of the Bellota River Road, (19) Northeasterly along the center of said road to the east line of the Northwest ¼ of said Section 2, (20) North along said east line of the Northwest ¼ of said Section 2 to the Southwest corner of the Southeast ¼ of Section 35, Township 3 North, Range 9 East, (21) East 5/8 mile, more or less, along the south line of Section 35 to the center of the

Bellota River Road, (22) Northeasterly ¾ mile, more or less, along the center of said road to a point on the south line of the North ½ of Section 36, Township 3 North, Range 9 East, Mount Diablo Base and Meridian, (23) East ⅝ mile, more or less, along the South line of said North ½ of Section 36 to the County line between San Joaquin and Stanislaus Counties, (24) North ½ mile, more or less, along said County line to the corner common to San Joaquin, Stanislaus and Calaveras Counties, (25) Northwesterly ½ mile, more or less, along County Line between San Joaquin and Calaveras Counties to its intersection with the north line of the south ½ of Section 25, Township 3 North, Range 9 East, (26) West, along said north line to the northwest corner of the Southwest ¼ of said Section 25, (27) South ½ mile, more or less, to the Southwest corner of said Section 25, (28) West ½ mile, more or less, to the Northwest corner of the Northeast ¼ of Section 35 of Township 3 North, Range 9 East, (29) South ¼ mile, more or less, to the Northeast corner of the South ½ of the Northwest ¼ of said Section 35, (30) West ½ mile, more or less, to the Northwest corner of said South ½ of the Northwest ¼ of said Section 35, (31) South ¼ mile, more or less, to the Northeast corner of the South ½ of Section 34, Township 3 North, Range 9 East, (32) West 1½ miles, more or less, to a point in the center of the Linden Road at the center of Section 33, (33) Westerly ½ mile, more or less, along the center of said Linden Road to its intersection with the west line of Section 33, Township 3 North, Range 9 East, (34) South ½ mile, more or less, along the west line of Section 33 to the northeast corner of Section 5, Township 2 North, Range 9 East, (35) West 3¼ miles, more or less, along the north line of Sections 5 and 6 of Township 2 North, Range 9 East, and the north line of Sections 1 and 2 of Township 2 North, Range 8 East to the southwest corner of the East ½ of the East ½ of Section 35, Township 3 North, Range 8 East to a point on the boundary of that certain petition, dated May 14, 1953, for inclusion in the Stockton and East San Joaquin Water Conservation District; thence along the boundary described in said petition, dated May 14, 1953 the following eighteen (18) courses, (1) Northerly ¾ mile, more or less, along the westerly line of said East ½ of the East ½ of said Section 35 to the northeast corner of the Southwest ¼ of the Northeast ¼ of said Section 35, (2) Westerly 418.3 feet along the north line of the Southwest ¼ of the Northeast ¼ of said Section 35, (3) Northerly ¼ mile, more or less, along a line parallel with, 418.3 feet westerly of, measured at right angles to the west line of the Northeast ¼ of the Northeast ¼ of said Section 35 to intersection with the north line of said Section 35, (4) Westerly 1072.5 feet, more or less, along the north line of said Section 35 to the northwest corner of the East 5 acres of the Northeast ¼ of the Northwest

¼ of said Section 35, (5) Southerly along the west line of said 5 acre tract to intersection with the north line of the Southeast ¼ of the Northwest ¼ of said Section 35, (6) Westerly along said north line to the Northwest corner of the Southeast ¼ of the Northwest ¼ of said Section 35, (7) Southerly 2645 feet, more or less, along the west line of the East ½ of the West ½ of said Section 35 to the Northeast corner of the Southwest ¼ of the Southwest ¼ of said Section 35, (8) Westerly 1324.5 feet, more or less, along the north line of the Southwest ¼ of the Southwest ¼ of said Section 35 to the northwest corner of said Southwest ¼ of the Southwest ¼ of said Section 35, (9) Northerly 1¼ miles, more or less, along the east line of Sections 34 and 27, Township 3 North, Range 8 East, Mount Diablo Base and Meridian, to the northeast corner of the Southeast ¼ of said Section 27, (10) Westerly ¼ mile, more or less, along the north line of said Southeast ¼ to the northwest corner of the Northeast ¼ of said Southeast ¼, (11) Southerly ⅛ mile, more or less, along the west line of the Northeast ¼ of the Southeast ¼ of said Section to the southeast corner of the Northeast ¼ of the Northwest ¼ of the Southeast ¼ of said Section 27, (12) Westerly 1/16 mile, more or less, along the south line of the Northeast ¼ of the Northwest ¼ of the Southeast ¼ of said Section to the northwest corner of the East ½ of the Southwest ¼ of the Northwest ¼ of the Southeast ¼ of said Section 27, (13) Southerly ⅛ mile, more or less, along the west line of the East ½ of the Southeast ¼ of the Northwest ¼ of the Southeast ¼ of said Section to the southwest corner thereof, (14) Westerly 1/16 mile, more or less, along the north line of the East ½ of the Southwest ¼ of the Southeast ¼ of said Section 27 to the northwest corner thereof, (15) Southerly ¼ mile, more or less, along the west line of the East ½ of the Southwest ¼ of the Southeast ¼ to the southwest corner thereof, (16) Westerly ⅞ mile, more or less, along the north line of Sections 34 and 33, Township 3 North, Range 8 East, Mount Diablo Base and Meridian to the northwest corner of the Northeast ¼ of the Northeast ¼ of said Section 33, (17) Southerly ¼ mile, more or less, along the west line of the Northeast ¼ of the Northeast ¼ of said Section to the southwest corner thereof, and (18) Westerly ¼ mile, more or less, along the south line of the northwest ¼ of the Northeast ¼ of said Section to the southwest corner thereof being a point on said Stockton and East San Joaquin Water Conservation District boundary; thence along last said boundary the following four (4) courses; (1) Northerly ¼ mile, more or less, along the east line of the Northwest ¼ of said Section 33 to the Northeast corner of said Northwest ¼, (2) Westerly ½ mile, more or less, along the north line of said Northwest ¼ to the northwest corner thereof, (3) Northerly ½ mile, more or less, along the

east line of the Southeast ¼ of Section 29, Township 3 North, Range 8 East to the northeast corner of said Southeast ¼, and (4) Westerly ½ mile, more or less, along the north line of said Southeast ¼ to the northwest corner thereof being a point on the centerline of Tully Road; thence leaving said Stockton and East San Joaquin Water Conservation District boundary the following seven (7) courses, (1) Southerly 2½ miles, more or less, along said centerline of Tully Road to intersection with the centerline of Comstock Road, said intersection being at the southeast corner of the West ½ of Section 5, Township 2 North, Range 8 East, Mount Diablo Base and Meridian, (2) Westerly ¼ mile, more or less, along said centerline of Comstock Road to intersection with Tully Road at the northeast corner of the West ½ of the West ½ of Section 8, Township 2 North, Range 8 East, Mount Diablo Base and Meridian, (3) Southerly 1.0 mile, more or less, along said centerline of Tully Road to intersection with the centerline of Baker Road at the southeast corner of said West ½ of the West ½ of Section 8, (4) Easterly 3.0 miles, more or less, along said centerline of Baker Road and the ½ mile extension thereof to intersection with the centerline of Wall Road and being at the southeast corner of the West ½ of the West ½ of Section 11, Township 2 North, Range 8 East, Mount Diablo Base and Meridian, (5) Southerly ½ mile, more or less, along said centerline of Wall Road to intersection with the centerline of Linden Road, (6) Northeasterly 1.3 miles, more or less, along said centerline of Linden Road to intersection with the centerline of Fine Road, and (7) Southerly 2½ miles, more or less, along said centerline of Fine Road to the point of beginning,

Division No. 2

Beginning at a point on the Stockton and East San Joaquin Water Conservation District boundary, said point being the southwest corner of fractional Section 1, Township 1 North, Range 7 East, Mount Diablo Base and Meridian, and being a point on the easterly boundary of C. M. Weber Grant, said Stockton and East San Joaquin Water Conservation District boundary being described in notice of election for the organization of the Stockton and East San Joaquin Water Conservation District, held June 1, 1948; thence along said Stockton and East San Joaquin Water Conservation District boundary the following seven (7) courses, (1) Easterly ½ mile, more or less, along the southerly line of said fractional Section 1 to the southeast corner thereof, said corner being on the centerline of Jack Tone Road, (2) Easterly 4.0 miles, more or less, along the south lines of Sections 6, 5, 4, and 3, Township 1 North, Range 8 East, to the southeast corner of said Section

3, (3) Northerly 1.0 mile, more or less, along the east line of said Section 3 to the southwest corner of Section 35, Township 2 North, Range 8 East, being a point on the centerline of Copperopolis Road, (4) Easterly 1.0 mile, more or less, along the south line of said Section 35 and being along said centerline of Copperopolis Road to the southeast corner of said Section 35, (5) Northerly ½ mile, more or less, along the east line of said Section 35 to the southwest corner of the Northwest ¼ of Section 36, Township 2 North, Range 8 East, (6) Easterly ½ mile, more or less, along the south line of said Northwest ¼ to the center of said Section 36 and being a point on the centerline of Fine Road, and (7) Northerly 1.0 mile, more or less, along the ¼ section line of Sections 36 and 25, Township 2 North, Range 8 East and along said centerline of Fine Road to the center of Section 25, Township 2 North, Range 8 East; thence leaving said Stockton and East San Joaquin Water Conservation District boundary the following nine (9) courses, (1) Northerly 2½ miles, more or less, along the said centerline of Fine Road to intersection with the centerline of Linden Road, (2) Southwesterly 1.3 miles, more or less, along said centerline of Linden Road to intersection with the centerline of Wall Road, (3) Northerly ½ mile, more or less, along said centerline of Wall Road to intersection with the easterly projection of the centerline of Baker Road at a point being the northeast corner of the West ½ of the Northwest ¼ of Section 14, Township 2 North, Range 8 East, (4) Westerly 3¼ miles, more or less, along said easterly projection and said centerline of Baker Road to the northwest corner of Section 17, Township 2 North, Range 8 East, said projection and said centerline of Baker Road being along the north lines of Sections 14, 15, 16, and 17, Township 2 North, Range 8 East, (5) Southerly 1.7 miles, more or less, along the west lines of Sections 17 and 20 to a point on the said centerline of Linden Road, (6) Southwesterly 3.7 miles, more or less, along said centerline of Linden Road to intersection with the centerline of Alpine Road, (7) Southeasterly 0.8 mile, more or less, along said centerline of Alpine Road to intersection with the centerline of the Southern Pacific Railroad Company property, (8) Easterly 1¾ miles, more or less, along said centerline of the Southern Pacific Railroad Company property to a point on the northerly projection of said westerly line of fractional Section 1, Township 1 North, Range 7 East, and (9) Southerly 1½ miles, more or less, along said northerly projection and said westerly line of fractional Section 1 to the point of beginning,

Division No. 3

Beginning at a point on the Stockton and East San Joaquin

Water Conservation District boundary, said point being the northeast corner of the Southwest ¼ of Section 29, Township 3 North, Range 8 East, Mount Diablo Base and Meridian, said Stockton and East San Joaquin Water Conservation District boundary being described in notice of election for the organization of the Stockton and East San Joaquin Water Conservation District, held June 1, 1948; thence along said Stockton and East San Joaquin Water Conservation District boundary the following four (4) courses, (1) Westerly 1½ mile, more or less, along the ½ Section lines of Sections 29 and 30, Township 3 North, Range 8 East to the northeast corner of the Southeast ¼ of Section 25, Township 3 North, Range 7 East, Mount Diablo Base and Meridian, (2) Westerly 3½ miles, more or less, along the ½ Section lines of Sections 25, 26, 27, and 28, Township 3 North, Range 7 East to intersection with the centerline of Alpine Road, (3) Southerly 1½ miles, more or less, along said centerline of Alpine Road to intersection with the north line of Section 4, Township 2 North, Range 7 East, Mount Diablo Base and Meridian, and being on the centerline of Eight Mile Road, (4) Westerly 0.9 mile, more or less, along the north line of Sections 4 and 5, Township 2 North, Range 7 East and being along said centerline of Eight Mile Road to intersection with the centerline of Hildreth Road; thence Southerly 1¼ mile, more or less, along said centerline of Hildreth Road to intersection with centerline of Ashley Road; thence Southeasterly 1¼ mile, more or less, along said centerline of Ashley Road to intersection with centerline of the Calaveras River; thence Northeasterly 1.1 mile, more or less, along said centerline of the Calaveras River to intersection with centerline of Alpine Road; thence Southeasterly 3.7 miles, more or less, along said centerline of Alpine Road to intersection with the centerline of Linden Road; thence Northeasterly 3.7 miles, more or less, along said centerline of Linden Road to intersection with the west line of Section 20, Township 2 North, Range 8 East, Mount Diablo Base and Meridian; thence Northerly 1.7 miles, more or less, along said west line of Section 20 and along the west line of Section 17, Township 2 North, Range 8 East, Mount Diablo Base and Meridian to the northwest corner thereof, being a point on the centerline of Baker Road; thence Easterly ¼ mile, more or less, along the north line of said Section 17 and the centerline of Baker Road to intersection with the centerline of Tully Road at the southeast corner of the West ½ of the West ½ of Section 8, Township 2 North, Range 8 East, Mount Diablo Base and Meridian; thence Northerly 1.0 mile, more or less, along said centerline of Tully Road to intersection with the centerline of Comstock Road at the northeast corner of said West ½ of West ½ of Section 8; thence Easterly ¼ mile, more or less, along said centerline of

Comstock Road being along the south line of Section 5, Township 2 North, Range 8 East, Mount Diablo Base and Meridian to intersection with centerline of Tully Road at the southeast corner of the West ½ of said Section 5; thence Northerly 2½ miles, more or less, along said centerline of Tully Road and the ½ Section line of said Section 5 and the ½ Section lines of Sections 32 and 29, Township 3 North, Range 8 East, Mount Diablo Base and Meridian to the point of beginning,

Division No. 4

Beginning at a point on the Stockton and East San Joaquin Water Conservation District boundary, said point being on the intersection of the centerline of Hildreth Road and the north line of Section 5, Township 2 North, Range 7 East, Mount Diablo Base and Meridian, said Stockton and East San Joaquin Water Conservation District boundary being described in notice of election for the organization of the Stockton and East San Joaquin Water Conservation District, said election being held June 1, 1948; thence leaving said District boundary Southerly 1¼ mile, more or less, along said centerline of Hildreth Road to intersection with the centerline of Ashley Road; thence Southeasterly 1¼ mile, more or less, along said centerline of Ashley Road to intersection with the centerline of the Calaveras River; thence Southwesterly 6.0 miles, more or less, along said centerline of the Calaveras River to intersection with the centerline of Pacific Avenue; thence Northerly 1.2 mile, more or less, along said centerline of Pacific Avenue to intersection with the centerline of Robinhood Drive; thence Westerly 0.6 mile, more or less, along said centerline of Robinhood Drive to intersection with the centerline of Pershing Avenue; thence Northerly 0.2 mile, more or less, along said centerline of Pershing Avenue to intersection with the south line of Swain Oaks Manor; thence South 69° 40' West 1652.20 feet along said south line of Swain Oaks Manor to the southwest corner thereof; thence North 02° 35' West 112.62 feet along the west line of said Swain Oaks Manor to the north line of Section 29, Township 2 North, Range 6 East, Mount Diablo Base and Meridian; thence Westerly 1.0 mile, more or less, along said north line of Section 29 to the northwest corner thereof; thence Southerly ⅛ mile, more or less, along the west line of said Section 29 to intersection with the centerline of Fourteen Mile Slough (formerly called Twelve Mile Slough); thence Southerly and Westerly ½ mile, more or less, along said centerline of Fourteen Mile Slough to a point on the City Limits line; thence Westerly, Northwesterly, Northerly and Northeasterly 1.3 miles, more or less, along said centerline of

Fourteen Mile Slough and said City Limits line to intersection with the west line of Section 19, Township 2 North, Range 6 East, Mount Diablo Base and Meridian; thence Northerly 0.5 mile, more or less, along said west line of Section 19 and said City Limits line to the southeasterly corner of Mitchell Slough-Wright Tract Annexation—A-7-67; thence Westerly, Northerly, and Easterly 1.3 miles, more or less, along the City Limits line established by said Annexation—A-7-67 and by the Wright Tract Annexation—A-1-62 to the northwest corner of said Section 19; thence Easterly 1900 feet, more or less, along the north line of said Section 19 and said City Limits line to the southeast corner of the Shima Tract; thence leaving said City Limits line Northerly 6600 feet, more or less, along the easterly boundary of said Shima Tract to a corner thereof; thence Westerly 1500 feet, more or less, along the northerly boundary of said Shima Tract to the southeast corner of the Atlas Tract; thence Northerly 3800 feet, more or less, along the easterly boundary of said Atlas Tract to the southwest corner of Section 6, Township 2 North, Range 6 East, Mount Diablo Base and Meridian; thence Northerly 1.0 mile, more or less, along the west line of said Section 6 to the northwest corner thereof; thence Easterly 7⅞ miles, more or less, along the north line of said Township and Range and along the north line of Township 2 North, Range 7 East, Mount Diablo Base and Meridian, to the point of beginning,

Division No. 5

Beginning at a point on the Stockton and East San Joaquin Water Conservation District boundary, said point being the southwest corner of fractional Section 1, Township 1 North, Range 7 East, Mount Diablo Base and Meridian, and being a point on the easterly boundary of C. M. Weber Grant, said Stockton and East San Joaquin Water Conservation District boundary being described in notice of election for the organization of the Stockton and East San Joaquin Water Conservation District, held June 1, 1948; thence Northerly 1½ mile, more or less, along the westerly line of said fractional Section 1 and the northerly projection thereof to intersection with the centerline of the Southern Pacific Railroad Company property; thence Westerly 1¾ miles, more or less, along said centerline of the Southern Pacific Railroad Company property to intersection with the centerline of Alpine Road; thence Northwesterly 4½ miles, more or less, along said centerline of Alpine Road to intersection with the centerline of the Calaveras River; thence Westerly 5.1 miles, more or less, along said centerline of the Calaveras River to intersection with the centerline of the Stockton Diverting Canal; thence Southeasterly ¾ mile, more or less, along said

centerline of the Stockton Diverting Canal to intersection with the centerline of North Wilson Way; thence Southerly 4⅝ miles, more or less, along the centerline of North Wilson Way and South Wilson Way to intersection with the centerline of Charter Way; thence Easterly 1¾ miles, more or less, along said centerline of Charter Way to intersection with the centerline of State Highway 99; thence Northerly 0.6 mile, more or less, along said centerline to the centerline of Washington Street; thence Easterly 1.4 miles, more or less, along said centerline of Washington Street to intersection with the centerline of the Stockton Diverting Canal; thence Southeasterly 0.8 mile, more or less, along said centerline of the Stockton Diverting Canal to intersection with the centerline of Copperopolis Road; thence Southwesterly 0.1 mile, more or less, along said centerline of Copperopolis Road to intersection with Gillis Road; thence Southerly ⅞ mile, more or less, along said centerline of Gillis Road to a point on the boundary of said Stockton and East San Joaquin Water Conservation District, on the south line of State Highway Route 4 (Farmington Road); thence Easterly 1¼ mile, more or less, along said south line to intersection with the north line of fractional Section 11, Township 1 North, Range 7 East, Mount Diablo Base and Meridian and being also the southerly boundary of C. M. Weber Grant; thence Easterly 1⅛ mile, more or less, along said southerly boundary of C. M. Weber Grant to a point where the Farmington Road turns southeasterly; thence North 80.0 feet to a point on the northerly line of a private roadway 80.0 feet in width; thence Easterly ¼ mile, more or less, along the northerly line of said roadway to a point on the westerly line of the Northeast ¼ of Section 12, Township 1 North, Range 7 East, Mount Diablo Base and Meridian, said point being on the easterly line of the C. M. Weber Grant and distant 80.0 feet northerly from the center of said Section 12; thence Northerly ½ mile, more or less, along said easterly boundary of C. M. Weber Grant to the point of beginnning,

Division No. 6

Beginning at the northeast corner of Section 58, C. M. Weber Grant, said corner being a point on the boundary of the Central San Joaquin Water Conservation District; thence along said Central San Joaquin Water Conservation District boundary the following four (4) courses, (1) Southerly along the west line of Sections 68, 69, and 70 of said C. M. Weber Grant to the southerly line of said Grant being also the north line of Section 28, Township 1 North, Range 7 East, Mount Diablo Base and Meridian; (2) Westerly along said Weber Grant line and along said north line of Section 28 to the

northwest corner of said Section 28; (3) Southerly along the west line of said Section 28 to intersection with the south line of Section 59, C. M. Weber Grant, and (4) Westerly along the said south line of Section 59 to a point on the easterly right-of-way line of Highway 99; thence Southerly 3.4 miles, more or less, along said easterly right-of-way line of Highway 99 to the intersection of said easterly right-of-way with the southwesterly boundary of French Camp Road, also known as French Camp Toll Road or Turnpike; thence Northwesterly 3 miles, more or less, along said southwesterly boundary of French Camp Road to the westerly right-of-way line of the Western Pacific Railroad Company property; thence Southerly 1.8 miles, more or less, along said westerly right-of-way to a point on the southerly line of Section P of C. M. Weber Grant; thence Westerly 1.2 miles, more or less, along the south line of said C. M. Weber Grant to the northeast corner of the Northwest ¼ of the Northwest ¼ of Section 14, Township 1 South, Range 6 East, Mount Diablo Base and Meridian, said corner being a point in the boundary of Reclamation District No. 17; thence Westerly 0.75 mile, more or less, along the boundary of said Reclamation District No. 17 to the southeast corner of fractional Section 10 of said Township and Range and being the southwest corner of the C. M. Weber Grant; thence along the boundary of said Reclamation District No. 17 and the boundary of said C. M. Weber Grant the following four (4) courses, (1) Northerly 232.41 chains, more or less, along the easterly boundary of fractional Sections 10 and 3 of said Township and Range and along the easterly boundary of fractional Section 34, Township 1 North, Range 6 East, Mount Diablo Base and Meridian to the northeast corner of said fractional Section 34, (2) East 20 chains, (3) North 40 chains, and (4) East 1076 feet; thence leaving said C. M. Weber Grant boundary and continuing along the boundary of said Reclamation District No. 17 the following five (5) courses, (1) North 255.64 feet, (2) North 89° 15′ East 364.98 feet, (3) North 66° 30′ East 1246.34 feet to a point on the west line of said French Camp Road, (4) Northerly 1850 feet, more or less, along said west line of French Camp Road to the south bank of French Camp Slough, and (5) Westerly 1.75 mile, more or less, continuing along said boundary of Reclamation District No. 17 to the right or easterly bank of the San Joaquin River; thence Northwesterly 1.1 mile, more or less, downstream along said right or easterly bank of the San Joaquin River to intersection with the centerline of State Highway 4; thence Easterly 1¾ miles, more or less, along said centerline of Highway 4 to intersection with the centerline of Charter Way; thence Easterly 3½ miles, more or less, along said centerline of Charter Way to intersection with centerline of State Highway

99; thence Northerly 0.6 mile, more or less, along said centerline of State Highway 99 to intersection with centerline of Washington Street; thence Easterly 1.4 miles, more or less, along said centerline of Washington Street to intersection with the centerline of the Stockton Diverting Canal; thence Southeasterly 0.8 mile, more or less, along said centerline of the Stockton Diverting Canal to intersection with the centerline of Copperopolis Road; thence Southwesterly 0.1 mile, more or less, along said centerline of Copperopolis Road to intersection with Gillis Road; thence Southerly ⅞ mile, more or less, along said centerline of Gillis Road to a point on the Stockton and East San Joaquin Water Conservation District boundary on the south line of Farmington Road, said Stockton and East San Joaquin Water Conservation District boundary being described in notice of election for the organization of the Stockton and East San Joaquin Water Conservation District, said election being held on June 1, 1948; thence along said Stockton and East San Joaquin Water Conservation District boundary the following three (3) courses, (1) Westerly ¼ mile, more or less, along said south line of Farmington Road to intersection with the easterly line of Section 67, C. M. Weber Grant, (2) Southerly 0.4 mile, more or less, along said easterly line of Section 67 to the southeast corner thereof, and (3) Westerly 0.9 mile, more or less, along the southerly line of said Section 67 to the point of beginning,

Division No. 7

Beginning at the point of intersection of the centerline of the Calaveras River with the centerline of Pacific Avenue, said point being on the Stockton and East San Joaquin Water Conservation District boundary, said Stockton and East San Joaquin Water Conservation District boundary being described in notice of election for the organization of the Stockton and East San Joaquin Water Conservation District, said election being held June 1, 1948; thence Easterly 2.0 miles, more or less, meandering the centerline of the Calaveras River upstream to intersection with centerline of the Stockton Diverting Canal; thence Southeasterly ¾ mile, more or less, along said centerline of Stockton Diverting Canal to intersection with the centerline of North Wilson Way; thence Southerly 4⅝ miles, more or less, along the said centerline of North Wilson Way and the centerline of South Wilson Way to intersection with the centerline of State Highway 4; thence Westerly 3.5 miles, more or less, along said centerline of State Highway 4 to intersection with the right or easterly bank of the San Joaquin River; thence Southerly 0.1 mile, more or less, along said right or easterly bank of the San Joaquin River to a point bearing East 500 feet, more or less,

from the southeast corner of the 3.55 acre parcel of Oxidation Pond Annexation No. 3—A-1-66; thence West 500 feet, more or less, to said southeast corner; thence Westerly 1.6 miles, more or less, along the Stockton City Limits line to the easterly line of Dagget Road; thence Northerly 1.0 mile, more or less, along said easterly line of Dagget Road and along the Stockton City Limits line to a point on the centerline of Burns Cutoff; thence in a general westerly, northerly, and northeasterly direction 3.09 miles, more or less, along said centerline of Burns Cutoff to intersection with the centerline of the Stockton Deep Water Channel; thence Northwesterly 0.9 mile, more or less, along said centerline of the Stockton Deep Water Channel to centerline Station 286+00, said Station 286+00 bearing Southwesterly 375 feet at right angles to said centerline from U.S.E.D., B.M. 4008; thence Northeasterly 300 feet, more or less, at right angles to said centerline to a point on the southerly boundary of the Elmwood Tract; thence Easterly and Northerly 1.9 mile, more or less, along the southerly and easterly boundary of said Elmwood Tract to the point of intersection of said easterly boundary with the southerly levee of Fourteen Mile Slough (formerly called Twelve Mile Slough); thence North 500 feet, more or less, to the Stockton City Limits line, said City Limits line being along the centerline of said Fourteen Mile Slough; thence Easterly 1.2 mile, more or less, along said centerline of Fourteen Mile Slough to intersection with the West line of Section 29, Township 2 North, Range 6 East, Mount Diablo Base and Meridian; thence Northerly ⅛ mile, more or less, along said west line to the northwest corner of said Section 29; thence Easterly 1.0 mile, more or less, along the North line of said Section 29 to intersection with the west line of Swain Oaks Manor; thence South 02° 35′ East 112.62 feet along the west line of said Swain Oaks Manor to the southwest corner thereof; thence North 69° 40′ East 1652.20 feet along the south line of said Swain Oaks Manor to the centerline of Pershing Avenue; thence Southerly 0.2 mile, more or less, along said centerline of Pershing Avenue to intersection with the centerline of Robinhood Drive; thence Easterly 0.6 mile, more or less, along said centerline of Robinhood Drive to intersection with the centerline of Pacific Avenue; thence Southerly 1.2 miles, more or less, along said centerline of Pacific Avenue to the point of beginning.

After the effective date of this section the division boundaries may be further relocated pursuant to the procedures set forth in Chapter 3 (commencing at Section 74430) of Part 4 of Division 21 of the Water Code, but no such relocation of division boundaries shall occur until four years after the effective date of this section, except that the board shall be authorized pursuant to the provisions of Section 74433

of the Water Code to relocate the boundaries of the divisions established by this section to the extent of any exclusion of land, including, but not limited to, any exclusion as a result of an election held pursuant to Section 24 of this act, and any inclusion of land or annexation of land to the district. This section shall not take effect until the adoption, pursuant to Section 26, of a resolution including one or more planning areas into the district.

Sec. 34.

Notwithstanding the provisions of Sections 74019 and 74202 of the Water Code and Sections 23506 and 23509 of the Elections Code and any other provisions of law in conflict with this section, directors shall be elected as provided in this section. In all other respects the election of directors and the holding of office by directors and the expiration of their terms of office shall be governed by Division 21 (commencing with Section 74000) of the Water Code and the Uniform District Election Law. The general district election shall be held on the date of the general municipal election for the City of Stockton.

SEC. 35. Upon the annexation of any territory to the City of Stockton not within the district, such territory shall automatically be included within the district and such inclusion shall take effect upon the effective date of the annexation of such territory to the City of Stockton. Upon the inclusion of any territory pursuant to this section, such territory shall be an additional planning area and shall be in the partial tax area, subject to the provisions of Section 27 as to inclusion in the full tax area. It shall not be necessary to undertake a benefit review procedure solely for the purpose of reviewing an area included within the district as an additional planning area pursuant to this section, but such additional planning area shall be reviewed at the time of subsequent benefit review procedures.

SEC. 36. Parcels of land within any planning area shall be excluded from paying all ad valorem taxes assessed by the district during any fiscal year (July 1 to June 30) following a preceding period extending from November 1 of any year to the next succeeding October 31 during which there was utilized on such a parcel for irrigated agricultural crops water taken from any watercourse which is located within the boundaries of the Delta Water Agency as the boundaries of the Delta Water Agency are presently defined by Section 10.1 of the Delta Water Agency Act of 1968 (Chapter 419 of the Statutes of 1968, as amended by Chapter 285 of the Statutes of 1969) or from the distribution system of the Woodbridge Irrigation District or from any watercourse entirely outside the boundaries of the district prior to the effective date of this

act; if less than 50 percent of such a parcel's water supply during such a subject period is extracted from the underground. This section shall be implemented by rule adopted by the board and any owner of a parcel desiring to take advantage of this section shall file such reports with the board as the board may require by rule. It shall be the duty of the secretary to annually file a statement as to all parcels to which this section is applicable, as provided by Chapter 8 (commencing at Section 54900) of Part 1 of Division 2 of Title 5 of the Government Code.

SEC. 37. The provisions of this act, insofar as they are substantially the same as existing law, are restatements and continuations of existing law and not new enactments.

SEC. 38. This act is an urgency statute necessary for the immediate preservation of the public peace, health or safety within the meaning of Article IV of the Constitution and shall go into immediate effect. The facts constituting such necessity are:

There is an urgent need to provide treated water within the Stockton-East Water District and facilities for such purpose cannot be adequately planned and initiated until such time as the extent of the jurisdiction of the district is determined. In order, therefore, to permit the provision of urgently needed water within the district at the earliest possible time, it is necessary that this act go into immediate effect.

ATTACHMENT G

Example of Factory Certification for Propeller Meters

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Propeller Meter

CERTIFIED TEST REPORT

CUSTOMER: KIRKPATRICK ASSOCIATES

MODEL NO: M0312

METER SERIAL NO: 12-10330

CONFIGURATION

METER INSIDE DIAMETER: 11.875

METER OUTSIDE DIAMETER: 12.25

TEST DATE: 11/21/2012

TEST FACILITY: Volumetric

IDEAL TEST CONSTANT: 1542

11/21/12

CALIBRATION DATA

	Tested TC	GPM	Accuracy
1	1546	2554	100.3

CERTIFIED BY: Paul Hobbs DATE: 11/26/2012

This calibration was performed on a gravimetric or volumetric test facility, traceable to the National Institute of Standards and Technology, USA. The estimated flow measurement uncertainty of the calibration facilities are Gravimetric +/- 0.15% Volumetric +/- 0.5%

McCROMETER
3255 WEST STETSON AVENUE
HEMET, CA 92545 USA
PHONE (951) 652-6811 / FAX (951) 652-3078
WEB SITE: http://www.mccrometer.com E-MAIL: info@mccrometer.com

ATTACHMENT H

2010 Rate Ordinance, and Rate Equalization Groundwater Assessment and Base Monthly Payment

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ORDINANCE NO.34
Adopted 4/13/10

AN ORDINANCE ESTABLISHING MUNICIPAL GROUNDWATER ASSESSMENTS, AGRICULTURAL GROUNDWATER ASSESSMENTS, DOMESTIC GROUNDWATER ASSESSMENTS AND CHARGES FOR STREAM-DELIVERED WATER FOR CALENDAR YEAR 2010

The Board of Directors of Stockton East Water District does ordain as follows:

Section 1: The Municipal Groundwater Assessment for calendar year 2010 shall be One Hundred Sixty Dollars and Seventy One Cents ($160.71) for Rate Equalization and Three Dollars and Sixty Cents ($3.60) for base Groundwater Production Assessment or a Total Municipal Groundwater Assessment of One Hundred Sixty Four Dollars and Thirty-One Cents ($160.71 + $3.60= $164.31) per acre foot of water.

Section 2: The Agricultural Groundwater Assessment for calendar year 2010 shall be Four Dollars and Fifty-Eight Cents ($4.58) per acre foot of water.

Section 3: The Domestic Groundwater Assessment for calendar year 2010 shall be Thirty-Seven Dollars and Fifty Cents ($37.50) per Domestic Use Unit.

Section 4: The rate for sales of stream-delivered water for calendar year 2010 shall be Twenty Dollars ($20.00) per acre foot of water.

Section 5: This ordinance shall take effect thirty (30) days after its final passage, and shall be published at least once in a newspaper of general circulation within fifteen (15) days after its final passage, with the names of the members of the Board of Directors voting for and against the same.

AYES:	Atkins, Cortopassi, McGaughey, McGurk, Panizza, Sanguinetti, and Watkins
NOES:	None
ABSTAIN:	None
ABSENT:	None

Andrew Watkins
ANDREW WATKINS, President
Board of Directors
Stockton East Water District

ATTEST:

Kevin M. Kauffman
KEVIN M. KAUFFMAN, Secretary
Board of Directors
Stockton East Water District

ORDINANCE#34 04-13-10.doc

RULE NO. 161

ADOPTED 04/13/10

RULE FOR RATE EQUALIZATION - CALENDAR YEAR 2010

WHEREAS, the District Act authorizes the Board to adopt rules and regulations as it deems necessary and proper for carrying out the provisions of the Act; and

WHEREAS, paragraph 6D (3) of the Second Amended Contract among SEWD; City of Stockton, County of San Joaquin and California Water Service Company states that "Stockton East shall annually levy a municipal groundwater assessment, pursuant to its enabling legislation such that the cost of groundwater use is equivalent to the cost of surface water use";

NOW, THEREFORE, THE BOARD OF DIRECTORS OF STOCKTON EAST WATER DISTRICT HEREBY ENACTS AND ESTABLISHES THE FOLLOWING RULES TO LEVY A GROUNDWATER ASSESSMENT TO EQUALIZE THE COST OF GROUNDWATER AND SURFACE WATER FOR 2010:

1. POWER COST -- Use actual power costs submitted by owner to accommodate for differences in water depth, pumping efficiency, system pressure, etc. In the absence of actual power costs, the cost of $70 per acre foot will be assumed.

2. OPERATION AND & MAINTENANCE COST -- Includes labor, repairs, chemicals, treatment costs and the current $3.60 assessment. The cost of $36 per acre foot will be assumed.

3. AMORTIZATION AND DEPRECIATION COST -- Includes well and equipment replacement. The cost of $10 per acre foot will be assumed.

4. FORMULA FOR RATE EQUALIZATION -- Surface water costs plus Groundwater costs divided by total M & I water production equals cost per acre foot. The assumed costs and water production for 2010 are as follows:

Ground water	26,500 AF X $116.00 =	$3,074,000
Surface water	55,000 AF X $354.14 =	$19,477,684
Totals	81,500 AF	$22,551,684

The total cost of $22,551,684 divided by total use of 81,500 AF equals $276.71 per acre foot. The assumed 2010 additional groundwater assessment is $276.71 less $116 (total of items 1-3 above), or $160.71.

5. Any municipal groundwater user has the right to appeal the amount of this additional $160.71 per acre foot rate equalization assessment if it can be demonstrated that actual groundwater production costs are higher than the assumed $116 per acre foot. The appeal process will begin with the Administration Committee of the District Board and if necessary can be appealed to the full Board.

6. Any appeal which is granted shall entitle the appellant to a refund of the amount demonstrated to have been over-collected, less the actual costs to the District of processing the appeal and refund, provided that no overpayment shall be refunded unless the request for appeal has been filed with the Secretary of the District within three years of such overpayment.

SCHEDULE C

STOCKTON EAST WATER DISTRICT
CALCULATION OF RATE EQUALIZATION GW ASSESSMENT &
BASE MONTHLY PAYMENT
FY 2010-2011 BUDGET

CALCULATION OF RATE EQUALIZATION GW ASSESSMENT

(A) Assumed Groundwater Pumping Cost:

Power cost per acre foot	70.00
Operation & Maintenance cost	36.00
Replacement costs	10.00
Total GW Pumping Cost	116.00

(B) Calculation of Rate Equalization Groundwater Assessment:

2009 - 2010 (Budget)	Water Production	$ Cost/AF	Amount
Ground water	26,500 AF	116.00	3,074,000.00
Surface water	55,000 AF	325.10	17,880,668.83
Totals	81,500 AF		20,954,668.83
GW Rate Equalization Assessment:	$20,954,668.83 /	81,500	$257.11
Less: GW Pumping Cost			(116.00)
2009-2010 GW Rate Equalization Assessment			**$141.11**

2010 - 2011 (Budget)	Water Production	$ Cost/AF	Amount
Ground water	26,500 AF	116.00	3,074,000.00
Surface water	55,000 AF	354.14	19,477,684.17
Totals	81,500 AF		22,551,684.17
GW Rate Equalization Assessment:	$22,551,684.17 /	81,500	$276.71
Less: GW Pumping Cost			(116.00)
2010-2011 GW Rate Equalization Assessment			**$160.71**

BASE MONTHLY PAYMENT (BMP) \CALCULATION

Treatment Plant Budget - FY 2010-2011			(a)	**19,477,684.17**
Revenue - Groundwater Rate Equalization	22,500 AF	160.71		3,615,975.00
Interest Income - M&O Funds				96,000.00
Total Revenues before Base Monthly Payment			(b)	**3,711,975.00**
Total Annual Payment (a)-(b)			(c)	**15,765,709.17**
Less: Prior Fiscal Year BMP adjustment (credit)			(d)	(1,274,502.72) *
Total - Adjusted Annual Payment - FY 2010-2011				**14,491,206.45**
Total Base Monthly Payment - (c) divided by 12 months				**1,313,809.10**
Less: BMP adjustment (credit) for prior fiscal year - (d) divided by 12 months				(106,208.56) *
Total Adjusted BMP - FY 2010-2011				**1,207,600.54**

**Based on final audited statements for FY 2008-2009.*

SCHEDULE D

PRORATION OF BASE MONTHLY PAYMENT
FOR FISCAL YEAR 2010-2011 (04/01/10 - 03/31/11)

Total Base Monthly Payment FY 20010-2011 (per month)	**1,313,809.10**
Add/(Less): BMP adjustment	(106,208.56)
Total Adjusted Base Monthly Payment FY 2010-2011	**1,207,600.54**

	2008-2009 Water Use (AF)			Percentage	**2010-2011** Base Monthly Payment	**2009-2010** Base Monthly Payment	**Difference**
	Surface	Well	Total				
City of Stockton	26,584	10,282	36,866	52.262648%	**$ 631,124.03**	532,980.54	**$ 98,143.49**
Lincoln Village	1,308	745	2,053	2.910168%	**$ 35,143.20**	22,810.63	**$ 12,332.57**
Colonial Heights	426	8	434	0.615198%	**$ 7,429.12**	7,429.22	**$ (0.09)**
Cal Water	20,384	10,803	31,187	44.211987%	**$ 533,904.20**	451,465.29	**$ 82,438.90**
Totals	48,702	21,838	70,540	100.000000%	**$ 1,207,600.54**	1,014,685.68	**$ 192,914.86**

ATTACHMENT I

2010 District Sample Bill

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2010 Final Bill

STOCKTON EAST WATER DISTRICT

Stockton East Water District
6767 E. Main Street Stockton, CA 95215
P.O. Box 5157 Stockton, CA 95205
(209) 948-0333 Phone
(209) 948-0423 Fax
Website: www.sewd.net
E-mail: sewd@sewd.net

Account No.	[redacted]
Net Ag Acres	45.90
Billing Date	2/1/2011
Payment Due Upon Receipt	
Site:	[redacted]
Pump ID: C-10	

[redacted]

Description	Qty	Unit	Unit Charge	Water Rights (%)	Extended Amount	Invoice Total
Domestic Unit Charge	1.000	Each	$37.50		$37.50	
						$37.50
Walnuts - Metered Surface Water	98.440	Acre Feet	$20.00	45.00%	$1,082.84	
						$1,082.84
8" Meter Charge - SW - Before 01-01-9	1.000	Each	$40.00		$40.00	
						$40.00
Payment					($508.99)	
Payment					($685.63)	
						($1,194.62)
Penalty					$34.28	
						$34.28

Meter Number	*Beginning*	*Ending*	*Net*
1	973.065	74.322	101.262

ACCOUNT CREDIT - DO NOT PAY $0.00

A PENALTY OF 5% WILL BE ASSESSED IF PAID AFTER 4/30/2011.

Please detach and return with payment.

STOCKTON EAST WATER DISTRICT

Stockton East Water District
6767 E. Main Street Stockton, CA 95215
P.O. Box 5157 Stockton, CA 95205
(209) 948-0333 Phone
(209) 948-0423 Fax
Website: www.sewd.net
E-mail: sewd@sewd.net

2010 Final Bill

Account: [redacted]
Class: AG
Site Address: [redacted]

[redacted]

A PENALTY OF 5% WILL BE ASSESSED IF PAID AFTER 4/30/2011.

Payment Due Upon Receipt.
Thank You for Your Prompt Payment

AMOUNT DUE $0.00

AMOUNT ENCLOSED

2010 Progress Bill

STOCKTON EAST WATER DISTRICT

Stockton East Water District
6767 E. Main Street Stockton, CA 95215
P.O. Box 5157 Stockton, CA 95205
(209) 948-0333 Phone
(209) 948-0423 Fax
Website: www.sewd.net
E-mail: sewd@sewd.net

Account No.	[redacted]
Net Ag Acres	45.90
Billing Date	10/1/2010
Payment Due Upon Receipt	

Site: [redacted]

Pump ID: C-10

[redacted]

Description	Qty	Unit	Unit Charge	Water Rights (%)	Extended Amount	Invoice Total
Walnuts - Metered Surface Water	62.33	Acre Feet	$20.00	45.00%	$685.63	
						$685.63
					AMOUNT DUE	$685.63

A PENALTY OF 5% WILL BE ASSESSED IF PAID AFTER 10/31/2010.

Please detach and return with payment.

STOCKTON EAST WATER DISTRICT

Stockton East Water District
6767 E. Main Street Stockton, CA 95215
P.O. Box 5157 Stockton, CA 95205
(209) 948-0333 Phone
(209) 948-0423 Fax
Website: www.sewd.net
E-mail: sewd@sewd.net

2010 Progress Bill

Account: [redacted]
Class: AG
Site Address: [redacted]

[redacted]

A PENALTY OF 5% WILL BE ASSESSED IF PAID AFTER 10/31/2010.

Payment Due Upon Receipt.
Thank You for Your Prompt Payment

AMOUNT DUE $685.63

AMOUNT ENCLOSED

ATTACHMENT J

District Water Shortage Plan

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DIRECTORS
DEWEY GEORGE
JOSEPH L. DONDERO
JACK H. TONE
JACK LAVEN
JACK E. CLAYTON
BETTY MacNEAR
STELLA E. ALONZO
EDWARD M. STEFFANI
GENERAL MANAGER
JOHN W. STOVALL
GENERAL COUNSEL

STOCKTON EAST WATER DISTRICT

6767 EAST MAIN STREET P.O. BOX 5157 STOCKTON, CA 95205-0157 209'948-0333

July 1, 1992

Jonas Minton, Chief
Water Conservation Office
Division of Local Assistance
Department of Water Resources
P.O. Box 942836
Sacramento, CA 94236

Subject: Water Shortage Contingency Plan

Dear Mr. Minton,

I am writing to supplement the Stockton East Water District Water Shortage Contingency Plan submitted to you on 2/11/92.

SEWD wholesales treated water to urban Stockton retailers and is not able to enforce water use restrictions. The District provides water when it is available. The District has assisted the two retailers with the preparation of their plans, and is now submitting the attached Water Shortage Contingency Plan.

The SEWD Board endorsed the California Water Service Company and City of Stockton plans, and makes a firm commitment to continue to monitor groundwater levels in the urban area, and cooperates with the retailers to determine groundwater pumping patterns which will provide for maximum protection against saline intrusion.

Very truly yours,

EDWARD M. STEFFANI
General Manager

vw

STOCKTON EAST WATER DISTRICT
URBAN WATER SHORTAGE CONTINGENCY PLAN

Section 1 - Coordinated planning

Stockton East Water District was formed in 1948 under the 1931 Water Conservation Act of the State of California. In 191, the District was granted additional powers to acquire a supplemental water supply and to promote water use practices leading to a balance between surface water and ground water use.

In 1964 with the completion of New Hogan Reservoir on the Calaveras River, the District signed an Interim Contract with the U.S. Bureau of Reclamation for use of New Hogan Water for Agricultural irrigation. In 1970 Permanent Contracts with the U.S. Bureau of Reclamation and Calaveras County Water District were signed for the safe yield of New Hogan Reservoir. These Contracts provide the District with 56.5% and Calaveras County Water District with 43.5% of the normal year 84,100 AF safe yield of New Hogan Reservoir.

In 1977 the District completed construction of a 30 MGD Water Treatment Plant and entered into a contract with the City of Stockton, California Water Service Company, Lincoln Village County Maintenance District and Colonial Heights County Maintenance District for the use of treated surface water. This Contract is for a minimum annual delivery of 20,000 AF during normal years.

In 1983 the District entered into a contract with the U.S. Bureau of Reclamation for 75,000 AF of Interim water from New Melones Reservoir on the Stanislaus River. 40,000 AF have been designated for urban use with the rest to be used for agricultural irrigation. The District is now in the final construction phase of a $60 million Conveyance Project to convey New Melones water to the District.

The District's governing board consists of 7 directors elected at large to represent 7 Divisions within the District. The Board of Directors holds meetings on the first and third Tuesdays of each month.

The District encompasses a land area of approximately 115,000 acres and includes a population of 250,000. Normal year urban water demands are 65,000 AF and agricultural demands are 225,000 AF.

Stockton Area Water Suppliers (SAWS) was formed as an association of Stockton urban area retail water suppliers and Stockton East Water District. SAWS members include Stockton East Water District, City of Stockton Water Utility District, San Joaquin County (representing Lincoln and Colonial Heights Maintenance

Districts) and the California Water Service Company, an investor-owned utility. SAWS members meet regularly to discuss water related matters, including water supply, use, conservation and the development of water shortage contingency plans. SAWS members consulted during the preparation of Urban Water Shortage Contingency Plans for the City of Stockton, the California Water Service Company and Stockton East Water District.

Section 2 - Past, Current and Projected Water Use

The District as stated above, wholesales delivery of a normal year minimum of 20,000 AF of treated surface water. The amounts delivered to each of 4 retailers is based on the percentage of total water used (well and surface) in each retailer area during the previous year. The current year percentage and amount entitlements are as follows:

City of Stockton	35.6%	=	7,120 AF
Lincoln Village Maintenance District	2.6%	=	520 AF
Colonial Heights Maintenance District	1.0%	=	200 AF
California Water Service Company	60.6%	=	12,160 AF

Upon completion of the New Melones Water Conveyance Project (expected during the spring of 1993), an additional 40,000 AFA of treated water will be available to the retailers.

Section 3 - Worst Case Water Supply Availability for 12, 24, and 36 Months

New Hogan Reservoir has a capacity of 317,000 AF; however, due to the need to operate under flood control criteria, the average long term conservation yield to the District is approximately 84,100 AF. This yield is divided between M&I users and agricultural users. The first 13,000 AF of yield is available to water rights holders and the next 20,000 AF are contractually committed to the treatment plant. An additional 52,000 AF is needed to meet normal year agricultural demands. Any additional available yield above 72,000 AF is normally used for M&I purposes.

Since the treatment plant began operating in March 1977, there have been two drought periods when deliveries of treated water had to be curtailed. Annual deliveries have ranged from as low as 5,000 AF in 1977 to 29,000 AF in 1986.

The District policy has been to provide as much treated surface water to the urban area as possible because of the danger of saline intrusion into the groundwater basin from the Delta. It is estimated that the groundwater basin is being over-drafted 30,000 AF during a normal year. Any deficiencies in treated water deliveries from the treatment plant are reflected in additional groundwater pumping by the contractors to make up the difference.

In addition to New Hogan Reservoir, the District has contracted for 75,000 AF of interim water from New Melones Reservoir. This water, when it is available, will be used to reduce groundwater pumping within the District.

Section 4 - Stages of Action

The District coordinates on a regular basis with the urban area Contractors for the delivery of treated surface water. The District can only deliver what is available. The balance has to be made up by the Contractors from groundwater pumping. The District coordinates and supports the urban area retailers in developing voluntary and mandatory rationing.

Section 5 - Mandatory Prohibitions on Water Use

The District is a wholesaler only of treated water and has no authority over mandatory prohibitions on water use. The District does coordinate with and support the efforts of the urban area retailers.

Section 6 - Consumption Limits in the Most Restrictive Stages

Same response as Section 5

Section 7 - Penalties or Charges for Excessive Use

Same response as Section 5

Section 8 - Revenue and Expenditure Analysis

Each year a budget is adopted at a public hearing to determine the amount of revenue needed from the Contractors to meet treatment plant related expenses for the succeeding year. Revenue requirements are adjusted for over or under collection from the previous year which are generally related to the amount of water treated.

Section 9 - Monitoring mechanisms

Same response as Section 5

Section 10 - Public Noticing and Adoption

On 1/21/92 the District Board of Directors voted unanimously to endorse the City of Stockton and California Water Service Company Plans, made a firm commitment to continue to monitor groundwater levels in the urban area, and to cooperate with the retailers to determine groundwater pumping patterns which will provide for maximum protection against saline intrusion.

CITY OF STOCKTON

DEPARTMENT OF MUNICIPAL UTILITIES

URBAN WATER SHORTAGE CONTINGENCY PLAN

Note: Appendices & other back-up material is on file at SCWA

January, 1992

CITY OF STOCKTON

DEPARTMENT OF MUNICIPAL UTILITIES

URBAN WATER SHORTAGE

CONTINGENCY PLAN

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Section 1 Coordinated Planning

California Water Code Section 10620 (d)(2) specifies that each urban water supplier shall coordinate the preparation of its urban water shortage contingency plan with other urban water suppliers and public agencies in the area, to the extent practicable.

All water sources available to the City of Stockton's urban area are shared in common with other urban and agricultural interests in the area. Therefore, the City developed this Water Shortage Contingency Plan in coordination with the following involved parties:

> Stockton East Water District; California Water Service Company; and San Joaquin County. Other Agencies and Departments consulted during the preparation of this Plan include the State and County Health Departments, and the City and County Office of Emergency Services.

The Stockton Area Water Suppliers (SAWS)

SAWS was formed several years ago as an association of Stockton urban area retail water suppliers and the Stockton East Water District (SEWD). SAWS members include the Stockton East Water District, City of Stockton Water Utility District, San Joaquin County (representing Lincoln and Colonial Heights Maintenance Districts) and the California Water Service Company, an investor-owned utility. The City and each entity contracting with SEWD for the supply of treated surface water has a contractual limit to the amount of SEWD water it can receive. However, none of the contracting agencies depends solely on treated SEWD water. Each retail water purveyor agency has wells capable of supplying all of the normal base demand from the common groundwater basin. When SEWD declares a supply shortage, all member agencies receive a uniform percentage reduction from their contractual allocation.

Treated surface water has accounted for about 20 to 30% of the City's normal water supply on a historical basis. The other 70 to 80 percent of the supply is produced by City-owned wells from the groundwater basin. During critical dry periods, the City Water Utility, in cooperation with other SAWS members, has agreed to forego its allotment of treated Municipal and Industrial water from SEWD to permit the water to be distributed to Agricultural users that rely solely on surface water.

SAWS members normally meet regularly to discuss water related matters, including water supply, use, conservation, and the development of water shortage contingency plans. In declared emergencies, when more extensive coordination is necessary, members meet as frequently as necessary.

At the SAWS monthly meetings, planning efforts, education and public information, and other water management activities are coordinated. As a result of these meetings, all SAWS member agencies have adopted compatible rationing plans, landscape water use restrictions, and nearly identical "mandatory water reduction " ordinances. The Mandatory Water Use Reduction Ordinance adopted by the City of Stockton is attached to this plan as Appendix II.

Local Surface Water from the New Hogan Reservoir

New Hogan Reservoir is owned by the State of California and is operated under an agreement between the U.S. Bureau of Reclamation (USBR), SEWD and the Calaveras County Water District. Each agency sets its own priorities for the use of the Reservoir within the limits of the master contract with the Bureau of Reclamation. The Stockton East Water District has dedicated the use of its share of the New Hogan Project so as to provide 13,000 acre feet per annum (AFA) to riparian, agricultural users, with the next 20,000 AFA reserved for municipal and industrial (M&I) users, and with the next 52,000 AFA allocated to non-riparian agricultural users. Any surplus or unused agricultural water is sent to the treatment plant for M&I users in the Stockton urban area. Under normal conditions, the treatment plant has delivered over 28,000 AFA of treated water to the Stockton urban area. A recent plant expansion project has increased the capacity of the SEWD treatment plant from 20,000 AFA to 30,000 AFA.

Local Surface Water from the New Melones Reservoir

New Melones Reservoir is owned and operated by USBR. In 1983, the Stockton East Water District contracted with USBR for a "long-term interim" supply of 75,000 AFA from New Melones Reservoir for M&I and agricultural use. A "long-term interim" supply from New Melones Reservoir is available to SEWD until other demands develop in the Stanislaus River Basin (area of origin). It is estimated that the annual allotment of water from this source will be available at least until the year 2020.

Based upon the strength of the USBR contract, SEWD recently sold $50 million in Certificates of Participation to finance the New Melones Conveyance System Project. The main project features include a diversion structure at Goodwin Dam, a 3.3 mile long tunnel to Littlejohn Creek, a 9-mile long section of lined canal to Shirley Creek, 16 miles of streambed improvements to the existing Farmington Dam, a 10-mile section of unlined canal, and a 2.5 mile section of 78-inch diameter aqueduct to the SEWD Treatment Plant. This project is currently underway, and is expected to be completed in the Fall of 1992.

SEWD intends to divide its annual allocation of 75,000 acre feet into 20,000 AFA agricultural, and 40,000 AFA M&I, with 15,000 AFA as conveyance losses. The 40,000 AFA M&I allocation is divided into 8,000 AFA to correct groundwater

overdrafting, and 32,000 AFA to accommodate expected growth in water demand in the urban area. Project costs will be repaid by water sales to both agricultural and urban water users.

Ground Water Supply

Prior to 1976, ground water was the sole water supply for the Stockton urban area. Since 1976 when the SEWD treatment plant became operational, the groundwater basin has supplied approximately 70-75 percent of the needs of the urban area. All three retail water agencies still have enough operating wells to meet their respective base water demands under normal conditions.

Currently, the urban area is using approximately 64,000 AFA from a groundwater basin with a proportionate safe yield of approximately 29,000 AFA. With a normal allocation of 25,000 AFA of surface water from the New Hogan Reservoir supplied to the Urban Area by SEWD, there is a net overdraft of 10,000 AFA within the urban area. With the completion of the New Melones Conveyance System, and a return to "normal" weather patterns, this net overdraft will be eliminated in the urban area until approximately the year 2010. Agriculture uses about 225,000 AFA of which approximately 65,000 AF is surface water and 160,000 AF is groundwater. As the "safe yield" of the groundwater basin is approximately 164,000 AFA this results in an annual overdraft of about 40,000 AFA in a "normal year". When the surface water supply available to SEWD falls below 90,000 AFA the groundwater overdraft increases proportionately.

Water Quality Concerns

With all of its wells operational, the City's Water Utility can supply 100% of the service area's current base water demands from groundwater. During successive dry and critically dry years, supplemental surface water deliveries from SEWD are reduced. This creates a water shortage emergency which forces both the agricultural and urban area water users to pump additional groundwater during the summer season. The added pumping accelerates the decline in groundwater levels east of Stockton and induces subsurface inflow from adjacent areas. The groundwater basin west of the City is known to be contaminated with saline water and some chemical contamination is known to exist in the groundwater basin North of the City. Due to the potential for saline and chemical contamination by intrusion into the groundwater basin from the areas west and north of the City, the relative difference in groundwater levels underlying the City and these areas of known contamination must be closely monitored and controlled.

Water Shortage Emergency Response Coordination

Water shortage emergency response is coordinated with the County's Advisory Water

Commission. Loss of water facilities is incorporated into the City's Emergency Plan. The City's response planning includes the use of standby generators, water purification supplies and equipment, emergency drinking water storage, and water trucks. Water storage, treatment and pumping facilities have been constructed to meet earthquake safety standards and are inspected regularly.

During any declared Stage 5 Water Shortage Emergency, the Building Department can process applications for building permits, but will not issue the actual permits until the Emergency declaration is rescinded. See Appendix III.

The City and County Planning Commissions have been advised of the short and long term water supply outlook in the area. Development guidelines to require a determination of water supply and sewer capacity impacts are incorporated in all project environmental documentation. In addition, in order for a development project to receive County approval, the developer must certify that the project will not result in any net increase in overall water demand.

A noticed Public Hearing was held concerning the City's Urban Water Management Plan and this Water Shortage Contingency Plan. At the Hearing, City Staff proposed to reduce water use during an emergency by the use of an allotment method for each customer class. The final version of this Urban Water Shortage Contingency Plan was reviewed and adopted by the City Council of the City of Stockton at a Public Hearing held on _____1992.

Section 2 Past, Current and Projected Water Use (1991-94)

California Water Code Section 10631 (e)(1) requires that a statement of past, current and projected water use and, to the extent records are available, a breakdown of those uses on the basis of residential single family, residential multifamily, industrial, commercial, governmental, and agricultural use be provided in the Urban Water Shortage Contingency Plan.

The City's Water Utility District serves about 78,000 residents through approximately 25,100 meters. Residential users make up 94% of the total customer base. The commercial and industrial users account for a little more than 3%, while institutional users, including parks, schools, greenbelts, and street planting, total slightly less than 3% of the total number of users. All users of water in the City of Stockton are metered.

The current water demand is 18,400 AFA. New connections are increasing at a rate of 2.5% per year (600). New water demand is expected to either remain equal to or less than the annual growth rate, due to efficiency standards for new construction.

Total annual demand, without improved efficiency at pre-1990 accounts, is estimated to be 22,000 AFA in 1995. Unaccounted-for water averages less than three percent and is apportioned to all account types. Residential connections average 3.5 residents with a historical water use of 193 gallons per person per day (gpcd). Multifamily connections range from 2.9 to 1.8 residents per apartment unit with an average use of 98 gpcd. The City's total average water use is 193 gpcd.

TABLE 1 Customer Types, Normal Demand and Demand Including Growth

Customer	Connections	Highest Use, AF	Actual 1991, AF	Projected 1992, AF	Projected 1993, AF	Projected 1994, AF
Residential	23,669	13,800	13,800	14,100	14,625	15,188
Commercial	828	2,024	2,042	2,068	2,145	2,228
Institutional	678	2,546	2,392	2,632	2,730	2,835
TOTALS	25,175	18,370	18,234	18,800	19,500	20,250

RESIDENTIAL connections are projected to continue to increase by 2.5% per year. Existing single-family accounts use 193 gpcd and multifamily accounts use 98 gpcd. Efficiency requirements for new construction are expected to reduce interior use in new residences to less than 98 gpcd.

COMMERCIAL, INDUSTRIAL, and GOVERNMENTAL demand is projected to continue to show an increase of between two and one half and three percent per year.

OTHER USES & RECREATIONAL demand is expected to remain constant. Increased efficiency and landscape conversions at existing parks, golf courses and cemeteries will provide sufficient water savings to supply new recreational projects contained in the general plan.

Section 3: Worst Case Water Supply Availability for 12, 24 & 36 Months

California Water Code Section 10631 (e)(2) requires an estimate be made of the minimum water supply available at the end of 12, 24 and 36 months, assuming the worst case water supply shortage.

The City of Stockton currently has two water sources which are listed below. Average water supply by source and projected worst case supply by source are provided in Table 2.

TABLE 2: Supply Sources and Worst Case Supply Projections Values in Acre Feet

Source	Contracted Amount	85-89 Average Use	Actual 1991	Projected 1992	Projected 1993	Projected 1994
New Hogan	7,000	2,000	6,000	0	0	0
Melones	14,000	0	0	0	0	0
Groundwater	3,395	3,395	3,395	3,395	3,395	3,395
Overdraft	Unknown	12,327	8,839	15,405	16,105	16,855
TOTALS	Unknown	17,722	18,234	18,800	19,500	20,250
% Shortage*	*based on safe yield	70%	49%	82%	83%	83%
Additional Shortage**	**based on historical	N/A	-3,490	3,078	3,756	4,528
% Additional Shortage		0%	-28%	25%	31%	37%

Notes:
1. City's share of the groundwater basin's "safe yield" is assumed equal to SEWD contract limits, i.e. 35%.
2. Assuming 12,327 AFA (Historical overdraft) as a base, projected shortage represents difference from historical overdraft conditions.

NEW HOGAN RESERVOIR operation is discussed in Section 1. Primarily it is a flood control facility and use of the conservation storage is divided between M&I users in Calaveras and San Joaquin Counties. New Hogan reservoir has a capacity of 317,000 AF; however, due to the need to operate under flood control criteria, the average long term conservation yield available to the SEWD is less than 100,000 AFA. SEWD is contractually obligated to make 13,000 AFA available to the riparian users along the river, with the next 20,000 AFA committed to the treatment plant. Any excess water can be used for agricultural or M&I purposes. Since 1975, when SEWD begin

operating the treatment plant, there have been two drought periods when deliveries of water for M&I users had to be curtailed.

Treated water from the treatment plant is allocated based on a contract between SEWD and the three retail water users. The City's Water Utility District is allocated in excess of 35% of the treatment plant output. In a normal water year, this would represent an allocation of approximately 8,750 AFA. The finished water quality is good, and under normal delivery conditions, this treated surface water costs the City about $150 per acre foot. Reductions in deliveries are triggered by the April 1 storage levels listed in Table 3.

If in the 1992-94 period no surface supply is available from SEWD, the City's share of the New Hogan Reservoir supplies is expected to decline to zero each year. See Table 2. Also, even though the New Melones Conveyance System Project is expected to be completed by Fall, 1992, if in the 1992-94 period no surface supply is available from SEWD, the City's share of the New Melones Reservoir supplies is expected to be zero each year.

TABLE 3 NEW HOGAN RESERVOIR STAGED REDUCTIONS IN ACRE FEET

Total Reservoir Storage, AF	% Reservoir Storage	% Reduction	Total Deliveries	Riparian Agriculture	Other Agriculture	Stockton Urban	Other Urban	Total Urban
317,000	100%	0%	125,000	13,000	87,000	8,750	16,250	25,000
100,000	32%	64%	100,000	13,000	67,000	7,000	13,000	20,000
41,000	13%	87%	36,000	13,000	3,000	7,000	13,000	20,000
21,000	7%	93%	16,000	13,000	3,000	0	0	0
18,000	6%	96%	3,000	0	3,000	0	0	0
15,000	5%	100%	0	0	0	0	0	0

Groundwater Basin

In Section 1 of this report and in the UWMP, the threat to the groundwater basin from continued overdraft was discussed. SEWD is constructing facilities that in future could allow it to manage the basin for conjunctive use. Supplemental supplies of surface and imported water will be stored in the basin as a contingency against the possibility of a future water shortage. The Water District's experience from 1977 through 1987 indicates that with the conjunctive use program, up to five years contingent water shortage can be stored in the underground water basin.

In addition to the New Hogan Reservoir, The Stockton East Water District (SEWD) has contracted for 75,000 AFA of interim water from the New Melones Reservoir . This

water, when it is available, will be used to reduce groundwater pumping in the SEWD. For planning purposes, the City assumes that this interim supply will firm up the conjunctive use program and provide a firm supply to accommodate the City's 2.6% per year growth in water demand. "Wet" years should allow the SEWD to provide the City with "surplus" imported water for treatment in the expanded SEWD water treatment plant. It is assumed that disasters, such as earthquakes, could interrupt SEWD water delivery availability for up to six months.

During 1991, the City's SEWD delivery was not reduced, and all SEWD urban water contractors received full delivery. However, for worst case planning purposes, the City has assumed that three consecutive years of 1977 level precipitation could result in no deliveries for 1992-94. In this event, both agricultural and urban areas will be forced to pump additional groundwater. These added demands will result in additional overdrafting of the groundwater basin.

A WATER RECLAMATION/REUSE system is currently under consideration by the City and up to 20,000 AF of tertiary treated water will be available for use in 1992. The system will not be fully developed by 1993 but some water will be provided for use on construction sites. In 1991, about 1,000 AF of reclaimed waster was used for construction and dust control purposes. Recycled water is considered the most reliable of all the City's alternative supplies.

Water Quality and Emergency Supplies

The City's water sources are of medium to good quality, and no problems resulting from industrial or agricultural contamination have been experienced to date. Extended multi-week supply shortages due to natural disasters or accidents which damage both imported and local surface sources are unlikely. Even in the event of a severe earthquake, groundwater wells could probably be back in production within five days. Loss of a significant number of wells is not anticipated as Stockton is in a relatively low earthquake hazard zone. The City's distribution reservoirs hold sufficient treated water to meet the health & safety requirements (50 gpcd) for City residents for 36 hours.

Section 4 Stages of Action

California Water Code Section 10631 (e)(3) requires a statement of appropriate triggering stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.

In response to the water shortage emergency anticipated in 1991, the City of Stockton developed a five stage rationing plan. The City's plan includes both voluntary and mandatory conservation stages. In order to carry out the requirements of this Urban Water Shortage Contingency Plan, Stage reductions specified in the City's existing Ordinance would need to be revised as shown in Table 4 below.

TABLE 4 Rationing Stages and Reduction Goals

Shortage	Stage	Demand Reduction Goal	Type Program
up to 10%	Stage 1	10% reduction	Voluntary
up to 20%	Stage 2	20% reduction	Mandatory
20-30%	Stage 3	30% reduction	Mandatory
30-40%	Stage 4	40% reduction	Mandatory
40-50%+	Stage 5	50%+ reduction	Mandatory

The Demand Reduction Goal as noted above applies to all except "process water users", as defined in the City's Mandatory Water Use Reduction Ordinance.

The following PRIORITIES for use of available water have been established, based on California Water Code Chapter 3 (see Appendix IV) and community input:

- HEALTH & SAFETY - interior residential and fire fighting
- COMMERCIAL & INSTITUTIONAL - maintain jobs & economic base
- EXISTING LANDSCAPING - especially trees and shrubs
- NEW DEMAND - projects without permits when shortage declared
- NEW LANDSCAPING - defer until after emergency is over
- NONESSENTIAL USES - to be curtailed for duration of emergency

HEALTH & SAFETY water quantity calculations used to determine the interior gpcd requirements are provided below. The Stage 2 and Stage 3 health & safety allotments are 100 gpcd (49 HCF per person per year, equaling 8,744 AFA). The Stage 4 and 5 health & safety allotments are reduced to 76 gpcd (37 HCF per person per year, or 6,640 AFA). The total annual amount of water required to meet these health & safety needs is calculated by multiplying the appropriate gpcd times 78,000 residents.

TABLE 5 Per capita Health & Safety Water Quantity Calculations

	Non-Cons. Fixtures		Habit Changes*		Cons. Fixtures**	
Toilets	7 fls @ 6 gpf =	42.0	5 fls @ 6 gpf =	30.0	5 fls @ 1.5 gpf =	7.5
Shower	7 min @ 5.0 gpm =	35.0	5 min @ 5.0 gpm =	25.0	5 min @ 2.0 gpm =	10.0
Washer	13 gpcd (1/3 load) =	13.0	13 gpcd (1/3 load) =	13.0	11.5 gpcd (1/3 load) =	11.5
Kitchen	5 gpcd =	5.0	4 gpcd =	4.0	4 gpcd =	4.0
Other	5 gpcd =	5.0	4 gpcd =	4.0	4 gpcd =	4.0
TOTAL (gpcd)		100.0		76.0		37.0
HCF per capita per year		48.8 CCF		37.1 CCF		18.1 CCF

*Reduced shower use is result of shorter showers or reduced flow, reduced washer.
**Fixtures include 1.6 gpf toilets, 2.0 gpm shower heads.
fls - flush
gpf - gallons per flush
gpm - gallons per minute
gpcd - gallons per capita per day

Notes:

1. Reduced shower use results from shorter showers or reduced flow. Reduced washer use results from fuller loads.
2. Conservation Fixtures include Ultra Low Flush 1.6 gpf toilets, 2.0 gpm showerhead and efficient clothes washers.

The Health & Safety minimum allotment was set at 100 gpcd in Stages 2 & 3 because it provides sufficient water for essential interior use with no habit or plumbing fixture changes. If individuals wish to change water use habits or plumbing fixtures, 100 gpcd is sufficient to provide for limited non-essential uses. In Stage 4, the health & safety allotment would require habit changes.

Based on the customer demand information in Table 1, Table 6 indicates the water allocated to each customer type by priority and rationing stage.

TABLE 6 - Water Supply Allocated by Priority

WATER SUPPLY BY PRIORITY

STAGE 2	Residential	Commercial	ALL OTHERS		TOTALS
			Government	Irrigation	
Average use	13,800 AF	2,024 AF	1,403 AF	1,175 AF	18,400 AF
Requested use % Reduction	11,040 20%	1,822 10%	1,262 10%	940 20%	15,064 18%
STAGE 3					
Average use	13,800 AF	2,024 AF	1,403 AF	1,175 AF	18,400 AF
Requested use % Reduction	9,660 30%	1,720 15%	1,192 15%	881 25%	13,454 27%
STAGE 4					
Average use	13,800 AF	2,024 AF	1,403 AF	1,175 AF	18,400 AF
Requested use % Reduction	8,280 40%	1,619 20%	982 30%	822 30%	11,703 36%
STAGE 5					
Average use	13,800 AF	2,024 AF	1,403 AF	1,175 AF	18,400 AF
Requested use % Reduction	6,900 50%	1,417 30%	842 40%	822 30%	9,981 46%

Supply Shortage Triggering Levels

The City of Stockton has a legal responsibility to provide for the health and safety water needs of the community (see Appendix IV). In order to minimize the social and economic impact of water shortages, the City will manage water supplies prudently. This Plan is designed to provide a minimum of 50 percent of normal supply during a severe or extended water shortage. The following rationing program triggering levels are established to ensure that these policy statements are implemented, and are based upon the mutual sharing of the groundwater basin by all urban area water purveyors (i.e. supply reductions resulting in increased overdrafting of the basin either inside or outside the City's service area could trigger rationing by the City of Stockton).

The City's two water sources are groundwater and imported surface water. Rationing stages may be triggered by a shortage in one source or a combination of sources. Because Stages overlap, the triggers stated herein automatically implement the more restrictive Stage, unless the City Council, at a Public Hearing, adopts findings to implement the less restrictive Stage. Shortages may trigger a change in Stage at any time.

The specific criteria for triggering the City's rationing stages are listed in Table 7.

TABLE 7 - Water Supply Triggering Levels

Stage	% Shortage	Water Shortage	Carry-over Storage
Stage 1	Up to 10% supply reduction	Supply reductions that increase the overdraft by 6,000 AFA	Insufficient storage to provide 50% of normal supplies for the year
Stage 2	10 to 20% supply reduction	Supply reduction that increases the overdraft by 12,000 AFA	Insufficient storage to provide 35% of normal supplies for the next year
Stage 3	20 to 30% supply reduction	Supply reduction that increases the overdraft by 18,000 AFA	Insufficient storage to provide 25% of normal supplies for the next year
Stage 4	30 to 40% supply reduction	Supply reduction that increases the overdraft by 24,000 AFA	Insufficient storage to provide 10% of normal supplies for the next year
Stage 5	40 to 50% supply reduction	Supply reduction that increases the overdraft by 30,000 AFA	No storage for either agriculture or M & I

Section 5 Mandatory Prohibitions on Water Use

California Water Code Section 10631 (e)(4) requires a statement of the mandatory provisions of the Plan which will reduce water use and which include prohibitions against specific wasteful practices, such as gutter flooding.

The City adopted a "No Waste" Ordinance in 1987, please see Appendix II.

Section 6 Consumption Limits

California Water Code Section 10631 (e)(5) requires the establishment of consumption limits for the most restrictive conservation stages of the Plan. Each urban water supplier may use any type of consumption limit in its water shortage contingency plan that would reduce water use and is appropriate for its area. Examples of consumption limits that may be used include, but are not limited to, percentage reductions in water allotments, per capita allocations, an increasing block rate schedule for high usage of water with incentives for conservation, or restrictions on specific uses.

The City has established the following allocation method for each customer type:

CUSTOMER CLASS	STAGE	ALLOCATION METHOD
Residential	1-4	Percentage reduction with maximum amount
	5	Hybrid of per capita and percentage
Commercial	1-4	Percentage Reduction
	5	Percentage Reduction; vary by efficiency
Institutional & all Others	1-4	Percentage Reduction
	5	Percentage Reduction; vary by efficiency

The specific percentage reductions at each stage and for each customer class correspond to the figures listed in Table 6.

The individual customer allotments will be based on the 1987 base year and customer class averages. This gives the City a more accurate view of the usual water needs of each account and provides additional flexibility in determining allotments and reviewing appeals.

The Municipal Utilities Director has been delegated authority to classify each customer and calculate each customer's allotment according to the methods described in Appendix V. The allotments reflect seasonal patterns. Each customer will be notified of their classification and allotment by mail before the effective date of the Water Shortage Emergency. New customers and connections will be notified at the time service commences. In a disaster, prior notice of allotment may not be possible; in these cases, notice must be provided by other means. Any customer may appeal the Municipal Utilities Director's classification on the basis of use or the allotment on the basis of incorrect calculation. Appeals shall be processed as set forth in Appendix V.

Section 7 Penalties or Charges for Excessive Use

California Water Code Section 10631 (e)(6) requires a statement regarding penalties or charges for excessive use.

The City of Stockton's current rate structure is provided in Table 8.

TABLE 8 Current Normal Rate Structure

SERVICE CHARGE PER METER PER MONTH

METER SIZE	RATE	METER SIZE	RATE
5/8" METER	$6.30	3" METER	$32.00
3/4" METER	7.30	4" METER	46.00
1" METER	9.70	6" METER	76.00
1-1/2" METER	14.00	8" METER	110.00
2" METER	14.00	10" METER	137.00

QUANTITY RATES

For the first 30,000 Cubic Feet-- per 100 CF..	$0.352
For all over 30.000 Cubic Feet--- per 100 CF..	$0.300

Excess use charges -- During Mandatory Water Use Reduction Period

EXCESS USE ABOVE ENTITLEMENT:

An Excess Use Penalty of $2.00 per CCF of water used in excess of the customer's ration quantity during each billing period up to and including 100% of the average base year amount per customer class; and $4 per CCF for all additional water used above the average base year amount per customer class.

If a customer receives more than one written warning for violation of the provisions of the Mandatory Water Use Reduction Ordinance, or for any of the prohibited uses as defined, and after the observation of a subsequent violation, the City may install a flow restricting device on the customer's water service, which shall remain for a period of at least 48 hours, and until the specified removal penalty has been paid. For a subsequent violation, the flow restrictor shall remain for a period of at least two weeks.

Section 8 Analysis of Revenue and Expenditure Impacts

California Water Code Section 10631 (e)(7) requires inclusion of an analysis of the impacts of the plan on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.

The City's current normal annual income from water sales is $5,020,237 of which the monthly meter charges provide $2,198,760, or 44% Any surplus revenues are used to fund Water Utility Operations, Emergency Fund (described below) projects, and other water system capital improvements. Tables 10 and 11 are based on the Table 9 sales ranges.

TABLE 9 - Projected Ranges of Water Sales by Stage

Water Sales	Normal	Stage 2 20%	Stage 3 30%	Stage 4 40%	Stage 5 50%
TOTAL (AFA)	18,400	15,064	13,454	11,703	9,981

Tables 10 and 11 provide information on projected revenue impacts by Stage.

Table 10 shows the Water Utility's Revenues and Expenditures, and the projected fiscal impacts of increased costs and reduced sales due to shortages.

TABLE 10 - Revenues & Expenditures (at current rates with no increases) (in $1,000)

	Normal	Stage 2 (20%)	Stage 3 (30%)	Stage 4 (40%)	Stage 5 (50%)
Oper. Revenues					
Water Sales	$2,821	$2,297	$2,051	$1,784	$1,522
Meter Charges	$2,199	$2,199	$2,199	$2,199	$2,199
Total Revenue	$5,020	$4,496	$4,250	$3,983	$3,721
% Reduction	0%	-10%	-15%	-21%	-26%
Oper. Expenses*					
Personal Svcs.	$1,376	$1,376	$1,376	$1,376	$1,376
Purchased Wtr	$1,550	$1,550	$1,150	$1,550	$1,550
Pump Tax	$ 54	$ 926	$ 827	$ 720	$ 614
Debt Service	$1,248	$1,248	$1,248	$1,248	$1,248
Depreciation	$ 637	$ 637	$ 637	$ 637	$ 637
Other O&M Exp.	$ 389	$ 272	$ 216	$ 155	$ 94
Total Expenses	$5,256	$6,011	$5,856	$5,687	$5,521
Oper Exp per AF	$ 286	$ 399	$ 435	$ 486	$ 553
Surplus or (Deficiency)	($235)	($1,515)	($1,606)	($1,704	($1,800)

*1989-90 Fiscal Year Expenses

Table 11 provides an estimate of the Water Utility's Revenues & Expenditures with reduced sales (20%, 30%, 40% and 50%) at Stages 2 through 5. The Utility will incur added capital costs for lowering pump settings, increased pumping and treatment costs, added ground water extractions costs. These costs will be partially offset by the reduced production but it will be necessary to increased rates to maintain the fiscal integrity of the system.

TABLE 11 - Projected Revenues & Expenditures

Opr.Revenues	Normal	Stage 3 (30%)	Stage 4(40%)	Stage 5(50%)
Water Sales	$6,192,490	$4,968,092	$5,136,874	$5,457,110
Meter Charges	1,894,438	1,894,438	1,894,438	1,894,438
Total Revenue	$8,086,927	$6,862,530	$7,031,312	$7,351,547
% reduction	-	-15%	-13%	-9%
Operating Expenses				
Salaries	$1,600,000	$1,700,000	$1,750,000	$1,750,000
Overhead	990,000	1,050,000	1,080,000	1,080,000
Cost of Supply	2,224,000	1,825,400	2,178,600	3,363,600
Purification	300,000	270,000	270,000	270,000
Transmission	150,000	150,000	150,000	150,000
Customer Accounts	60,000	90,000	100,000	110,000
General & Admin.	450,000	650,000	700,000	750,000
Depreciation	1,200,000	1,200,000	1,200,000	1,200,000
Capital Proj.	1,000,000	750,000	0	0
Total Opr. Exp.	$7,974,000	$7,685,400	$7,428,600	$8,673,600
Surplus or (Deficiency)	$ 112,927	($822,870)	($397,288)	($1,322,053)

Establishment of a Rate Stabilization Fund

In order to mitigate the financial impacts of a water shortage, the City is establishing a policy of maintaining a Contingency Reserve as part of its Water Fund. The goal is to maintain the Fund at 75 percent of normal Water Department revenue. This fund will be used to stabilize rates during periods of water shortage or disasters affecting the water supply. The City will not have to increase rates as much or as often during a prolonged or severe shortage.

However, even with the emergency fund, rate increases will be necessary during a prolonged water shortage. As described in Section 4 of this Plan, a Stage 1 shortage requires a 20 percent reduction in water deliveries while a Stage 3 requires up to a 40 percent reduction. The experiences of California water purveyors during the 1990-91 drought shortage demonstrated that actual water use reductions by customers are usually considerably larger that those requested by the supplier. During the 1990-91

usually considerably larger that those requested by the supplier. During the 1990-91 drought shortage it was also politically difficult for many agencies to adopt the rate increases necessitated by a 20 to 50 percent reduction in sales.

In order to maintain fiscal solvency of the Water Utility, water rates would have to be increased by the following percentages when the indicated Stages are implemented:

Stage 2 or 3 --- 25 percent increase over pre-shortage rates

Stage 4 or 5 -- 35 percent increase over pre-shortage rates

Most California water agencies which experienced water shortages found that it required several years for daily per capita use to return to pre-shortage levels. Thus, in anticipation of reduced sales following a shortage, the City's rates will be continued. After a shortage, Water Utility expenses are expected to drop below pre-shortage levels. Per capita water use is projected at 90 percent of the pre-shortage use, so continuation of the emergency rate should generate sufficient income to equal expenses. Any excess revenues collected as a result of this rate adjustment will be used to re-establish the "Contingency Reserve" within the Water Fund.

Section 9 Implementation of the Plan

California Water Code Section 10631 (e)(8) requires the preparation of a draft water shortage contingency resolution or ordinance to carry out the urban water shortage contingency plan.

The City adopted a Resolution to Declare a Water Shortage Emergency which will implement this Plan, please see Appendix VI.

Section 10 Water Use Monitoring Procedures

California Water Code Section 10631 (e)(9) requires inclusion in the Plan of a mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency plan.

Normal Monitoring Procedure

In normal water supply conditions, production figures are recorded and reported weekly to the Deputy Director responsible for the Water operations. Totals are reported monthly to the Municipal Utilities Director and incorporated into the water supply report.

Stage 2 and 3 Water Shortages

During a Stage 1 or 2 water shortage, daily production figures are reported to the Supervisor. The Supervisor compares the weekly production to the target weekly production to verify that the reduction goal is being met. Weekly reports are forwarded to the Water Department Manager and the Water Shortage Response Team. Monthly reports are sent to the City Council. If reduction goals are not met, the City Manager will notify the City Council so that corrective action can be taken.

Stage 4 and 5 Water Shortages

During a Stage 3 or 4 water shortage, the procedure listed above will be followed, with the addition of a daily production report to the City Manager.

Disaster Shortage

During a disaster shortage, production figures will be reported to the Supervisor hourly, and to the City Manager daily. Reports will also be provided to the City Council.

Section 11 Plan Adoption Standards

California Water Code Section 10621 (a) states that each urban water supplier shall, not later than January 31, 1992, prepare, adopt, and submit to the Department of Water Resources, an amendment to its urban water management plan which meets the requirements of subdivision (e) of Section 10631.

The City of Stockton prepared this Water Shortage Contingency Plan during December, 1991. The Plan was adopted on January_____, 1992 (see Appendix I) and submitted to the Department of Water Resources on January _____, 1992. The Plan includes all the information necessary to meet the requirements of subdivision (e) of California Water Code Section 10631.

California Water Code Section 10642 states that, prior to adopting a plan, the urban water supplier shall make the Plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to California Water Code Section 6066 of the Government Code. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing, the Plan shall be adopted as prepared or as modified after the hearing.

The Public Hearing was duly held in accordance with law, and the availability of copies of the draft water shortage contingency plan were properly noticed in the City's newspapers. Copies of the draft plan were made available for public review at City offices and the Public Library.

The 1992 Water Shortage Contingency Plan for the City of Stockton was formally adopted at a duly noticed City Council Meeting on January____, 1992

California Water Code Section 10656 states that an urban water supplier that does not submit an amendment to its urban water management plan pursuant to subdivision (a) of Section 10621 to the Department of Water Resources by January 31, 1992, is ineligible to receive drought assistance from the state until the Urban Water Management Plan is submitted pursuant to Article 3 (commencing with Section 10640) of Chapter 3.

The City of Stockton submitted a Water Shortage Contingency Plan to the Department of Water Resources on January ____, 1992.

ATTACHMENT K

Groundwater Management Plan

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June 2004

Eastern San Joaquin Groundwater Basin Groundwater Management Plan

Northeastern San Joaquin County Groundwater Banking Authority

Eastern San Joaquin Groundwater Basin Groundwater Management Plan

Executive Summary

Jack Sieglock, Chairman
Northeastern San Joaquin County
Groundwater Banking Authority

Thomas R. Flinn, Director
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San Joaquin County Department of Public Works

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Copies of the Groundwater Management Plan may be purchased for $40 from:
San Joaquin County Department of Public Works
P.O. Box 1810
Stockton, CA 95201

Make checks payable to: San Joaquin County Department of Public Works

Foreword

. . .

The American West and particularly the State of California is faced with the critical challenge of sustainable development and equitable management of increasingly scarce water resources. The entirety of this concern is framed by greater competition between regional powers for limited surface supplies from major rivers and heightened attention regarding the future use and control of groundwater by overlying landowners, appropriative agencies and the State. Consequently, the Northeastern San Joaquin County Groundwater Banking Authority Joint Exercise of Powers Agreement was established in 2001 to provide a consensus-based forum for local water interests with historically diverse viewpoints regarding the exploitation of groundwater resources in the Eastern San Joaquin Groundwater Basin. Members agreed to work cooperatively with unanimity toward achieving water resource planning objectives and to speak with one regional voice. This Groundwater Management Plan is the result of this inexorable collaborative effort, which was single-minded in its effort to reinforce local control and provide direction for the sustainable development of this vital resource for the future social, economic and environmental viability of San Joaquin County.

Mel Lytle, Ph.D.
Water Resource Coordinator

Acknowledgements

This Groundwater Management Plan (GMP) is a product of the commitment that the Groundwater Banking Authority (GBA) members together with many other interested agencies made to sustain and enhance the groundwater resources of the Eastern San Joaquin Basin. The GBA extends thanks to staff consultants from HDR, Schlumberger Water Services and Camp Dresser & McKee Inc. in the preparation of materials, modeling information and technical review of the GMP. In addition, special thanks are given for grant funding, information and services provided by the California Department of Water Resources, the Center for Collaborative Policy and the U.S. Geological Survey.

Finally, the GBA would like to thank staff, the Department of Public Works and the GBA Coordinating Committee and Plan Group members in guiding the preparation and technical review of the GMP. Significant funding for this work was provided by GBA member contributions and the San Joaquin County Flood Control and Water Conservation District Water Investigation Zone No. 2. A special benefit assessment supported by the taxpayers of San Joaquin County.

Northeastern San Joaquin County Groundwater Banking Authority

Board of Directors

Supervisor Jack Sieglock, *Chairman*
San Joaquin County Board of Supervisors

Councilmember Gary Giovanetti, *Vice Chairman*
City of Stockton

Anders Christensen
Woodbridge Irrigation District

Director Mel Panizza
Stockton East Water District

Councilmember John Beckman
City of Lodi

Reid Roberts
Central San Joaquin Water Conservation District

Ed Steffani
North San Joaquin Water Conservation District

Dante Nomellini
Central Delta Water Agency

John Herrick
South Delta Water Agency

Associate Members

Paul Risso
California Water Service Company

Joe Peterson
San Joaquin County Farm Bureau

Staff

Tom Flinn, *Secretary*
San Joaquin County Public Works

Mel Lytle, Ph.D., Water Resources Coordinator
San Joaquin County Department of Public Works

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List of Abbreviations

ACWA – Association of California Water Agencies
ADAPS - Automatic Data Acquisition and Processing System
af – Acre-feet
ASR – Aquifer Storage and Recovery
BMP – Best Management Practice
Cal Water – California Water Service Company
CCWD – Calaveras County Water District
CDWA – Central Delta Water Agency
CERCLA – Comprehensive Environmental Response, Compensation and Liability Act
cfs – Cubic Feet per Second
CSJWCD – Central San Joaquin Water Conservation District
CVP – Central Valley Project
CVPIA – Central Valley Project Improvement Act
DMM – Demand Management Measure
DO – Dissolved Oxygen
DWR – California Department of Water Resources
EBMUD – East Bay Municipal Utility District
EC – Electrical Conductivity
EDF – Environmental Defense Fund
EIR – Environmental Impact Report
EIS – Environmental Impact Statement
ESJGB – Eastern San Joaquin Groundwater Basin
ESJPWA – East San Joaquin Parties Water Authority
FERC – Federal Energy Regulatory Commission
FSC – Folsom South Canal
FRWP – Freeport Regional Water Authority
GBA – Groundwater Banking Authority
GIS – Geographic Information System
GMP – Groundwater Management Plan
GOES – Geostationary Observational Environmental System
JPA – Joint Powers Agreement
MARS – Mokelumne Aquifer Recharge & Storage
MGD – Million Gallons per Day
MORE WATER – Mokelumne Regional Water Storage and Conjunctive Use Project
MOU – Memorandum of Understanding
MRWPA – Mokelumne River Water and Power Authority
MSL – Mean Sea Level
MW – Megawatts
NSJWCD – North San Joaquin Water Conservation District
OID – Oakdale Irrigation District
RWQCB – Regional Water Quality Control Board
SARA – Superfund Amendments and Reauthorization Act
SAWS – Stockton Area Water Suppliers
SCADA – Supervisory Control and Data Acquisition
SDWA – South Delta Water Agency
SEWD – Stockton East Water District
SJCOG – San Joaquin Council of Governments
SSJID – South San Joaquin Irrigation District
SWP – State Water Project

SWRCB – State Water Resources Control Board
TDS – Total Dissolved Solids
TMDL – Total Maximum Daily Load
USACE – U.S. Army Corps of Engineers
USBR – U.S. Bureau of Reclamation
USGS – U.S. Geological Survey
WHPA – Wellhead Protection Area
WID – Woodbridge Irrigation District

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Executive Summary

ES-1 Background

Independently, agencies in Eastern San Joaquin County have found it difficult to wield the political and financial power necessary to mitigate conditions of critical groundwater overdraft. County interests have come to realize that a regional consensus based approach to water resources planning and conjunctive water management increases the chance for successfully implementing groundwater management actions that are equitable, affordable, and provide far reaching benefits locally, regionally, and Statewide.

Organized in 2001, the Northeastern San Joaquin County Groundwater Banking Authority (Authority) employs the consensus based approach in its goal to develop "...locally supported groundwater banking projects that improve water supply reliability in Northeastern San Joaquin County...and provide benefits to project participants and San Joaquin County as a whole." Collaboration amongst the Authority member agencies has strengthened the potential for broad public support for groundwater management activities as well as the ability to leverage local, State, and federal funds. The Groundwater Management Plan for Eastern San Joaquin County (Plan) is a continuation of the collaborative effort to effectively manage the Eastern San Joaquin Groundwater Basin (Basin). Table ES-1 lists the member agencies of the Authority.

Table ES-1 Member Agencies of the Northeastern San Joaquin County Groundwater Banking Authority
City of Stockton
City of Lodi
Woodbridge Irrigation District
North San Joaquin Water Conservation District
Central San Joaquin Water Conservation District
Stockton East Water District
Central Delta Water Agency
South Delta Water Agency
San Joaquin County Flood Control and Water Conservation District
California Water Service Company*
San Joaquin Farm Bureau Federation*
* Associate Members

ES-2 Purpose and Objectives

The purpose of the Groundwater Management Plan is to review, enhance, assess, and coordinate existing groundwater management policies and programs in Eastern San Joaquin County and to develop new policies and programs to ensure the long-term sustainability of groundwater resources in Eastern San Joaquin County. To better define the supporting values included with this Plan's purpose, the Authority has listed the following mission values centered on the development of the Plan as outlined in Table ES-2.

Table ES-2 Groundwater Management Plan Mission Values for Success		
Be implemented in an equitable manner	Maintain or enhance the local economy	Protect groundwater and surface water quality
Be affordable	Minimize adverse impacts to entities within the County	Provide more reliable water supplies

Exhibit multiple benefits to local land owners and other participating agencies	Maintain overlying landowner and Local Agency control of the Groundwater Basin	Restore and maintain groundwater resources
Minimize adverse impacts to the environment	Protect the rights of overlying land owners	Increase amount of water put to beneficial use within San Joaquin County

In order to meet the purpose of the Plan and ensure the long-term sustainability of the Basin, the Authority created the following Plan objectives:

1. Maintain long-term sustainability of the Basin through the development of management objectives, practices and conjunctive use projects to benefit the social, economic and environmental viability of Eastern San Joaquin County.
2. Prevent further saline intrusion and degradation of groundwater quality throughout the Basin.
3. Increase understanding of Basin dynamics through the development of a sound research program to monitor, evaluate, and predict Basin conditions.
4. Maintain local control of the groundwater Basin through the responsible management of groundwater resources by overlying cities, counties, water districts, agencies, and landowners.
5. Formulate rational and attainable Basin management objectives to comply with SB 1938 and retain State funding eligibility.
6. Formulate voluntary policies, practices and incentive programs to meet established Basin management objectives.
7. Formulate appropriate financing strategies for the implementation of the Plan.

ES-3 Groundwater Management Area

San Joaquin County overlies the Eastern San Joaquin, Cosumnes, and Tracy Sub-basins of the greater San Joaquin Valley Groundwater Basin. For the purposes of the Plan, the Eastern San Joaquin County Groundwater Management Area (GMA) is defined as the portion of San Joaquin County overlying the Eastern San Joaquin and Cosumnes Sub-Basins. Within the GMA, the member agencies of the Authority will implement the Plan within their respective boundaries. To ensure that every parcel in the GMA is represented, all unorganized areas will be included in the San Joaquin County Flood Control and Water Conservation District. Figure ES-1 depicts the member Agencies of the Authority and their respective boundaries within the GMA.

ES-4 Agency Participation

The physical boundaries of the Eastern San Joaquin and Cosumnes Sub-Basins extend beyond the political boundaries of San Joaquin County. Portions of Calaveras and Stanislaus Counties overlie the eastern fringes of the Basin. Recognizing the need for increased coordination between agencies outside of the GMA, the Authority invited a variety of interest groups from the business, environmental, agricultural, and political communities to participate in the development of the Plan. The Authority values the consensus based approach to groundwater management and strives to coordinate, integrate, and mutually benefit from the groundwater management efforts of its member agencies and those with vested interest in the social, economic, and environmental viability of Eastern San Joaquin County.

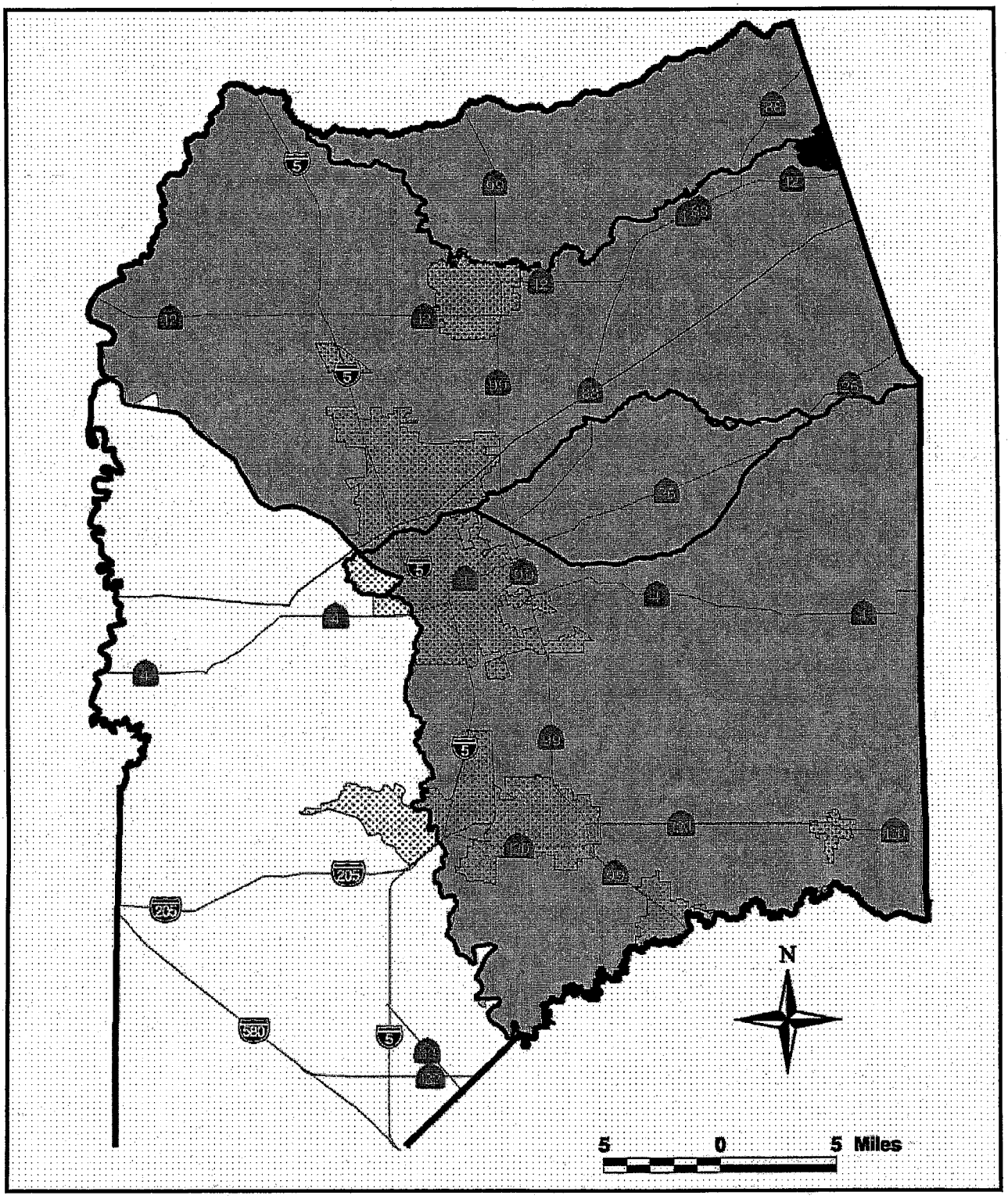

Figure ES-1 Groundwater Management Area
Source: California Spatial Information Library at http://www.gis.ca.gov/

Throughout the planning process, the Authority's Coordinating Committee, a technical sub-group of the Authority, convened every 4th Wednesday of the Month to formulate the Plan. Key discussion points and decisions were debated and finalized by the Coordinating Committee and incorporated into the Plan by Authority Staff. Draft sections of the Plan were also presented to and commented on by the Coordinating Committee. The Authority Board of Directors was regularly updated on the activities of the Plan at their regular meetings on the 2nd Wednesday of the month. For the purpose of providing an atmosphere conducive to broad-based consensus building and compromise, Authority Coordinating Committee meetings were facilitated through the California Center for Collaborative Policy.

Attendees of these meetings include representatives from over 40 agencies and interest groups. Table ES-3 is a list of meeting attendees and agencies contributing to the plan.

Table ES-3 Groundwater Management Planning Participants

Local Participants & Agencies	
Andy Christensen	Woodbridge Irrigation District
Cary Keaton	City of Lathrop
Dante Nomellini	Central Delta Water Agency
Dave Kamper	South San Joaquin Irrigation District
David Simpson	Natural Resource Conservation Service
Ed Formosa	City of Stockton Municipal Utilities Department
Ed Steffani	North San Joaquin Water Conservation District
Gary Giovanetti	Stockton City Council
Joe Petersen	San Joaquin Farm Bureau Federation
John Herrick	South Delta Water Agency
Keith Conarroe	City of Manteca
Kevin Kauffman	Stockton East Water District
Larry Diamond	Calaveras County Water District
Loralee McGaughey	Stockton East Water District
Mark Lindseth	City of Lodi
Mark Madison	City of Stockton Municipal Utilities Department
Mel Lytle	San Joaquin County Public Works
Melvin Panizza	Stockton East Water District
Michael McGrew	San Joaquin County Counsel
Paul Risso	California Water Service Company
Ray Borges	San Joaquin County Environmental Health
Reid Roberts	Central San Joaquin Water Conservation District
Richard Prima	City of Lodi
Steve Stroud	South San Joaquin Irrigation District
Teresa Tanaka	Linden County Water District
Tom Flinn	San Joaquin County Public Works
Tom Gau	San Joaquin County Public Works
State Participants & Agencies	
Ann Jordan	Office of State Senator Charles Poochigan
Mary Bava	Office of Assemblyperson Barbara Matthews
Tim Parker	Department of Water Resources
Federal Participants & Agencies	
David Simpson	Natural Resource Conservation Service

Eric Reichard	US Geologic Survey
John Izbicki	US Geologic Survey
Patrick Dwyer	US Army Corps of Engineers
	Other Participants & Agencies
Barbara Williams	Sierra Club
Carolyn Ratto	California Center for Collaborative Policy
David Beard	Great Valley Center
David Simpson	Natural Resource Conservation Service
Gerald Schwartz	East Bay Municipal Utility District
Gina Veronesc	Camp, Dresser, & McKee
James Cornellius	Calaveras County Water District
James Moore	Galt Economic Development Task Force
John Aud	Stanislaus County
Larry Diamond	Calaveras County Water District
Mark Williamson	Saracino-Kirby-Snow
Robert Vince	Camp, Dresser, & McKee
Ron Addington	Business Council, Inc.

The Authority will continue to seek the input of its neighbors and interest groups during the implementation of the Groundwater Management Plan and any future planning efforts.

ES-5 Consistency with Water Code Section 10750 *et. seq.*

Groundwater management is the planned and coordinated effort of sustaining or improving the health of the underlying basin in order to meet future water supply needs. With the passage of Assembly Bill (AB) 3030 in 1992, local water agencies were provided a systematic way of formulating groundwater management plans and granted the Authority to implement those plans through fees and assessments. AB 3030 also encourages coordination between local entities through joint power authorities or memorandums of understanding.

In 2002, the passage of SB 1938 further emphasized the need for groundwater management in California. SB 1938 requires AB 3030 groundwater management plans to contain specific plan components in order to receive state funding for water projects. Table ES-4 illustrates the recommended components of a groundwater management plan as outlined in AB 3030 and the required sections under SB 1938. Table ES-4 also indexes the sections of this Plan where the recommended or required AB 3030/SB 1938 components are addressed.

ES-6 Eastern San Joaquin County Hydrogeology

Current and historical groundwater pumping rates exceed the sustainable yield of the underlying groundwater Basin on an average annual basis. Historic groundwater level trends as seen by well hydrographs throughout the Basin illustrate the following trends:

1. In the central portion of the Basin, the groundwater table dropped continuously from the 1950s to the early 1980s. Inclines during the early 1980s are attributed to extreme wet years of heavy rainfall.

2. In the northern part of the Basin, groundwater levels declined into the early 1990s.

3. Beginning in the early 1980s, a distinct drawdown and recovery cycle appears be driven by climatic conditions more than long-term changes in groundwater use.

4. Groundwater levels in the early 1990s had declined to the point where a number of wells throughout the Basin could not be operated. The severity of the situation forced many pumpers to construct new deeper wells.

Table ES-4 Components of a Groundwater Management Plan

Plan Component	Recommended by AB 3030	Required by SB 1938	Plan Sections
Control of saline water intrusion	X		2, 3, 4, 5, 8
Management of wellhead protection and recharge areas	X		4
Regulation of contaminated groundwater	X		4
The administration of a well abandonment	X		4
Elimination of groundwater overdraft	X		2, 3, 4, 5, 8
Replenishment of groundwater	X		2, 3, 4, 8
Groundwater monitoring	X	X	5
Operation of a conjunctive water management system	X		3, 8
Well construction standards	X		4
Financing groundwater management projects	X		6, 7
The development of groundwater management partnerships	X		1, 4, 7, 8
Coordination of land use planning and groundwater management	X		4
Description of participation by interested parties		X	1, 7
Plan to involve agencies overlying the basin		X	1, 7
Basin Management Objectives		X	3
Basin management entity and area map		X	1

Sources: California Department of Water Resources Division of Planning and Local Assistance
http://wwwdpla.water.ca.gov/cgi-bin/supply/gw/management/hq/ab3030/main.pl

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Figures ES-2 and Figure ES-3 depict the Fall 1993 and Spring 1998 groundwater level contours respectively. The Fall 1993 contour represents the lowest groundwater level contours recorded in the Basin historic record. The Spring 1998 contour represents the recovery of the Basin following years of above average and severe precipitation.

The result of long-term groundwater overdraft is two fold: significant decline in groundwater levels and increased accretions from area waterways. Although increased accretions to the groundwater basin from high quality surface water sources are desirable, accretions in the western fringes of the Basin from the Lower San Joaquin River and older marine geologic formations are generally undesirable primarily due to elevated salt levels. Based on a simplified groundwater balance, as shown in Table ES-5, the net groundwater overdraft is estimated to be approximately 160,000 af/yr.

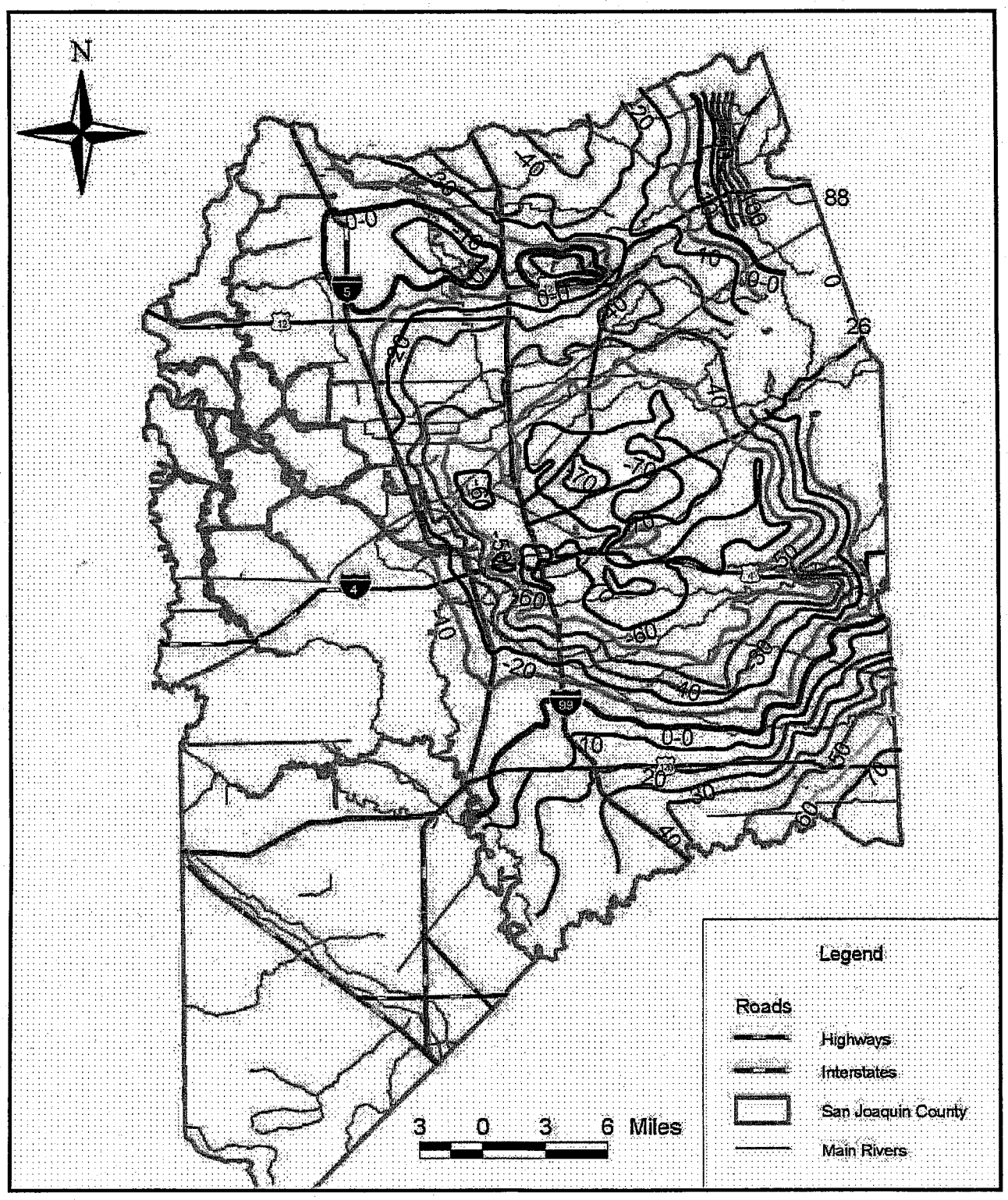


Figure ES-2 Fall 1993 Groundwater Contours
Source: Camp Dresser & McKee Inc.

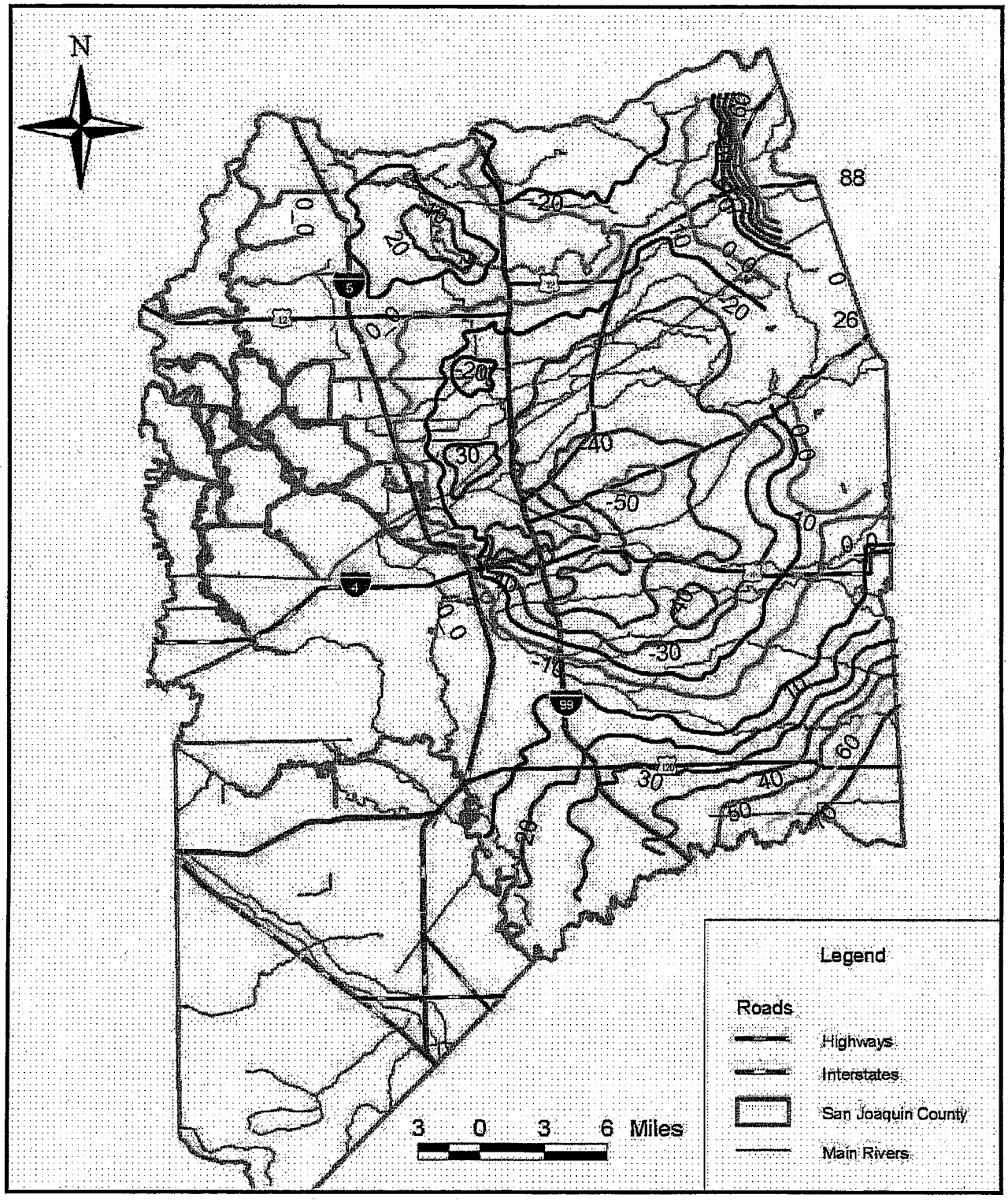


Figure ES-3 Spring 1998 Groundwater Contours
Source: Camp Dresser & McKee Inc.

Table ES-5 Simplified Groundwater Balance for Eastern San Joaquin County		
Groundwater Flow Component	**Average Value**	**Explanation**
Inflows (af)		
Deep Percolation/Recharge	608,400	Net infiltration from rainfall, irrigation, canal leakage etc.
Gain from Streams	198,170	Net inflow from streams to groundwater system
Lateral Inflow	98,000	Net of subsurface inflows and outflows.
Total Inflows	**904,577**	
Outflows (af)		
Groundwater Pumping	867,600	Net agricultural, municipal and industrial pumping
Loss to Streams	108,898	Net outflow from groundwater system to streams
Lateral Outflow	35,300	Subsurface Outflows
Total Outflows	**1,011,815**	
Groundwater Overdraft (af)		
Mined Aquifer Storage	107,238	Total Inflows minus Total Outflows
Estimated Saline Intrusion	42,000	Lateral Saline Intrusion into the Stockton Area
Total Estimated Overdraft	**150,700**	Sum of Mined Aquifer Storage and Saline Intrusion
Source: San Joaquin County Water Management Plan Volume I		

Groundwater flow in the Basin now converges on the depression with relatively steep groundwater gradients eastward from the Delta toward the cone of depression as depicted in Figures ES-2 and ES-3. The eastward flow from the Delta area is significant because of the typically poorer quality water now moving eastward in the Stockton area. Increased lateral inflow from the west is undesirable, as this water is typically higher in TDS and chloride levels and causes the degradation of water quality in the Basin. Figure ES-4 illustrates the approximate location of the 300 mg/L isochlor as measured in 2000. Projections indicate that the rate of eastward migration of the saline front is approximately 150 to 250 feet per year. Figure ES-4 also depicts the projected 2030 location of the 300 mg/L isochlor under no-action conditions.

Degradation of water quality due to TDS or chloride contamination threatens the long-term sustainability of a very important water resource for San Joaquin County, since water high in TDS and/or chloride is unusable for either urban drinking water needs or for irrigating crops. Damage to the aquifer system could for all practical purposes be irreversible due to saline water intrusion, withdrawal of groundwater from storage, and potentially subsidence and aquifer consolidation. The saline intrusion problem is not well understood by the Authority. Further studies and monitoring methods are necessary to ensure the problem is addressed and monitored adequately. The Plan further defines the groundwater science and monitoring investigations geared towards both saline intrusion and general Basin understanding.

A no-action or baseline simulation was conducted to predict how current groundwater and surface management practices would impact the groundwater basin in 2030. Groundwater modeling has shown that unless there is a change in how groundwater is used or managed,

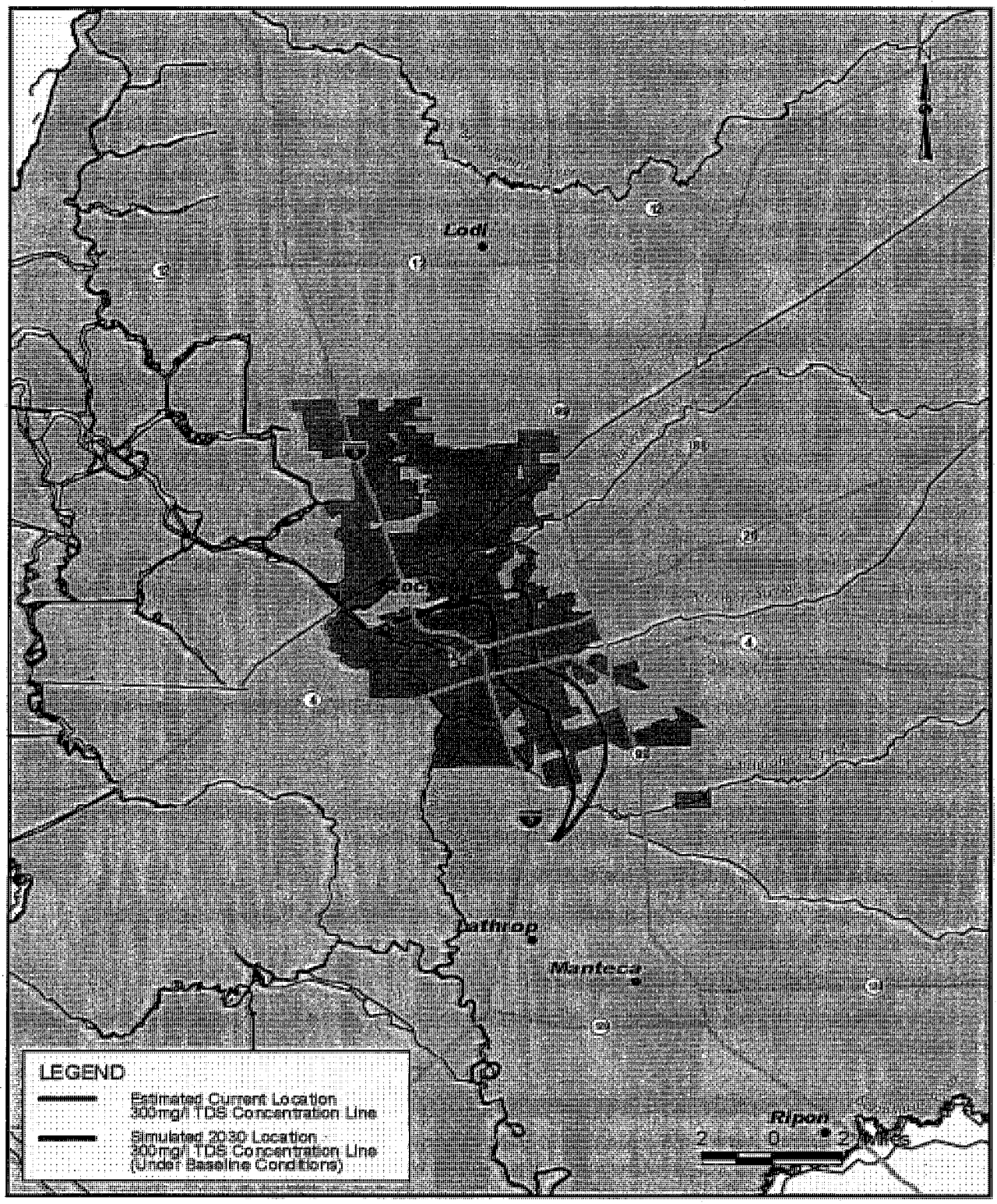


Figure ES-4 Estimated 2000 and 2030 Projected Saline Front
Source: Camp Dresser & McKee, Inc.

levels will continue to decline and storage will continue to be reduced. Figure ES-5 shows the corresponding simulated groundwater table for the year 2030 under baseline conditions. A large portion of the Basin is shown to have groundwater levels 60 to 80 feet below sea level.

Further exacerbating the groundwater conditions, as already mentioned, is the lateral inflow of higher salinity water from the west, which could render parts of the aquifer unusable. Figure ES-4 illustrates the approximate location of the 300 mg/l chloride concentration contour as of 1996 as well as the projected 2030 contour. Groundwater modeling has indicated that the rate of eastward movement of this line is approximately 150 to 250 feet per year. Figure ES-4 also shows the projected location of the 300 mg/L chloride concentration line by the year 2030 under baseline conditions.

ES-7 Basin Management Objectives

Senate Bill (SB) 1938, created in 2002, requires that agencies that elect to, "Prepare and implement a groundwater management plan that includes basin management objectives for the groundwater basin that is subject to the plan. The plan shall include components relating to the monitoring and management of groundwater levels within the groundwater basin, groundwater quality degradation, inelastic land surface subsidence, and changes in surface flow and surface water quality that directly affect groundwater levels or quality or are caused by groundwater pumping in the basin." In addition, local agencies that do not adopt or participate in a plan fulfilling the requirements of SB 1938 shall not be eligible for State funding intended for groundwater projects. The Authority has developed the following qualitative Basin Management Objectives (MO) for the GMA.

Management Objective #1: Groundwater Levels

Maintain or enhance groundwater elevations to meet the long-term needs of groundwater users within the Groundwater Management Area.

Management Objective #2: Water Quality

Maintain or enhance groundwater quality underlying the Basin to meet the long-term needs of groundwater users within the Groundwater Management Area.

Management Objective #3: Surface Water Quality

Minimize impacts to surface water quality and flow due to continued Basin overdraft and planned conjunctive use.

Management Objective #4: Water Quality

Prevent inelastic land subsidence in Eastern San Joaquin County due to continued groundwater overdraft.

ES-8 Groundwater Management Options

Groundwater management tools available to the Authority are explored in the Plan. In order to successfully implement a conjunctive use program that will meet the goals of this Plan, the Authority must first identify and develop a list of water management options. An option, in the context of this Plan, is the method, program or policy suitable for the broader conjunctive use program for Eastern San Joaquin County. The Plan explores the concepts for the acquisition of new and maximization of existing surface water supplies, groundwater recharge techniques, and other options dealing with demand management and water reuse. Table ES-6 lists the groundwater management options explored in the Plan.

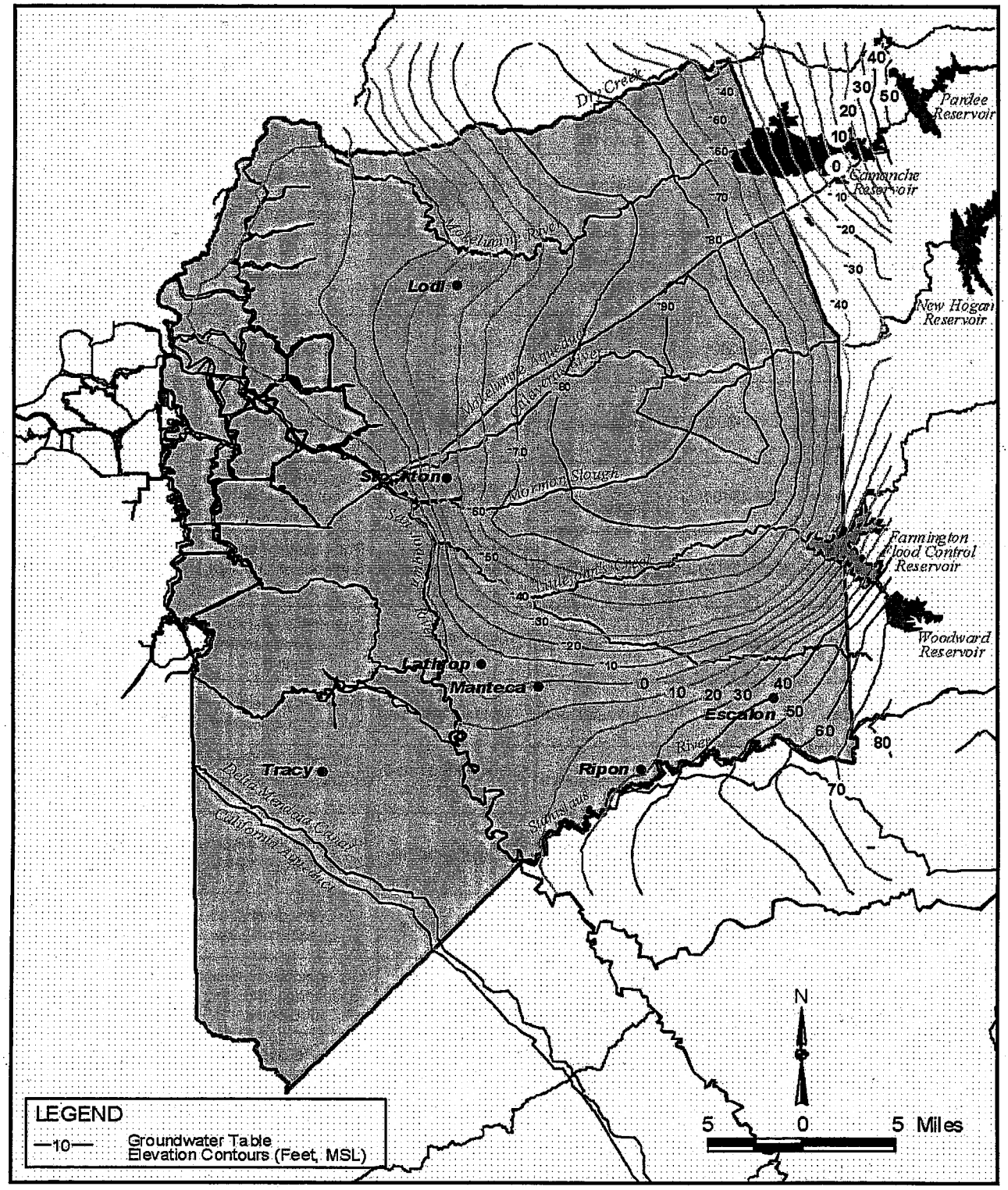


Figure ES-5 Simulated Groundwater Levels Under Baseline Conditions
Source: Camp Dresser & McKee Inc.

Table ES-6 Groundwater Option Comparisons

Option Type	Recharge Method	Improvement Costs ($/af)	Infrastructure Requirements	Land Requirements	Effectiveness	Operation/ Maintenance
Surface Supply Options	Wet Year Flows	~$500	On or off-stream regulating reservoir	Extreme for new reservoir	Very effective based on reservoir size and frequency	Very high requirements
	Water Transfers - Out of Basin	$200-400	Conveyance and storage	Potentially land intensive	Effective based on quantity of water and agreement duration	Varies with infrastructure requirements and year to year availability
	Area of Origin Priority	$0-$350	Use of existing or new infrastructure	Potentially land intensive	Very effective	Varies with infrastructure requirements
	Reservoir Re-operation	~$100	Use of existing infrastructure and storage	Minimal	Less effective	Minimal based on existing facilities
	Water Transfers - In Basin	~$100-$200	Minor conveyance	Minimal	Less effective	Varies with infrastructure requirements and year to year availability
Groundwater Recharge Options	Field Flooding	$50 - $100	Uses Existing Infrastructure	Uses seasonally fallow areas	Somewhat effective only available seasonally	Significant effort
	Spreading Basin/ Recharge Pond	$100 - $150	New Infrastructure	Requires relatively large dedicated areas	Potentially effective, requires detailed field testing	Significant effort
	Recharge Pit	$400 - $450	New Infrastructure	Requires dedicated areas	Potentially effective, requires detailed field testing	Significant effort
	Leaky Canal	Varies	New Infrastructure	Land intensive	Potentially effective, conveyance benefits	Significant effort
	Injection Wells	$150 - $200	New Infrastructure	Requires dedicated areas	Potentially effective, requires extensive well field	Significant effort
	Agricultural In-lieu	$200 - $250	New / Or Existing Infrastructure	Existing Land Use	Very effective based on quantity of water	Additional effort required by owner and district
	Urban In-lieu	~$250-$400	New / Or Existing Infrastructure	Existing Land Use	Very effective based on quantity of water	Requires treatment plant O&M costs
	Regional Groundwater Banking	$200-$300	New / Or Existing Infrastructure	Potentially land intensive	Very effective, financial assistance through third party	Significant effort
Other Options	Water Reclamation	$300-$500	Retrofit of existing facilities	Minimal	Less effective due to treatment costs and public perception	Requires treatment plant O&M costs
	Agricultural Water Conservation	$200-$250	New Infrastructure	Minimal	Potentially effective	Significant effort
	Urban Water Conservation	$200-$250	New Infrastructure	Minimal	Potentially effective	Minimal
	Crop Rotation/Land Fallowing	~$50	None	Potentially land intensive	Potentially effective if mitigated	Minimal

Source: San Joaquin County Water Management Plan Volume I
Farmington Groundwater Recharge and Seasonal Habitat Study

ES-9 Groundwater Contamination

Groundwater contamination and the continued degradation of groundwater quality is a global threat to all groundwater users. The Authority recognizes that the long-term sustainability of the underlying Basin cannot be accomplished without adequate groundwater quality protection, contamination prevention, and remediation programs. The Authority has discussed the issue of managing groundwater protection and contamination programs in Eastern San Joaquin County. A major concern of the Authority is that undertaking regulatory oversight will only duplicate the existing efforts of other regulatory agencies while financially burdening the community beyond its abilities. Increased coordination with regulatory agencies and a concerted effort to ensure its activities do not degrade water quality is potentially less resource intensive for the Authority and a more efficient method of protecting groundwater quality throughout the Basin. The Authority will continue to lead the pursuit against saline groundwater intrusion.

The following policies reflect the Authority's desire to address groundwater contamination and groundwater quality degradation:

1. Coordinate with local, State, and Federal agencies to ensure the underlying Basin is adequately protected against groundwater contamination and to ensure all contaminated sites are documented and mitigated by the responsible parties.

2. Continue to manage efforts to combat saline groundwater intrusion.

3. Strive to improve groundwater quality when technically and economically feasible. Authority actions degrading groundwater quality are not acceptable.

4. Require recharge projects to identify and evaluate impacts to groundwater quality and the potential for mobilization of soil and source water contaminants.

5. Consider current and future water quality standards in the planning and design of projects identified in this Plan.

ES-10 Groundwater Monitoring and Science Program

Since 1971, the San Joaquin County Flood Control and Water Conservation District (County) initiated the collection and management of groundwater data and the production of semi-annual groundwater reports. Currently, the County is undertaking the development of a Web-based interactive tool in order to make groundwater data collected over the years available to the public over the internet. The tool has been coined the San Joaquin County Groundwater Data Center (GDC). The GDC would become the repository for groundwater data and would facilitate groundwater analysis essential to the groundwater management objectives of San Joaquin County. The GDC is not only a technical tool, but also a public outreach tool as well. Through the internet, water users including County and agency staff, industry professionals, decision makers, and the general public will have access to groundwater data and historic semi-annual reports.

The overall goals and objectives of the GDC are:

1. Create and maintain a working groundwater database for San Joaquin County.
2. Develop the tools necessary to analyze groundwater data.
3. Make groundwater information available to decision makers, agency staff, and the general public through the internet.

4. Create an efficient and enforceable QA/QC plan.
5. Utilize the proven and supported technologies in groundwater monitoring, database management, and Geographic Information Systems (GIS).

The Authority and its member agencies are co-participants with the United States Geological Survey (USGS) and California Department of Water Resources (DWR) for the Groundwater Recharge and Distribution of High-Chloride Groundwater from Wells Study (Study). The purpose of the study is to quantify the source, aerial extent, and vertical distribution of high-chloride groundwater and the sources, distribution, and rates of recharge to aquifers along selected flow paths in Eastern San Joaquin County. The information gained from the Study will answer many questions with respect to future water levels, water quality, and storage potential under current and future management of the Basin. The total cost of the study is $2,579,350. The proposed USGS contribution will be $625,000 over 5 fiscal years as well as an additional $625,000 from the DWR over the first 3 fiscal years. Member agencies within the Authority will contribute the remaining $1,322,350 over next 5 fiscal years.

In order to ensure that groundwater data is collected in a systematic and consistent manner, the Authority has adopted the Groundwater Monitoring Program Quality Assurance/Quality Control (QA/QC) Plan, prepared by MWH in 1998. The QA/QC Plan addresses the following items: monitoring and sampling preparations, sample collection procedures, chain-of-custody procedures, sample transport, laboratory procedures and methods, and data validation and reporting. The QA/QC Plan can be obtained at the San Joaquin County Department of Public Works Stormwater Management Division. A revised QA/QC plan proposed as part of the GDC is expected to be completed by the Spring of 2005 ad subsequently adopted by the Authority Board.

ES-11 Financing Options

The development of new water supplies and the necessary infrastructure is a major financial undertaking. It is absolutely necessary for the Authority and its member agencies to leverage as much support for outside funding. The Plan provides a general overview of the potential funding sources, programs, and project partnerships available to the Authority from federal, State, and local sources.

ES-12 Plan Governance

Water interests in San Joaquin County have historically been fragmented, but have realized that projects developed in a collaborative process have the potential to exhibit greater and more far reaching benefits to all involved parties while increasing its implementability and fundability. Implementation of the water management options can best be achieved by continuing to work in a collaborative fashion to develop a broad base of political and financial support. The Authority has explored numerous options concerning the appropriate organization and powers needed to implement the plan and the best management framework that addresses the concerns of the Authority member agencies. Although no changes have been formally proposed to the powers and governance structure, the Authority could consider revisions in the future.

The Authority has served as a regional planning body and a forum for member agencies to share their groundwater management efforts and ensure that those efforts do not detrimentally affect other member agencies. In order to avoid potential conflicts between Basin stakeholders, the Authority employs the following policies:

- **Expanded Membership:** The membership in the Authority is diverse as are the challenges facing water Eastern San Joaquin County. In 2001, the Central Delta Water Agency and the South Delta Water Agency became full contributing and voting member agencies to the Authority. Associate membership (ex-officio) was also extended to the California Water Service and the San Joaquin Farm Bureau Federation as their input and support is essential to the success of the Authority. Other members have been contemplated such as SSJID, OID, City of Lathrop, Manteca, Escalon, and Ripon, Calaveras County Water District, Stanislaus County, DWR, Freeport Regional Water Authority, and EBMUD.

- **Continued Use of the Authority as a Forum:** As the Authority looks to implement the Plan, the member agencies will move the outlined projects through the planning, permitting, and design stages and ultimately to construction. In a forum, implementing member agencies will be able to quantify the benefits of its projects to stakeholders and receive comments and suggestions before disputes arise.

- **Continued Facilitation by the California Center for Collaborative Policy:** The California Center for Collaborative Policy (Center) has been an integral part to the success of the Authority's consensus based process. The Center's presence has maintained an atmosphere conducive to openness, compromise, and agreement. It is expected that the Center will continue to facilitate Authority meetings and throughout the implementation of the Plan.

ES-13 Integrated Conjunctive Use Program

The Integrated Regional Conjunctive Use Program is the key element in fulfilling the purpose of the Plan to ensure the sustainability of Groundwater resources in Eastern San Joaquin County. The Program is an inventory of viable options available to stakeholders in Eastern San Joaquin County as described by major supply elements, major surface storage and conveyance elements, and groundwater recharge components. Supply elements are grouped by river system and are a combination of reallocations, new water, and transfers. Entitlements to water are supported by legal claims based on existing water right permits, water service contracts and agreements, and pending water right applications. Major surface storage and conveyance elements are considered existing or proposed regional infrastructure intended for the capture and delivery of substantial amounts of water when available. Groundwater recharge components include groundwater recharge infrastructure improvements programs, drinking water treatment facilities, and incentive based agency conjunctive use programs. Table ES-7 describes each of the Integrated Conjunctive Use Program components.

Table ES-7 Integrated Conjunctive Use Program Elements

Supply Source	Water Rights and Contracts	Storage/Conveyance	GW Recharge
American River	• 350 cfs diversion at Freeport from Dec. 1 to June 30 • Currently limited to 155 cfs by EBMUD's pipeline • (Average Annual Yield = 44,000 af)	• Proposed Duck Creek Reservoir • SJC Freeport Interconnect • Alliance Canal • Freeport Regional Water Project	• Farmington Program • GW Recharge and Conjunctive Use • ASR Wells • Third Party Banking and Conjunctive Use Partnerships
Mokelumne River	• 1000 cfs diversion to storage Dec. 1. to June 30 • 620 cfs direct diversion • (Average Annual Yield = 60,000 - 100,000 af) • 39,000 to 60,000 af to WID • 20,000 af to NSJWCD subject to others • (Average Annual Yield = 11,000 af)	• MORE WATER Project Tunnel and Pipeline • MORE WATER Project Lower River Diversions • Woodbridge Dam Replacement and Existing Canal System • Existing South System and North System Rehabilitation • NSJWCD - Bear Creek, Pixely Slough, Paddy Creek, Gill Creek • Alliance Canal	• Proposed Duck Creek • Lodi Recharge or use of 6,000 af transfer • Farmington Program • In-lieu and direct recharge by Districts • Third Party Banking and Conjunctive Use Partnerships • ASR Wells
Calaveras River	• 100,000 af 56.5% to SEWD and 43.5% to CCWD • By agreement, SEWD is allowed to utilize CCWD unused supply • 13,000 ac-ft riparian demand	• Peters Pipeline • Mormon Slough • Alliance Canal • South Gulch Reservoir	• Farmington Program • Treatment Plan Expansion - Urban In-lieu • In-lieu and direct recharge • SJAFCA and Other Storm Water Detention Ponds • Third Party Banking and Conjunctive Use Partnerships
Stanislaus River	• 155,000 af contract to SEWD/CSJWCD • 75,000 af interim to SEWD • 49,000 af firm and <31,000 ac-ft interim to CSJWCD • 320,000 af (In San Joaquin County) • 34,000 af (South County Project In-basin delivery) • 30,000 af transfer to SEWD	• Peters Pipeline • CSJWCD - Lone Tree, Duck Creek, Temple Creek, Littlejohns Creek • Alliance Canal • South County Water Supply Project	• Farmington Program • Treatment Plant Expansion • Lathrop, Manteca, and Escalon In-lieu • In-lieu and direct recharge • SJAFCA and Other Storm Water Detention Ponds • Third Party Banking and Conjunctive Use Partnerships
Littlejohns Creek and Rock Creek	• 250,000 af Dec. 1 to April 30 • 60,000 af direct diversion • 190,000 af to storage • (Average Annual Yield = 15,000 af)	• Farmington Canal • CSJWCD - Lone Tree, Duck Creek, Temple Creek, Littlejohns Creek • Alliance Canal • Farmington Canal to South Gulch • Lyons Dam Project	• Farmington Program • CSJWCD Surface Water Incentive Program • In-lieu and direct recharge by Districts • Third Party Banking and Conjunctive Use Partnerships • SJAFCA and SJCOG Storm Water Detention Ponds
Delta	• City of Stockton Delta Water Supply Project • Initially 20,000 af increasing to 125,900 af in 2050 • (Average Annual Yield = 60,000 af)	• Pipeline and Treatment Facility	• Stockton In-lieu and ASR Wells • Third Party Banking and Conjunctive Use Partnerships • Farmington Program

The opportunity for groundwater banking partnerships in Eastern San Joaquin County is considered a viable alternative that creates new water. Groundwater banking is supported regionally and Statewide as an alternative means to new highly-contentious on-stream reservoirs and costly desalinization plants. The underlying Basin has the potential to store over 1 million acre-feet in close proximity to the Delta. The opportunities possible are a logical match for regional and Statewide interests to look to the Authority for groundwater banking opportunities. It is paramount to the Authority that banking rates, extraction rates, and quantities remain under local control.

The San Joaquin Groundwater Export Ordinance (Export Ordinance) is purposefully and notoriously stringent in order to protect local groundwater users from groundwater exports. San Joaquin County Board of Supervisors has continually stated that they are willing to amend the Export Ordinance should a project be proposed that can demonstrate local benefits with minimal risk to losing local control of the Basin.

Banking partnerships could provide the Authority with capital to fund portions of Integrated Conjunctive Use Program envisioned above. Conceptually, the Authority could employ various arrangements for the ranging from water storage agreements, surface water transfers/groundwater substitution, and a 'two for one' storage/extraction concept. Potential partners that have shown interest are EBMUD, Metropolitan Water District of Southern California, DWR, CALFED Environmental Water Account, and the City of Tracy. Entities have purchased raw water from other groundwater banks throughout the State at rates upwards of $420/af.

ES-14 Plan Implementation

The Authority is committed to adopting a Plan implementation strategy that is adaptive and incentive driven. This Plan is the first step in the development of a regional document that details how the groundwater basin will be managed and initiates the process that will ultimately define the guidelines and conditions that water districts and others will follow to achieve basin management objectives. Following the adoption of this Plan, the Authority and its members will work to implement the management objectives. The objectives coupled with regular groundwater monitoring and the development of basin operations criteria will establish a framework and the foundational information for future groundwater banking and recharge project operations in the Basin.

To encourage the continued implementation of the Plan, the Authority will complete a periodic assessment of the progress, direction and recommendations regarding Plan objectives. Basin conditions are currently measured by groundwater level and quality monitoring on a semi-annual basis. This assessment activity will be coupled with the annual review of Plan implementation activities and project development in the basin.

To ensure that the Authority is constantly striving to better manage groundwater resources, the following actions will be undertaken:

1. An annual report by March 1st of each year that outlines the accomplishments of the previous year's groundwater management efforts and report the current state of the Basin,

2. A review of the political, institutional, social, or economic factors affecting groundwater management, and

3. Based on the information gained in the above actions, recommendations for any required amendments to the Plan.

ES-15 Future Activities

The adoption of the Plan is merely the beginning of a series of actions the Authority will undertake to help meet future basin demands. As such, many of the identified actions will likely evolve as the Authority takes a more active approach to manage the Basin and meet the outlined objectives. Many additional actions will also be identified in the annual summary report described above. The Plan is therefore intended to be an iterative document, and it will be important to evaluate all of the actions and objectives over time to determine how well they are meeting the overall goal of the plan. The Authority plans to evaluate this entire plan within five years of adoption.

1 Introduction

1.1 Background

San Joaquin County is home to approximately 600,000 people and sustains a $1.34 billion agricultural economy. The population is expected to increase to approximately 1.1 million by 2030. Water demand in the county is approximately 1,600,000 acre feet per year, 60 percent of which is quenched by groundwater. The California Department of Water Resources (DWR) has declared the Eastern San Joaquin Groundwater Basin (Basin) "critically overdrafted," indicating that the current rate of groundwater pumping exceeds the rate of recharge and is not sustainable. (DWR, 1980) Based on the San Joaquin County Water Management Plan, the Basin is overdrafted by 150,000 af/yr on average. Long-term groundwater overdraft has lowered the groundwater table by 2 ft/yr in some areas to -70 ft (MSL) and has induced the intrusion of highly saline groundwater into the Basin from the west. Without mitigation, such intrusion will degrade portions of the Basin, rendering the groundwater unusable for municipal supply and irrigation.

Failure to address water supply and management needs in Eastern San Joaquin County will ultimately result in severe economic disruptions to the County. Agriculture in San Joaquin County, valued at $1.34 Billion, is already stressed due to declining market prices, rising regulatory, labor, and energy costs, and can ill afford threats to its water supply – a fundamental component of its continued existence. Municipal and industrial users simply must have reliable, high-quality supplies to exist. Loss of supplies to saline intrusion, potential loss of basin yield due to subsidence or simply lack of reliability will translate into business flight, job loss, loss of revenue for public services and general economic decline. Individual agencies in Eastern San Joaquin County have long grappled with declining groundwater levels and unreliable supplemental water supplies.

Conversely, long term overdraft has created opportunities for groundwater banking to the benefit of regional and statewide interest. Overuse of groundwater has depleted a substantial portion of stored groundwater in the Basin and has made available volume for potential regulatory storage. It is estimated that at least 1.2 million af, a volume equivalent to Folsom Lake, could be used to store wet year water for use in subsequent dry years. However, to do so would require the monumental task of overcoming the institutional, political, financial, and physical challenges of groundwater banking.

Independently, agencies in Eastern San Joaquin County have found it difficult to wield the political and financial power necessary to mitigate the conditions of overdraft. County interests have come to realize that a regional consensus based approach to water resources planning and conjunctive water management increases the chance for success. Regional planning efforts such as the San Joaquin County Water Management Plan (adopted by the County Board of Supervisors in October 2002) and the Mokelumne Aquifer Storage, Recovery Study (MARS Study), and the South County Surface Water Supply Project have proven successful ventures.

Since its formation in 2001, the Northeastern San Joaquin County Groundwater Banking Authority (Authority) has employed the consensus based approach in its goal to develop "...locally supported groundwater banking projects that improve water supply reliability in Northeastern San Joaquin County...and provide benefits to project participants and San Joaquin County as a whole." Collaboration amongst the Authority member agencies has strengthened the potential for broad public support for groundwater management activities as well as the ability to leverage local, State, and federal funds. Table 1-1 lists the member agencies of the Authority.

Table 1-1 Member Agencies of the Northeastern San Joaquin County Groundwater Banking Authority
City of Stockton
City of Lodi
Woodbridge Irrigation District
North San Joaquin Water Conservation District
Central San Joaquin Water Conservation District
Stockton East Water District
Central Delta Water Agency
South Delta Water Agency
San Joaquin County Flood Control and Water Conservation District
California Water Service Company*
San Joaquin Farm Bureau Federation*
* Associate Members

1.2 Purpose and Objectives

Over the past several years, the Authority has provided a consensus-based forum of local public water interests to work cooperatively with one voice to study, investigate, and plan locally supported groundwater banking and conjunctive use projects in the Eastern San Joaquin County. The Authority Board convenes monthly while the Authority Coordinating Committee meets twice a month on planning activities with cooperative assistance provided by the California State Department of Water Resources and the Center for Collaborative Policy.

San Joaquin County has made substantial progress related to water resource planning and continues to build on the momentum gained by local achievements in such endeavors through the Authority. In a report published by the Center for Collaborative Policy entitled, "Stakeholder Assessment for San Joaquin County – Conditions, Issues, and Options for Collaborative Solutions", the report suggested a core group of issues fundamental to continuing a comprehensive approach to solving the water resource needs within the County. The report concluded that the keys to successful planning efforts include:

- Development of a common understanding of the operations of water sub-basins within the County and the necessity of conjunctive use to the health of these basins and the County's economy in the future
- Use of consensus decision-making
- Grouping of members who are consistent in attendance, clear in communication, and conscientious in relaying information and views between their constituency and the group

One of the major activities the Authority has dedicated itself to this past year is the Groundwater Management Plan (Plan). The purpose of the Plan is to review, enhance, assess, and coordinate existing groundwater management policies and programs in Eastern San Joaquin County and to develop new policies and programs to ensure the long-term sustainability of groundwater resources in Eastern San Joaquin County. To better define the supporting values included with this Plan's purpose, the Authority has listed the following mission values centered on the development of the Plan as outlined in Table 1-2.

Table 1-2 Groundwater Management Plan Mission Values for Success		
Be implemented in an equitable manner	Maintain or enhance the local economy	Protect groundwater and surface water quality
Be affordable	Minimize adverse impacts to entities within the County	Provide more reliable water supplies
Exhibit multiple benefits to local land owners and other participating agencies	Maintain overlying landowner and Local Agency control of the Groundwater Basin	Restore and maintain groundwater resources
Minimize adverse impacts to the environment	Protect the rights of overlying land owners	Increase amount of water put to beneficial use within San Joaquin County

In order to meet the purpose of the Plan and ensure the long-term sustainability of the Basin, the Authority created the following Plan objectives:

1. Maintain long-term sustainability of the Basin through the development of management objectives, practices and conjunctive use projects to benefit the social, economic and environmental viability of Eastern San Joaquin County.
2. Prevent further saline intrusion and degradation of groundwater quality throughout the Basin.
3. Increase understanding of Basin dynamics through the development of a sound research program to monitor, evaluate, and predict Basin conditions.
4. Maintain local control of the groundwater Basin through the responsible management of groundwater resources by overlying cities, counties, water districts, agencies, and landowners.
5. Formulate rational and attainable Basin management objectives to comply with SB 1938 and retain State funding eligibility.
6. Formulate voluntary policies, practices, and incentive programs to meet established Basin management objectives.
7. Formulate appropriate financing strategies for the implementation of the Plan.

1.3 Groundwater Management Area

San Joaquin County overlies the Eastern San Joaquin, Cosumnes, and Tracy Sub-basins of the greater San Joaquin Valley Groundwater Basin. The Eastern San Joaquin Sub-basin is bounded by the Mokelumne River to the north, the Stanislaus River to the south, the San Joaquin River to the west, and bedrock to the east. The Cosumnes Sub-Basin is defined by the Cosumnes River to the northwest, the Mokelumne River to the South, and bedrock to the east. Figure 1-1 depicts the groundwater sub-basins of San Joaquin County as described in DWR Draft Bulletin 118 Update 2003. For the purposes of the Plan, the Eastern San Joaquin County Groundwater Management Area (GMA), depicted in Figure 1-2, is defined as the portion of San Joaquin County overlying the Eastern San Joaquin and Cosumnes Sub-Basins.. Within the GMA, the member agencies of the Authority will implement the Plan within their respective boundaries. To ensure that every parcel in the GMA is represented, all unorganized areas will be included in the San Joaquin County Flood Control and Water Conservation District. Figure 1-3 depicts the member Agencies of the Authority and their respective boundaries within the GMA.

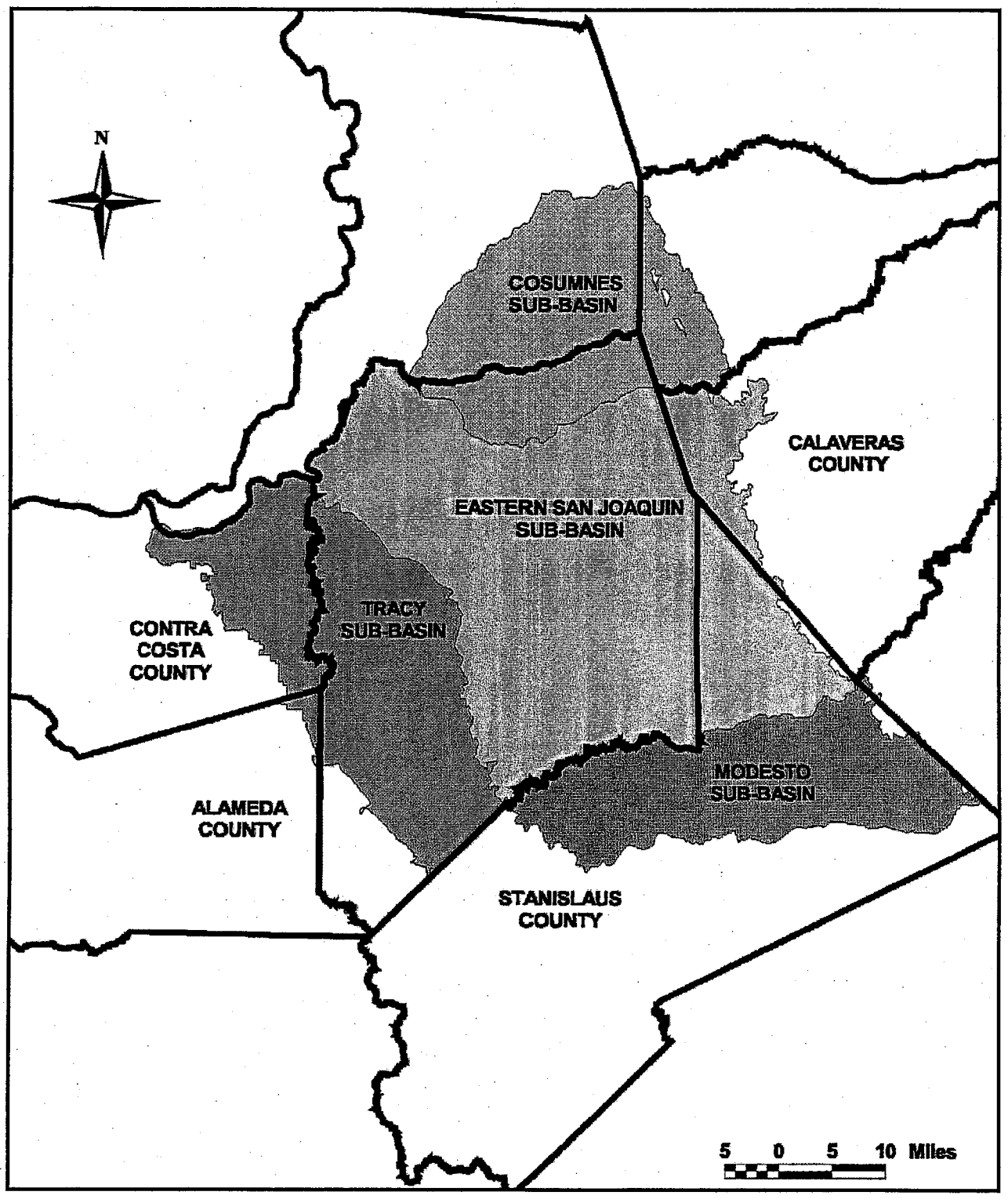


Figure 1-1 Groundwater Sub-Basins of San Joaquin County
Source: California Spatial Information Library at http://www.gis.ca.gov/

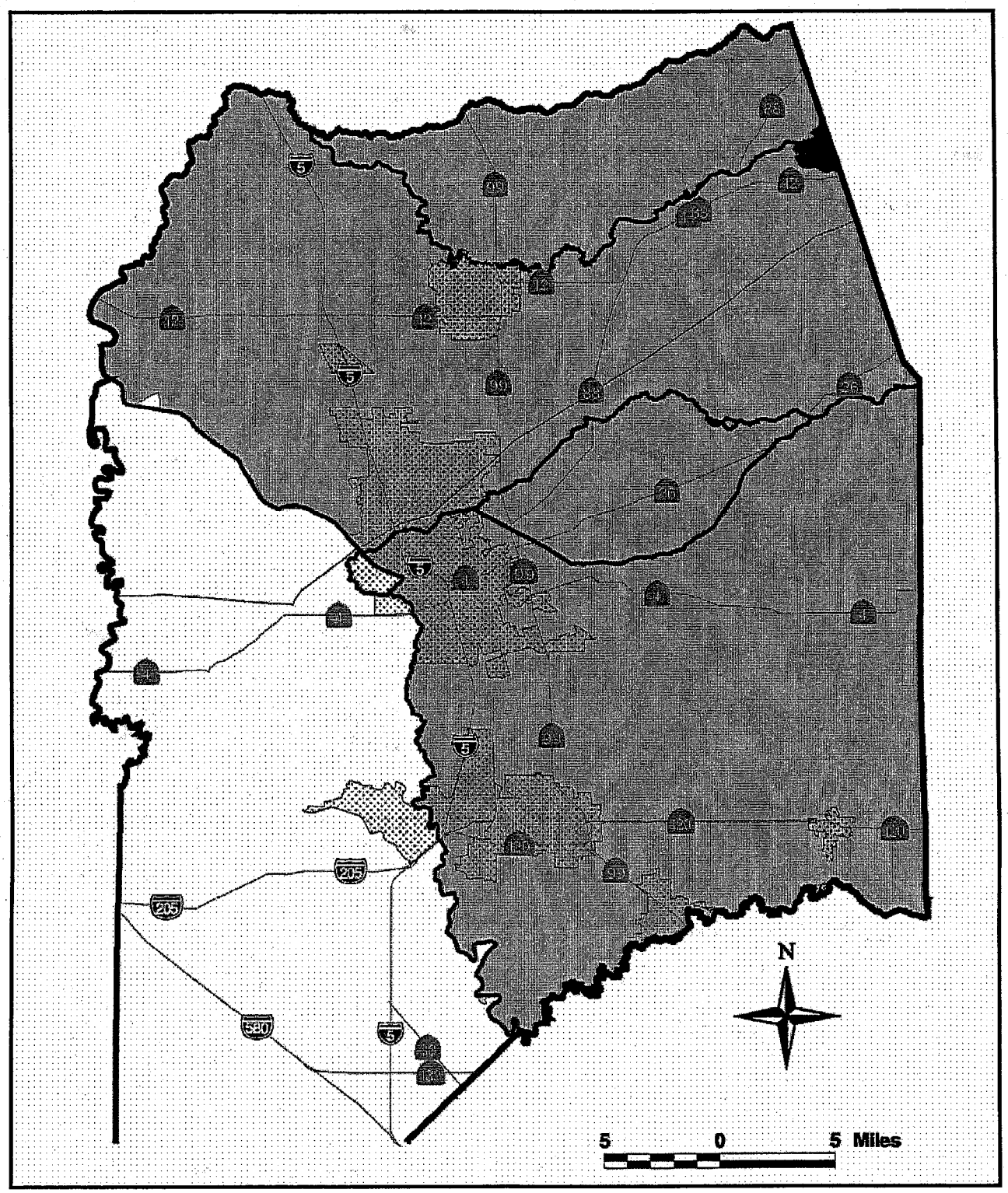


Figure 1-2 Groundwater Management Area
Source: California Spatial Information Library at http://www.gis.ca.gov/

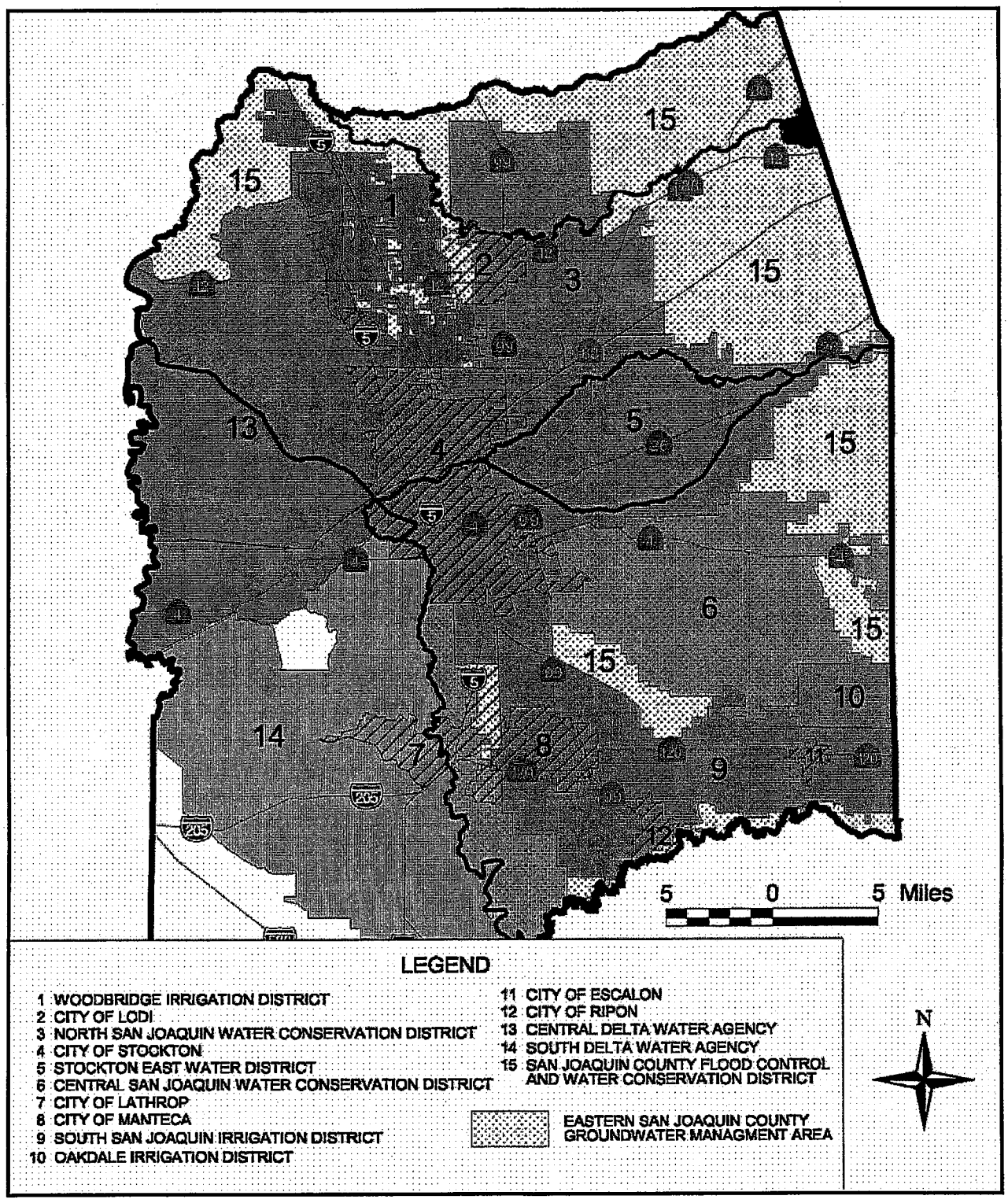


Figure 1-3 Overlying Agencies within the Groundwater Management Area
Source: California Spatial Information Library at http://www.gis.ca.gov/

1.4 Agency Participation

The physical boundaries of the Eastern San Joaquin and Cosumnes Sub-Basins extend beyond the political boundaries of San Joaquin County. Portions of Calaveras County and Stanislaus County overlie the Eastern San Joaquin Sub-basin. Recognizing the need for increased coordination between agencies outside of the GMA, in May 2003, the Authority invited a variety of interest groups from the business, environmental, agricultural, and political communities to participate in the development of the Plan. The Authority values the consensus based approach to groundwater management and strives to coordinate, integrate, and mutually benefit from the groundwater management efforts of its member agencies and those with vested interest in the social, economic, and environmental viability of Eastern San Joaquin County.

Throughout the planning process, the Authority's Coordinating Committee, a technical sub-group of the Authority, convened every 4th Wednesday of the Month to formulate the Plan. Key discussion points and decisions were debated and finalized by the Coordinating Committee and incorporated into the Plan by Authority Staff. Draft sections of the Plan were also presented to and commented on by the Coordinating Committee. The Authority Board of Directors was regularly updated on the activities of the Plan at their regular meetings on the 2nd Wednesday of the month. For the purpose of providing an atmosphere conducive to broad-based consensus building and compromise, Authority Coordinating Committee meetings were facilitated through the California Center for Collaborative Policy.

Attendees of these meetings include representatives from over 40 agencies and interest groups. Table 1-3 is a list of meeting attendees and agencies contributing to the Plan.

Table 1-3 Groundwater Management Planning Participants

Participant	Agency
Andy Christensen	Woodbridge Irrigation District
Cary Keaton	City of Lathrop
Dante Nomellini	Central Delta Water Agency
Dave Kamper	South San Joaquin Irrigation District
David Simpson	Natural Resource Conservation Service
Ed Formosa	City of Stockton Municipal Utilities Department
Ed Steffani	North San Joaquin Water Conservation District
Gary Giovanetti	Stockton City Council
Joe Petersen	San Joaquin Farm Bureau Federation
John Herrick	South Delta Water Agency
Keith Conarroe	City of Manteca
Kevin Kauffman	Stockton East Water District
Larry Diamond	Calaveras County Water District
Loralee McGaughey	Stockton East Water District
Mark Lindseth	City of Lodi
Mark Madison	City of Stockton Municipal Utilities Department
Mel Lytle	San Joaquin County Public Works
Melvin Panizza	Stockton East Water District
Michael McGrew	San Joaquin County Counsel
Paul Risso	California Water Service Company
Ray Borges	San Joaquin County Environmental Health
Reid Roberts	Central San Joaquin Water Conservation District
Richard Prima	City of Lodi

Steve Stroud	South San Joaquin Irrigation District
Teresa Tanaka	Linden County Water District
Tom Flinn	San Joaquin County Public Works
Tom Gau	San Joaquin County Public Works
State Participants & Agencies	
Ann Jordan	Office of State Senator Charles Poochigan
Mary Bava	Office of Assemblyperson Barbara Matthews
Tim Parker	Department of Water Resources
Federal Participants & Agencies	
David Simpson	Natural Resource Conservation Service
Eric Reichard	US Geologic Survey
John Izbicki	US Geologic Survey
Patrick Dwyer	US Army Corps of Engineers
Other Participants & Agencies	
Barbara Williams	Sierra Club
Carolyn Ratto	California Center for Collaborative Policy
David Beard	Great Valley Center
David Simpson	Natural Resource Conservation Service
Gerald Schwartz	East Bay Municipal Utility District
Gina Veronesc	Camp, Dresser, & McKee
James Cornellius	Calaveras County Water District
James Moore	Galt Economic Development Task Force
John Aud	Stanislaus County
Larry Diamond	Calaveras County Water District
Mark Williamson	Saracino-Kirby-Snow
Robert Vince	Camp, Dresser, & McKee
Ron Addington	Business Council, Inc.

The Authority will continue to seek the input of its neighbors and interest groups during the implementation of the Groundwater Management Plan and any future planning efforts.

1.5 Consistency with Water Code Section 10750 *et. seq.*

Groundwater management is the planned and coordinated effort to sustain or improve the health of a groundwater basin in order to meet the future water supply needs of groundwater users. With the passage of Assembly Bill (AB) 3030 in 1992, local water agencies were provided a systematic way of formulating groundwater management plans and a means to implement those plans through fees and assessments. AB 3030 also encourages coordination between local entities through joint power authorities or memorandums of understanding.

In 2002, the passage of SB 1938 further emphasized the need for groundwater management in California. SB 1938 requires AB 3030 groundwater management plans to contain specific plan components in order to receive state funding for water projects. Table 1-4 illustrates the recommended components of a groundwater management plan as outlined in AB 3030 and the required sections under SB 1938.

On July 9, 2003, the Authority Board of Directors held a public hearing to initiate the formulation of this Plan. The hearing was formally noticed per Water Code Section 10750 et. seq. and a Resolution of Intent to Prepare a Groundwater Management Plan was adopted by the Authority

Board of Directors. Table 1-4 also indexes the sections of this Plan where the recommended or required AB 3030/SB 1938 components are addressed.

Table 1-4 Components of a Groundwater Management Plan

Plan Component	Recommended by AB 3030	Required by SB 1938	Plan Sections
Control of saline water intrusion	X		2, 3, 4, 5, 8
Management of wellhead protection and recharge areas	X		4
Regulation of contaminated groundwater	X		4
The administration of a well abandonment	X		4
Elimination of groundwater overdraft	X		2, 3, 4, 5, 8
Replenishment of groundwater	X		2, 3, 4, 8
Groundwater monitoring	X	X	5
Operation of a conjunctive water management system	X		3, 8
Well construction standards	X		4
Financing groundwater management projects	X		6, 7
The development of groundwater management partnerships	X		1, 4, 7, 8
Coordination of land use planning and groundwater management	X		4
Description of participation by interested parties		X	1, 7
Plan to involve agencies overlying the basin		X	1, 7
Basin Management Objectives		X	3
Basin management entity and area map		X	1

Sources: California Department of Water Resources Division of Planning and Local Assistance
http://wwwdpla.water.ca.gov/cgi-bin/supply/gw/management/hg/ab3030/main.pl

California Department of Water Resources Draft 2003 Update Bulletin 118

1.6 Current Groundwater Management Efforts

To ensure that groundwater management efforts are not duplicated or conflicting, the Authority has reviewed existing groundwater and urban water management plans of member agencies, which are attached in the Technical Appendix.

1.6.1 Overview of Existing Groundwater Management Plans

Woodbridge Irrigation District – The Woodbridge Irrigation District (WID), organized in 1924 under the California Irrigation District Act, holds extensive water rights to Mokelumne River Water dating back to the mid-1880s. The boundaries of WID encompass a gross area of approximately 42,900 acres., however, WID is discontinuous resulting in patches of non-district lands within the its boundary. WID overlaps with the North San Joaquin Water Conservation District (NSJWCD), Stockton East Water District (SEWD), and the City of Lodi.

In 1996, WID adopted an AB 3030 Groundwater Management Plan for the purpose of ensuring that groundwater levels would continue to supplement surface water supplies in order to meet the demands of the District. WID's goal for conjunctive use is to maximize the use of surface water for the protection of the underground water supply. WID was also a member agency of the East San Joaquin Parties Joint Powers Authority, a predecessor to the Authority.

WID owns and operates the aging Woodbridge Diversion Dam located on the Lower Mokelumne River northeast of Lodi and an extensive canal system serving approximately 13,000 acres. Due to the deterioration and age of the Woodbridge Diversion Dam, WID has worked very hard to obtain the necessary approvals for its replacement. Through WID's

conservation efforts to convert to drip irrigation, WID has made available up to 6,000 af/yr to the City of Lodi at a cost of $200/af. WID intends to use the proceeds of the water purchase agreement to finance the current construction activities to replace the Woodbridge Diversion Dam in order to continue to fully utilize its right to Mokelumne River water and meet the goals of their AB 3030 Plan. Also at the regional level, WID has participated as a member agency of the East San Joaquin Parties Water Authority (ESJPWA) and the Authority.

North San Joaquin Water Conservation District – The North San Joaquin Water Conservation District (NSJWCD), organized in 1948 under provisions of the Water Conservation District Act of 1931, includes approximately 53,100 acres east of the City of Lodi. Approximately 4,740 acres are within the Lodi city limits and 5,600 acres are within Lodi's sphere of influence. NSJWCD straddles the Mokelumne River and is consequently located in both the Cosumnes and the Eastern San Joaquin sub-basins as defined by the DWR Draft Bulletin 118.

In 1996 NSJWCD adopted an AB 3030 Plan to address declining groundwater levels, degradation of groundwater quality, and securing reliable surface water supplies. Actions in their AB 3030 Plan include the continued effort to seek a reliable supplemental water supply from the Mokelumne River and other sources, promotion of more efficient water application methods, participation in regional groundwater management efforts, and the maximum use of surface water supplies through the development of groundwater recharge facilities.

On July 3, 1956, Decision 858 of the California State Engineer predecessor to the State Water Resources Control Board (D-858) denied NSJWCD a water right permit to divert up to 50,000 af/yr and instead approved East Bay Municipal Utility District's (EBMUD) request to appropriate an amount greater than the request of NSJWCD. A temporary permit was issued to NSJWCD for interim water based on EBMUD's unused entitlements and future demands, but could only be diverted from December 1 to July 1. Through an agreement between both parties, EBMUD stores up to 20,000 acre-feet in the wettest years for delivery to NSJWCD during the irrigation season. The permit expired in 2002.

In order to renew the permit, NSJWCD must show the SWRCB that it can put the water to beneficial use. NSJWCD has received a $462,500 CALFED grant and has participated in the Farmington Groundwater Recharge and Seasonal Habitat Study to demonstrate their ability to utilize its full appropriation. Property owners within NSJWCD have also approved an assessment to levy up to $5/acre to further the recharge effort. NSJWCD continues to seek resolution to D-858 through requests to the SWRCB to consider a reallocation of 50,000af/yr of Mokelumne River Water from EBMUD to the District.

At the regional level, NSJWCD has participated as a member agency of the ESJPWA, the Eastern Water Alliance, and the Authority.

Stockton East Water District – The Stockton East Water District (SEWD), as currently structured, was formed in 1948 under the 1931 Water Conservation Act of the State of California. The SEWD was originally organized as the Stockton and East San Joaquin Water Conservation District, an independent political subdivision responsible for acquiring a supplemental water supply and assisting in the development of practices of water use that would promote the required balance between surface water and groundwater.

From 1948 to 1963, SEWD's efforts were in planning, evaluating groundwater conditions and determining requirements for supplemental water. As a result of the SEWD planning and with

intensive efforts of part of the SEWD and local agencies, New Hogan Dam was constructed in 1964. The SEWD's first supply of supplemental surface water was contracted with the USBR in 1964 and a final agreement in 1970 guaranteeing 56.5% of New Hogan Reservoir's yield to the District.

Prior to 1963, the SEWD's basic financial structure rested upon a tax on land. In 1963, the Governor of California signed a bill that established groundwater use fees and surface water charges that could be levied by the SEWD. The additional revenues were used by the SEWD to contract for New Hogan water. The SEWD began registering wells within their boundaries. Check dams were built on the Calaveras River, Mormon and Mosher Sloughs for control of surface irrigation water and to promote groundwater recharge. SEWD became actively involved in the pursuit of projects to mitigate declining groundwater levels and to prevent the further intrusion of saline groundwater.

In 1971, SEWD boundaries were expanded to include the entire Stockton urban area. SEWD began plans for a 30 MGD treatment plant to serve the urban area. In 1975, a $25 million bond issue was passed by the SEWD wide election to fund the water treatment plant. The plant was completed in 1977 and went on line in 1978 to reduce the groundwater pumping depression under the urban area and the affects of saline intrusion on urban wells near the Delta. In 1979 the Independent Benefit Commission concluded that the treatment plant was a benefit to the planning areas. SEWD began to assess 14,000 af of additional agricultural acres. The total area within SEWD is approximately 116,300 acres, of which 47,600 acres (approximately 41%) are within the City of Stockton. WID and SEWD share approximately 9,700 acres in North Stockton.

SEWD has actively sought supplemental surface water from the American River via the Folsom South Canal and from the New Melones Reservoir. Efforts to obtain the American River supply have been thwarted by the Environmental Defense Fund (EDF), EBMUD litigation and the Freeport Regional Diversion Project litigation. The District and Central San Joaquin Water Conservation District (CSJWCD) contracted with the USBR in 1983 for 75,000 and 80,000 af of water respectively from New Melones Reservoir. In 1983, the District expanded surface water irrigation with the construction of the 12,000 gpm Potter Creek Pump Facility.

The Water Treatment Plant capacity was increased in 1991 to accommodate increased demand from the Stockton Urban areas. Construction on the New Melones Conveyance System was completed in 1994. Under the Central Valley Project Improvement Act (CVPIA), the USBR provided no water to SEWD in 1993 and 1994. In 1995 SEWD began receiving New Melones water, but less than the contracted amount because of the Miller-Bradely bill requirements regarding water quality issues on the San Joaquin River and fish flows. Legal action is ongoing.

Under current USBR operation of New Melones, SEWD and CSJWCD are provided up to 90,000 af water from New Melones annually. Water allocation is based on March-September water forecast plus February end-of-month storage in New Melones.

In 1995, SEWD adopted an AB3030 Groundwater Management Plan. The goal of their Plan is to continue past efforts to seek supplemental surface water supplies for conjunctive use, to protect existing supplies, and to further pressure the USBR to meet the contracted delivery amounts for New Melones water.

In 1997, the District entered into a water transfer agreement with Oakdale Irrigation District (OID) and South San Joaquin Irrigation District (SSJID). This agreement is for 8,000 to 30,000

af allocation based on New Melones storage and inflow as of April 1 of each year. The contract period ends 2009 with a possible 10-year renewal pending further studies.

SEWD completed the Farmington Groundwater Recharge and Seasonal Habitat Study (Farmington Study) in conjunction with the United States Army Corps of Engineers and other local agencies in 2001. The Farmington Study identified areas suitable for recharge and seasonal habitat development, evaluated recharge techniques, conducted pilot recharge tests, developed a final report and recharge guide, and developed an implementation strategy for the phased Farmington Program.

In 2003, SEWD completed the Pilot Phase of the Farmington Program, which consists of 60 acres of recharge ponds and fields adjacent to the SEWD Water Treatment Plant. The Demonstration Phase beginning in 2003 will investigate and construct up to 1,200 acres of recharge ponds and fields.

In 2003, SEWD applied for a Proposition 13 Groundwater Recharge Storage Construction Grant for the Peters Pipeline portion of the Farmington Program. The proposed project consists of a six-mile long 60-inch diameter pipeline, which will distribute irrigation and recharge water as well as water to the SEWD Water Treatment Plant.

At the regional level, SEWD has participated as a member agency of the Eastern Water Alliance and the Authority.

Central San Joaquin Water Conservation District – The CSJWCD was formed in 1959 under provisions of the California Water Conservation Act of 1931. The CSJWCD includes approximately 65,100 acres, of which 670 acres are within the sphere of influence for the City of Stockton.

CSJWCD has not adopted formally an AB 3030 Plan, however, in 1997, to mitigate declining groundwater levels, the District participated in the Goodwin Tunnel Project for the use of New Melones water subject to the contract with the USBR. The contract amount calls for 49,000 af/yr of firm yield and up to an additional 31,000 af/yr on an interim basis to the District. Under the existing New Melones Reservoir operations plan, the contracted amount has never been fully delivered. Irrigation facilities have been installed and operated by individual landowners through a surface water incentive program sponsored by the District.

At the regional level, CSJWCD has participated as a member agency of the Eastern Water Alliance and the Authority.

South San Joaquin Irrigation District – Formed in 1909 under the Irrigation District Act, SSJID comprises about 72,000 acres in the southeastern portion of San Joaquin County, all of which is located within the Basin. The cities of Manteca, Ripon and Escalon comprise approximately 10,000 acres of the District area. SSJID is allocated half of 600,000 af/yr from the Stanislaus River with the other half going to Oakdale Irrigation District. SSJID owns and operates an extensive system of conveyance structures and canals.

Adopted in 1993, the Plan outlines the efforts of the district to maintain groundwater levels and continue to utilize its surface water entitlements. As part of the plan, SSJID began regularly monitoring their irrigation wells for water quality. Before the Plan, only the municipal wells used for drinking water supply were tested because of Health Department requirements. SSJID also

uses agricultural sites during the off-season for recharge and plans to implement recharge and wellhead protection areas to safeguard groundwater quality.

The estimated safe yield of the Basin within the entire District is 72,000 af/yr. Municipal usage, particularly within the City of is about 2½ times the safe yield. Based on data from 32 wells in the District, the groundwater levels have decreased between 20 to 30 feet in the last 40 years. To address the water supply needs of the urban areas of the District and the Region, SSJID will begin in 2005 the delivery of up to 44,000 af/yr of treated surface water from Woodward Reservoir to the Cities of Escalon, Manteca, Lathrop, and Tracy. The net benefit to the Basin is expected to be approximately 30,000 af/yr. SSJID and OID also provide water to the City of Stockton through a 10-year transfer agreement for up to 30,000 af/yr of New Melones Water.

Oakdale Irrigation District – Formed in 1909 under the Irrigation District Act, OID comprises about 72,345 acres mostly in the northern portion of Stanislaus County with about 12% overlying the Eastern San Joaquin Sub-basin. With the adoption of a Plan in 1995, OID has taken a proactive approach to preventing groundwater contamination from abandoned wells by educating property owners and improving enforcement policies. OID has also developed guidelines for a wellhead protection program. Flood irrigation practices in OID have helped to recharge the Basin. As stated above, SSJID and OID provide water to the City of Stockton through a 10-year transfer agreement for up to 30,000 af/yr of New Melones Water.

1.6.2 Overview of Existing Urban Water Management Plans

City of Lodi – The City of Lodi is located northeast of Stockton, along Highway 99. According to the 2001 City of Lodi Urban Water Management Plan, 24 wells provide a population of 57,935 with water from the Basin. In 1999, City of Lodi wells produced 16,587 af with a projected 2020 demand of 22,727 af assuming a 1.5 percent constant growth rate. Since 1977, the City of Lodi has enforced stringent water conservation programs and is considering implementing other economically feasible Best Management Practices (BMPs). BMPs considered include Large Landscape Conservation Programs and Incentives, Commercial, Industrial and Institutional Conservation Programs, Residential Ultra Low Flush Toilet Rebate Programs, and Water Metering.

The City of Lodi's future water use projections indicate that groundwater in the area should be sufficient to meet the City's needs over the next 20 years. However, they have recognized that groundwater levels are declining, and have participated in the East San Joaquin Parties Water Authority to discuss and be a party to solutions. In 2003, the City of Lodi approved a 40-year agreement with WID for the purchase of 6,000 af/yr of Mokelumne River Water. The City is currently considering various methods to utilize the water either through direct recharge, injection, or treatment to potable standards.

Stockton East Water District – The mission of SEWD was established by the legislature when the District was created and to insure proper management of the Basin and provide supplemental water supplies. In accordance with its mission, SEWD wholesales drinking water to the City of Stockton, Cal Water, and San Joaquin County. By contract, the District delivers a minimum of 20,000 af/yr. From 1992 to 2002, the District delivered 439,048 af of treated water or about 40,000 af/yr to these urban contractors. As a wholesaler, SEWD has no authority over mandatory prohibitions on water use for the Stockton Urban Area.

City of Stockton – The City of Stockton has a population of approximately 243,700 and has three water suppliers to serve the area: City of Stockton Municipal Utility District (Stockton MUD) (38,300 connections); California Water Service Company (42,250 connections within the

city, 10,950 outside of city limits); and County of San Joaquin (2,387 unmetered connections through County Maintenance Districts). The Stockton MUD service area generally encompasses north of the Calaveras River, however, the City also serves areas in South Stockton.

The Stockton MUD has 22 wells in North Stockton and seven wells in South Stockton providing groundwater to its customers. SEWD also provides surface water to the three suppliers. Approximately 45% of the Stockton MUD's water deliveries come from groundwater, and 55% is treated surface water from SEWD. Saline intrusion in the Stockton area is a continual concern even with surface water deliveries from SEWD to offset some pumping.

Adopted in 2000, the City of Stockton Urban Water Management Plan outlines numerous demand management measures (DMM) to promote conservation including an extensive water conservation education program. The Stockton Area Water Suppliers (SAWS) which includes SEWD, Stockton MUD, San Joaquin County, and Calwater, coordinates monthly to oversee implementation of the conservation education program. SAWS has sponsored the award winning Sally-Save-Water campaign since 1990. The Sally-Save-Water campaign actively promotes water conservation through school visits, television advertisements, educational videos, posters and handouts. The campaign has also been recognized for its achievements by receiving a San Joaquin County Council of Governments Regional Excellence Awards. SAWS is also active in the promotion of the statewide declaration of May as Water Awareness Month.

Projected growth of the City of Stockton is expected to increase from its 2000 demand of 68,000 af/yr to the 2015 General Plan build out demand of 85,330 af/yr and ultimately to 177,900af/yr in 2050. In order to address the increase in demand, the City of Stockton is currently working to perfect a water right application for a Delta water supply. Citing Water Code Section 1485 and the watershed of origin priority, the City seeks to secure up to 125,900 af/yr from the Delta to the urban area. The Delta Water Supply Project is a major component in the efforts of the Authority to restore the health of the Basin.

California Water Service Company (Associate Member of the Authority) – The California Water Service Company (Calwater) serves approximately 42,250 connections within the City of Stockton primarily south of the Calaveras River as well as 10,950 beyond the City limits. Calwater is contracted to receive 50% to 55% of SEWD treated water deliveries and supplements the supply with 34 active wells.

In 2001, an Urban Water Management Plan was adopted for the Stockton District Calwater service area. Calwater actively participates in the conservation activities of the SAWS and has implemented an ultra low flush toilet rebate program and a plumbing retrofit program. Calwater participated in the activities of the East San Joaquin Parties Water Authority and have been contributing Associate Member of the Authority. Calwater is limited in its financial participation to the Authority because it is an investor owned public utility and is stringently regulated by the California Public Utilities Commission.

City of Manteca – The City of Manteca straddles State Route 99 south of Stockton. According to the 2002 City of Manteca Urban Water Management Plan, 16 wells provide groundwater to a population of approximately 50,000 with more wells planned for construction. Manteca is currently entirely dependant on groundwater to for its municipal and industrial needs. Since 1998, the City has implemented the following BMPs: Large Landscape Conservation Programs and Incentives, Commercial, Industrial, and Institutional Conservation Programs, Residential Water Audits, Water Metering, Residential Plumbing Retrofit, Public Information and Education

Programs, Conservation Coordinator, Conservation Pricing, and Water Waste Prohibition. Up to 3.65 MGD of reclaimed waste water is applied to fodder crops on City owned and leased lands.

The City of Manteca is expected to grow to over 130,000 by 2025. Recognizing the need for a reliable water supply to meet the demands of growth, the City of Manteca will participate with SSJID in the South County Surface Water Supply Project. At build out in 2025, the City will receive up to 18,500 af/yr of high quality water from the Project.

City of Ripon – The city of Ripon is located at the southern edge of the county along State Route 99. The population in 2002 was approximately 11,500 and is expected to grow to 29,900 by 2020. All of the city's potable water is provided by groundwater wells supplying 4,565 af in 2002, and this is estimated to increase to 12,310 af in 2020 in the 2003 City of Ripon Urban Water Management Plan. In 2002, 1,400 af of non-potable water was supplied by city groundwater wells, and 500 af of non-potable water was supplied with SSJID contracted surface water. In 2020, the city's non-potable wells are expected to supply the same amount of water, and the SSJID's contract is expected to increase to 5,080 af. The plan also anticipates 960 af of non-potable groundwater supplied by Nestle in 2020.

The City of Ripon Urban Water Management Plan contains 14 demand management measures (DMM) to promote conservation. A few of these are interior and exterior water audits for single family and multi-family customers, large landscape conservation programs and incentives, school education, and water waste prohibition.

City of Lathrop – Information not received prior to release of Plan.

City of Escalon – Information not received prior to release of Plan.

1.6.3 Overview of Groundwater Management by San Joaquin County

East San Joaquin Parties Water Authority – In 1995, County water interests facilitated the ESJPWA to conceive and implement a joint conjunctive use and groundwater banking project with EBMUD. Several alternatives were developed and explored with the goal of implementing the Mokelumne Aquifer Recharge and Storage Project (MARS). In wet years, supplemental surface water obtained would be used by County interest in-lieu of groundwater or be actively recharged using various methods. In dry years, EBMUD would be allowed to extract and export from the Basin a portion of the recoverable supply for use in the EBMUD service area.

In order to technically support the concept of aquifer storage and recovery, the ESJPWA undertook the Beckman Injection/Extraction Study (Beckman Study). The Beckman Study involved the injection of water from EBMUD's Mokelumne River entitlement via the Mokelumne Aqueduct and subsequent monitoring. The Beckman Study provided insight into the Groundwater Basin's ability to accept injected water. The Beckman Study concluded that the migration of injected water is attributed to many factors including seasonal hydrogeology, regional pumping patterns, and prevailing groundwater gradients. In 2002, the Authority continued the work of the ESJPWA and completed the Beckman Test Final Report. The Report concluded water injected at the site remained in the general vicinity. Further studies are needed to evaluate long-term storage and the overall recoverability of injected water from the underlying aquifer. Further analysis has concluded that the test area is suitable for recharge and that the recoverability of injected water is high.

Northeastern San Joaquin County Groundwater Banking Authority – Organized in 2001, the Authority has provided a consensus-based forum to local, State, and federal water interests to work cooperatively with one voice to study, investigate, plan, and develop locally supported groundwater banking and conjunctive use projects in Northeastern San Joaquin County.

The System Plan, completed in 2002, outlined specific groundwater recharge options into a conjunctive water management system with the capability of recharging up to 300,000 af/yr. Projects in the System Plan included the Freeport Interconnect Project, the Farmington Groundwater Recharge and Seasonal Habitat Project, the City of Stockton Delta Diversion Project and direct groundwater recharge through well injection and seasonal field flooding. Potentially new water supplies may come from surplus flows on the American River, Mokelumne River, Calaveras River, Littlejohns Creek, Stanislaus River, and the Delta.

Also in 2002, the Authority continued the work of the ESJPWA and completed the Beckman Test Final Report. The Report concluded water injected at the site remained in the general vicinity and that the test area exhibited a high degree of injected water recoverability. Further studies are needed to evaluate long-term storage and the overall recoverability of injected water from the underlying aquifer.

For over 30 years, the EBMUD and Sacramento County Water interests have fought over the future of the American River. In 2000, the parties agreed to a joint project whereby Sacramento interests and EBMUD would receive American River water on the Sacramento River near the town of Freeport. The project, coined the Freeport Regional Water Project, is expected to deliver water to the Mokelumne Aqueducts in Northeast San Joaquin County by 2008. The EBMUD is only allowed to receive American River water in the driest 35 percent of all years. In the remaining years, San Joaquin County could divert a significant amount of water through the Freeport Project. The Authority is currently in discussions with EBMUD on the development of the San Joaquin County Freeport Interconnect, a proposed interconnecting pipeline project, which would take advantage of this opportunity. Thus far, the Authority has commissioned a water availability analysis to determine the feasibility of amending a County water right application on the American River to coincide with the Freeport Project.

County Groundwater Export Ordinance – In 2000, the Board of Supervisors adopted the Groundwater Export Ordinance to prevent the deliberate export of groundwater for use outside of the County and condition the extraction of banked groundwater by out-of-County partners without a permit. The Export Ordinance requires stringent monitoring and extraction protocols deemed necessary to protect adjacent landowners and underlying basin from adverse impacts. Ordinance Authority does not extend into the incorporated city limits of the County's municipalities. The Board of Supervisors has in the past indicated that a more workable form of the Groundwater Export Ordinance is possible should stakeholders propose changes in the context of a workable project.

San Joaquin County Water Management Plan – Adopted in 2002, the San Joaquin County Flood Control and Water Conservation District facilitated the development of the San Joaquin County Water Management Plan. Over the course of almost two-years, stakeholders representing over 30 water interests, have met to synthesize a plan that addresses overdraft conditions in the Basin, prevent further degradation of groundwater quality due to saline water intrusion, increases water supply reliability, meets the projected year 2030 County water demand, identifies viable water supply and recharge options, identifies the institutional structure to implement the options. Since the Water Management Plan's adoption, the County has

continued to promote the goals of the Plan through the support of other agencies, the facilitation of the Advisory Water Commission and the Authority.

San Joaquin County Groundwater Monitoring Program – Since 1971, the San Joaquin County Flood Control and Water Conservation District has monitored groundwater levels and groundwater quality on a semi-annual basis. Over 300 wells are sampled by the District, and data from an additional 200 wells are incorporated into the groundwater level database. Groundwater levels are published in both the spring and fall reports. Groundwater quality data is collected once a year in the fall months for publication in the Fall Groundwater Report.

In 2000, the County completed an evaluation of the existing groundwater monitoring program in order to identify its adequacy. The evaluation concluded that the groundwater monitoring program is relatively adequate for groundwater levels, but does not collect enough saline water intrusion data. The recommendation was to increase the groundwater quality monitoring effort and perform an extensive hydrogeologic investigation of the Groundwater Basin in the region of the saline front. In 2002, the County worked with the DWR to drill two multiple depth well clusters in the City of Stockton along the projected saline front. Additionally, a joint study with the US Geologic Survey, the DWR, and member agencies of the Authority could further the efforts to better understand saline groundwater intrusion and the overall hydrogeology of the Basin.

Mokelumne River Water Right Applications – In 1990, the Mokelumne River Water and Power Authority (MRWPA) filed with the State Water Resources Control Board (SWRCB) Water Right applications for unappropriated wet year flows on the Mokelumne River and obtained a Federal Energy Regulatory Commission (FERC) Preliminary Permit to further study the associated power generation potential. The application sought to capture water behind a new on-stream dam located at Middle Bar upstream of Pardee Reservoir or at a site off-stream at the proposed Duck Creek Reservoir. The Application also included the ability for County interest to divert wet year flows off of the Lower Mokelumne River from Camanche Dam to Interstate 5.

In 2003, the MRWPA retained the services of HDR Engineering, Inc. to move forward the Mokelumne River Regional Water Storage and Conjunctive Use Project (MORE WATER Project) and prepare the necessary environmental documentation to perfect the water right applications and obtain all necessary permissions. The MORE WATER Project could potentially bring 60,000 – 100,000 af/yr to the Basin.

American River Water Right Applications – In 1990, the County also filed an application for unappropriated flows on the American River. The Application seeks to divert and store water between December 1 and June 30 from Nimbus Dam via the Folsom South Canal on the Lower American River and from the South Fork of the American River via a series of proposed pipelines and reservoirs. The County has amended its application in order to divert American River water from the Sacramento River at Freeport as well. The size of the Freeport diversion limits the amount of potential water delivered San Joaquin County under the amended application. The potential annual average yield to the County using the Freeport Project capacity is estimated at 44,000 af/yr.

1.6.4 Overview of Groundwater Management Outside the GMA

Calaveras County Water District – Calaveras County Water District's (CCWD) boundaries coincide with the boundaries of Calaveras County. Approximately 70 square miles of the Camanche and Valley Springs areas in Calaveras County overly the Eastern San Joaquin Groundwater Sub-basin. In 2001, CCWD adopted an AB 3030 Groundwater Management Plan

specifically for the Camanche Valley Springs area. The goals and objectives of the Plan are to develop a better understanding of the Basin dynamic and the establishment of a groundwater management program that will ensure the sustainability of the Basin. CCWD coordinates closely with numerous local, State, and Federal agencies as well as SEWD and EBMUD.

East Bay Municipal Utility District – EBMUD provides water and wastewater services to over 1.2 million customers east of the San Francisco Bay Area in Alameda and Contra Costa Counties. EBMUD owns and operates two major reservoirs on the Mokelumne River: Pardee and Camanche Reservoirs. Pardee Reservoir, built in 1929, is the primary source of drinking water for EBMUD. Camanche Reservoir, completed in 1969, is a multipurpose reservoir serving a variety of interests on the Lower Mokelumne River including WID's water rights, in-stream flow requirements, and recreation.

In times of severe drought, Pardee and Camanche cannot meet the needs of all of its down stream requirements and its customers. For a number of years, EBMUD and ESJPWA studied the possibility of a large scale conjunctive use project in Eastern San Joaquin County beneficial to both parties. A combined project has not yet been negotiated. EBMUD has also fought for over thirty years to uphold a Federal Central Valley Project contract for water from the American River at Nimbus. Opposition to the diversion by Sacramento County interests prompted both sides to develop a mutually beneficial project to divert American River water from the Sacramento River near the town of Freeport. In 2002, the Freeport Regional Water Authority was formed to move the Project forward. EBMUD is allowed to take no more than 133,000 af in one year and no more than 165,000 af in any three year period. EBMUD is expected to divert from Freeport in one-third of all years (http://www.ebmud.com/, 2003).

Despite the Freeport Project, EBMUD must address the 20,000 af shortage in a severe drought even while imposing a 25 percent water use reduction through rationing. Several conjunctive use projects involving aquifer storage and recovery (ASR) are currently being evaluated at several sites throughout the East Bay and the Mokelumne River watershed. San Joaquin County is a potential partner for a conjunctive use project.

2 Hydrogeology

2.1 Regional Geology and Stratigraphy

San Joaquin County is situated within the Central Valley, a 400-mile long, 50 mile wide northwestward trending, asymmetrical structural trough. The Sierra Nevada Ranges, east of the Central Valley, is comprised of pre-Tertiary igneous and metamorphic rocks. The Coastal Ranges, to the west, is comprised of pre-Tertiary and Tertiary semi-consolidated to consolidated marine sedimentary rocks. The geologic formations within San Joaquin County vary in origination in geologic times ranging from Recent to Pre-Cretaceous. Six to 10 miles of sediment have been deposited within the Central Valley and include both marine and continental gravels, sands, silts and clays.

During the middle Cretaceous (~100 million years ago), parts of the Central Valley were inundated by the Pacific Ocean resulting in deposition of marine deposits. Marine conditions persisted through the middle Tertiary period after which time sedimentation changed from marine to continental. The material source for the continental deposits are the Coastal Ranges and Sierra Nevada which are composed primarily of granite, related plutonic rocks, and metasedimentary and metavolcanic rocks from Late Jurassic to Ordovician age (Bertoldi, et al, 1991). The Central Valley has one natural surface water outlet, the Carquinez Strait located east of San Francisco Bay (USGS).

Geologic formations within the Central Valley and San Joaquin County are generally grouped as either east-side or west-side formations based on their location relative to the San Joaquin River, and the source of the sedimentary material of which they are composed. Generally, Eastside formation material originates in the Sierra Nevada and Westside formation material originates in the Coastal Ranges. Table 2-1 shows a generalized stratigraphic column for San Joaquin County. The most important fresh water-bearing formations in Eastern San Joaquin County are the Mehrten, Laguna, Victor, and alluvial deposits. The formations are described below.

Mehrten

The Mehrten Formation is considered the oldest significant fresh water-bearing formation within Eastern San Joaquin County. It is exposed in the eastern most portion of the county, and slopes steeply from 90 to 180 feet per mile reaching a depth of 800 to 1,000 feet and a thickness of 400 to 600 feet in the Stockton sands, and gravels, the formation is often subdivided into upper and lower units. The upper unit is reported to contain finer grained deposits (black sands interbedded with brown-to-blue clay) and the lower unit consists of dense tuff breccia. Consequently, groundwater is reported to be semi-confined in the Stockton area. The Mehrten Formation has moderate to high permeability where black sands occur (DWR, 1967, Brown & Caldwell, 1985).

Laguna

The Laguna Formation outcrops in the northeastern part of the County and dips at 90 feet per mile (DWR, 1967), and reaches a maximum thickness of 1,000 feet. It consists of discontinuous lenses of unconsolidated to semi-consolidated sand and silt with lesser amounts of clay and gravel. The Laguna Formation is moderately permeable with some reportedly highly permeable coarse-grained beds and generally unconfined, but semi-confined conditions probably exist locally. Some studies have suggested that an extensive aquitard, namely the Corcoran Clay, extends into the Laguna Formation or separates the Laguna and Mehrten Formations (Brown & Caldwell, 1985).

Table 2-1 Stratigraphic Column for San Joaquin County

System	Series	Formation	Location	Thickness (feet)	Rock Characteristics and Environment	Hydrogeologic Description
Quaternary	Recent	Stream Channel Deposits	Eastside & Westside		Continental unconsolidated gravel, course to medium sand deposited along present stream channels.	High permeability, unimportant to groundwater except as avenue for percolation.
	Late to Pleistocene	Alluvial Fan Deposits	Westside	0 to 150±	Continental fan deposits-heterogeneous, discontinuous mixtures of gravel silt & clay.	Moderate to locally high permeability, unconfined aquifers.
		Recent Alluvium and Victor	Eastside	0 to 150±	Continental fan and interfan material, locally some basin type. Lenticular gravel, sand, silt, & clay	Moderate permeability, unconfined aquifers.
	Plio-Pleistocene	Flood Basin Deposits	Eastside & Westside	0 to 1400±	Continental basin equivalent of Laguna, Tulare, and younger formations. Clay, silt, & sand, organic in part.	Generally low permeability, saturated environments, unconfined to confined.
Tertiary	Mio-Pliocene	Tulare	Westside	0 to 1400±	Continental semi-consolidated clay, sands, & gravel. Contains Corcoran Clay member.	Moderate permeability, generally unconfined above Corcoran Clay, confined below.
	Upper Miocene	Laguna	Eastside	0 to 1000±	Continental, semi to unconsolidated silt, sands, & gravel poorly sorted, include Arroyo Seco gravel pediment of Mokelumne River area.	Moderate permeability, unconfined to locally semi-confined. Restricted perched bodies in some areas
Cretaceous	Miocene	Merhten	Eastside	0 to 600±	Continental andesitic derivatives of silt, sand, & gravel & their indurated equivalents; tuff; Breccias; agglomerate.	Moderate to high permeability, where "black sands" occur. Confined to unconfined. Saline west of Stockton.
	Eocene	San Pablo Group	Westside	0 to 1000±	Continental to marine massive sandstone & shale. Westside equivalent to Merhten & Valley Springs formations, in part.	Low permeability. Saline in part. Essentially non-water bearing except along fractures & joints.
		Valley Springs	Eastside	7 to 500±	Continental to marine rhyolitic ash, clay, sand, gravel & their indurated equivalents.	Low permeability. Saline in Stockton area. Not considered significant in groundwater studies.
	Cretaceous	Eocene Undifferentiated	Westside	?	Marine shale, siltstone, & sandstone.	Contains saline waters except where flushed in outcrop areas. Unimportant to freshwater basin except as possible contaminant source.
Jurassic		Cretaceous Undifferentiated	Westside	?	Marine shale, siltstone, & sandstone.	Contains saline waters, unimportant to freshwater basin except as possible contaminant source.
	Jurassic	Franciscan Group, Undifferentiated	Westside	?	Marine shale, sandstone, chert metamorphica, serpentine.	Unimportant to freshwater basin except as possible contaminant source.

Source: San Joaquin County Water Management Plan Volume II

Victor
The Victor Formation is of Holocene to Pleistocene Age and consists primarily of stream deposited unconsolidated gravel, sand, silt, and clay. Coarse sands and gravels are found to the east, and sands, silts and clays towards the west. This formation is generally more permeable than underlying formations, and groundwater is typically unconfined (CDM, 2001).

Alluvial/Stream channel deposits
Stream channel deposits are found along major stream and river courses within the study area. Generally they consist of unconsolidated gravel and coarse sand with high permeabilities (CDM, 2001).

2.2 Surface Water Features

San Joaquin County lies at the northwestern corner of the San Joaquin Hydrologic Region as defined by DWR and shown on Figure 2-1. The major rivers in this hydrologic region are the San Joaquin, Cosumnes, Mokelumne, Calaveras, Stanislaus, Tuolumne, Merced, Chowchilla, and Fresno. The Calaveras, Mokelumne, and Stanislaus Rivers flow through or border San Joaquin County and at times discharge directly into the Delta or into the San Joaquin River which in turn flows to the Delta. The west and southwestern portion of the County is part of the Delta, and the areas of primary and secondary concern are shown above. The Delta and other major waterways are shown on Figure 2-2 and are discussed in more detail below (DWR, 2003).

2.2.1 Delta

The Sacramento-San Joaquin Delta covers more than 738,000 acres in five counties and is comprised of numerous islands within a network of canals and natural sloughs. The Sacramento and San Joaquin Rivers come together in the Delta before they flow to the San Francisco Bay and out to the ocean. The Delta is the largest estuary on the west coast and is home to over 750 plant and animal species, many of which are threatened or endangered. The Delta provides drinking water for two-thirds of all Californians and irrigation water for over 7 million acres of highly productive farmland. Rivers in San Joaquin County all flow into the Delta as they flow out to sea. Table 2-2 provides a summary of the major reservoirs located in the region. More detailed descriptions of the rivers and the associated facilities are provided in the following sections.

Table 2-2 Major Area Reservoirs

River	Major Reservoirs	Size (acre-feet)	Owning/Operating Agencies
Mokelumne	Pardee Reservoir Camanche Reservoir	197,950 417,120	East Bay MUD
Calaveras	New Hogan Lake	317,000	U.S. Army Corps of Engineers Stockton East Water District
Stanislaus	New Melones Reservoir	2,400,000	Central Valley Project
	Beardsley Reservoir Donnells Reservoir Tulloch Reservoir	77,600 56,893 68,400	Oakdale Irrigation District, South San Joaquin Irrigation District

Source:
State of California, *California Statistical Abstract*, 2002.

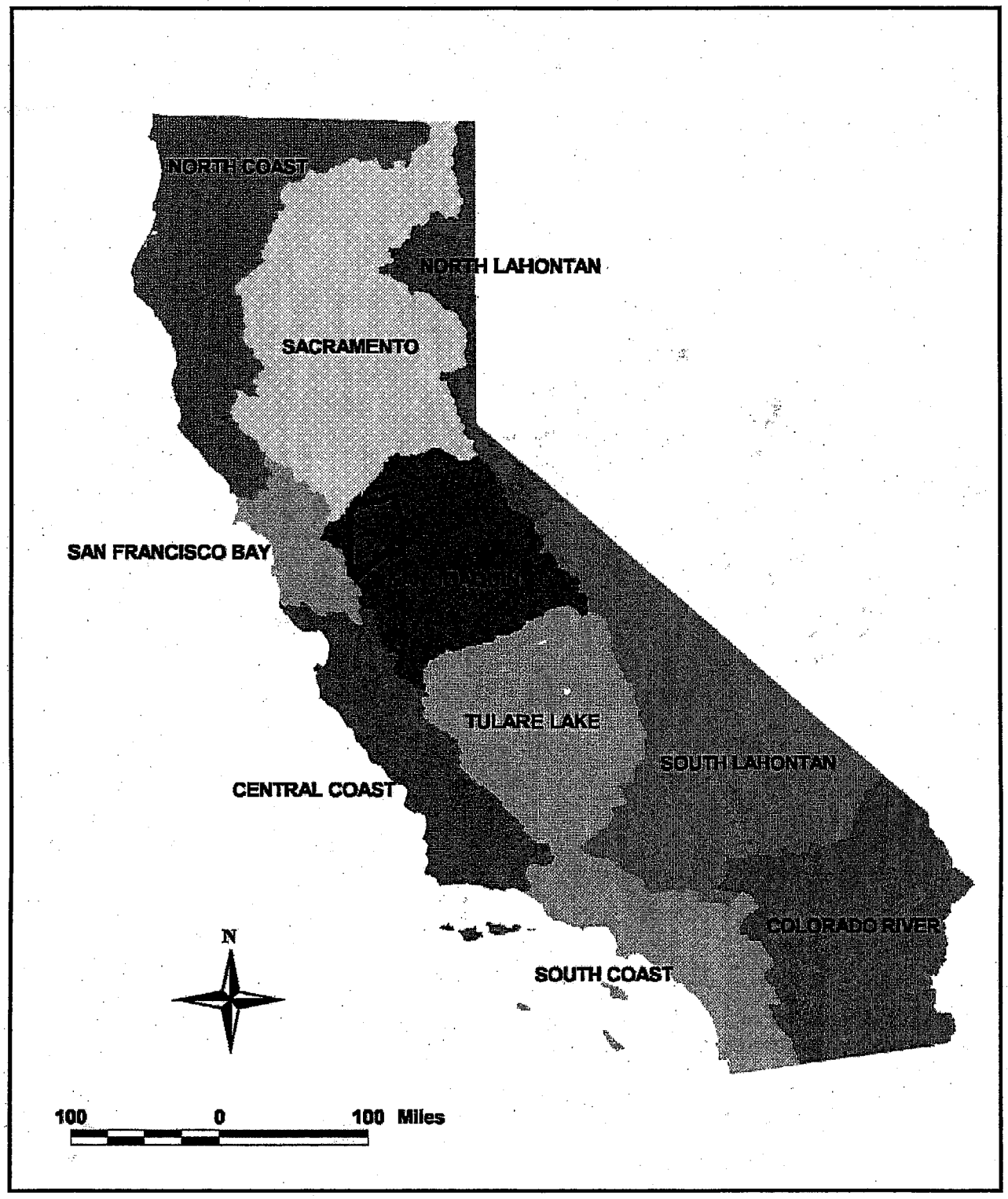


Figure 2-1 Hydrologic Regions of California
Source: California Spatial Information Library at http://www.gis.ca.gov/

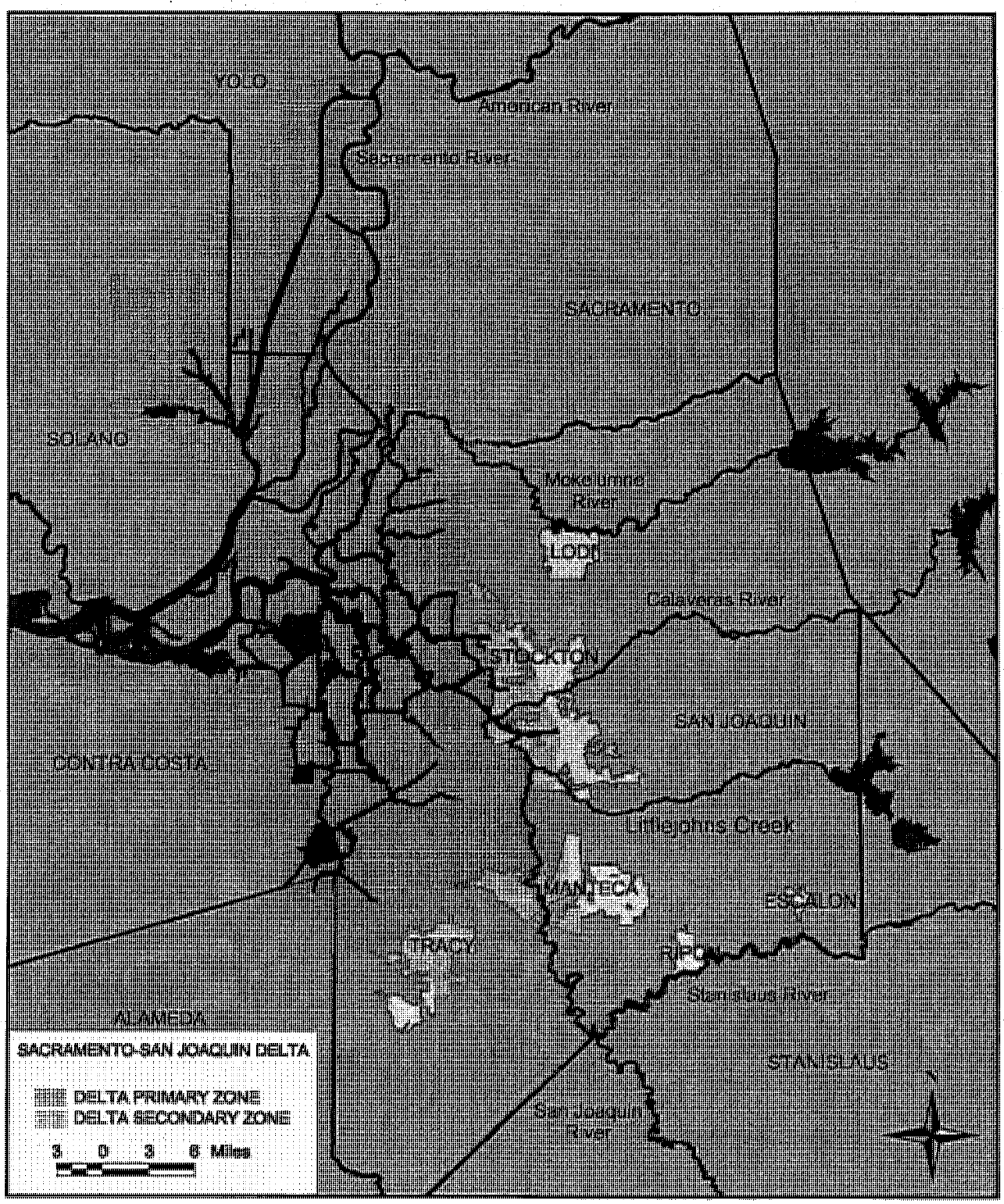


Figure 2-2 Sacramento San Joaquin Delta
Source: California Spatial Information Library at http://www.gis.ca.gov/

2.2.2 Calaveras River

The Calaveras River watershed consists of 363 square miles and stretches from the Sierra Nevada foothills to San Joaquin River in west Stockton. Flow in the Calaveras is primarily derived by rainfall with almost no contribution by snowmelt. The United States Army Corps of Engineers (USACE) constructed the multi-purpose New Hogan Dam in 1963 for flood control, municipal, industrial, and irrigation purposes. New Hogan Reservoir has a capacity of 317,000 af. The USACE controls flood control releases from New Hogan. SEWD operates New Hogan at all other times. SEWD and CCWD have rights to the yield from New Hogan. The current supply available to SEWD is subject to reductions based on CCWD's future demands. CCWD currently uses approximately 3,500 af/yr and estimates it will use up to 5,300 af/yr by 2040 (Calaveras County Water District, 1996).

2.2.3 Mokelumne River

The Mokelumne River watershed encompasses approximately 660 square miles stretching from the high Sierra Nevadas westward to the Delta. Snowmelt comprises a large portion of the watersheds runoff. Major facilities located on the Mokelumne are the Salt Springs Reservoir on the North Fork of the Mokelumne and the Pardee and Camanche Reservoirs on the rivers main stem. Salt Springs Reservoir is a PG&E facility built in 1963 and is operated for hydropower generation. Pardee and Camanche are both owned by EBMUD. Pardee Reservoir, which is upstream from Camanche, has a capacity of 197,950 af and is operated as a water supply reservoir. Reservoir water from Pardee is conveyed by the Mokelumne River Aqueducts to the EBMUD service area some 82 miles away. Camanche Reservoir, with a capacity of 417,120 af, is operated for flood control and also to meet instream flow requirements and down stream entitlements. Both Pardee and Camanche generate incidental hydro power at 30 MW and 9.9 MW respectively (EBMUD, Urban Water Management Plan 2000). Water rights on the Mokelumne form a complex hierarchy, with water rights held by Woodbridge Irrigation District, Amador County, Calaveras County, EBMUD, and North San Joaquin Water Conservation District.

2.2.4 Stanislaus River

The Stanislaus River watershed consists of approximately 904 square miles with an annual average runoff of approximately 1 million af. The majority of the runoff occurs from November to July and peaks during the summer months when snow melt is greatest. More than half the runoff is snowmelt-derived (USBR, Website, undated). The USACE constructed New Melones Dam on the Stanislaus River in 1978, replacing the original Old Melones Dam. Old Melones Dam was constructed in 1924 jointly by OID and SSJID, which hold pre-1914 water rights on the Stanislaus River. New Melones Reservoir has a capacity of 2.4 million af and is operated as part of the CVP. The average runoff at New Melones for the 74 years from 1904 to 1977 was 1.12 million af.

There are 9 additional reservoirs and two diversion canals upstream from New Melones on the Stanislaus River, including the Donnells, Beardsley, and Tulloch Reservoirs, which were constructed jointly by OID and SSJID and operated by the Tri-Dam Authority (USBR, Website, undated). Tulloch Reservoir, located several miles downstream from New Melones, is used to re-regulate releases from New Melones. SSJID, OID and SEWD divert from Goodwin Dam downstream from Tulloch Dam. Water can be diverted by gravity via Goodwin Tunnel to CSJWCD and SEWD. SSJID and OID are the principal users of Stanislaus River water in San Joaquin County. Both SEWD and CSJWCD interim CVP contracts for New Melones water.

2.2.5 San Joaquin River

The San Joaquin River originates in the Sierra Nevada and enters the San Joaquin Valley at Friant. The lower San Joaquin River is the section of the river from its confluence with the Merced River north to Vernalis. The lower San Joaquin River encompasses a drainage area of approximately 13,400 square miles. The majority of the flow in the lower San Joaquin River is derived from inflow from the Merced, Tuolumne and Stanislaus Rivers as the upper San Joaquin River contributes virtually no inflow during the summer months.

2.2.6 Other Rivers

Other rivers that have some relevance to discussions on water resources but are not located in San Joaquin County are the Tuolumne River, Cosumnes River and Dry Creek. The Tuolumne River originates in the Sierra Nevada Mountains and is the largest tributary to the San Joaquin River. It has a watershed of approximately 1,500 square miles and an unimpaired runoff of approximately 1.8 million af. Flows in the lower reaches of the Tuolumne River are regulated by New Don Pedro Dam, which was constructed in 1971 and is owned by Turlock and Modesto Irrigation Districts. New Don Pedro Reservoir has a capacity of approximately 2 million af and is operated for irrigation, hydroelectric generation, fish/wildlife protection, recreation, and flood control. Irrigation water is diverted downstream from New Don Pedro at La Grange into the Modesto Main Canal and Turlock Main Canal. The City and County of San Francisco operate several facilities in the upper water of the Tuolumne, namely O'Shaughnessy Dam at Hetch Hetchy Valley, Lake Eleanor and Cherry Lake. These facilities are operated for municipal and industrial supply as well as hydropower.

The Cosumnes River is a tributary of the Mokelumne River. It meets the Mokelumne near the town of Thornton and has a watershed area of approximately 540 miles. Flows are primarily rain/runoff-derived.

Dry Creek is a relatively minor tributary to the Mokelumne River and forms the northern boundary between San Joaquin and Sacramento Counties. The Cosumnes, Dry Creek, Mokelumne and Calaveras Rivers are collectively referred to as the Eastside Streams.

2.2.7 Surface Water Quality

Surface water quality for San Joaquin County water sources can be categorized as either an eastside or Sacramento-San Joaquin Delta source. Eastside rivers and streams are sources of high water quality with generally low total dissolved solids (TDS) loads. Reservoir storage and regulated flow on the Mokelumne, Calaveras and Stanislaus River systems reduces suspended solids as these rivers flow through San Joaquin County. However, during flood events and times of elevated flows, TDS and suspended solid levels can increase.

The Sacramento-San Joaquin Delta water quality is heavily influenced by the operations of the Central Valley and State Water Projects. Generally, the Sacramento-San Joaquin Delta water quality is best during the winter and spring months and poorer through the irrigation season and early fall. Delta Water quality is also very dependant on the ability for higher quality Sacramento River water to dilute poorer quality San Joaquin water in the South and Central Delta. Presently, the Central Valley Regional Water Quality Control Board is undertaking Total Maximum Daily Load (TMDL) proceedings for low dissolved oxygen (DO) in the Stockton Deep Water Ship Channel and salinity and Boron in the Lower San Joaquin River.

The San Joaquin River in the South Delta, experiences periods of severely degraded water quality. The SWRCB has set flow and water quality objectives at Vernalis, located just

downstream of the confluence of the Stanislaus River with the San Joaquin River. The USBR is obligated to meet the Vernalis objectives as a condition of their water right permits. Water quality in the San Joaquin River is influenced by factors such as rain and snow melt runoff, reservoir operations, and irrigation return flows in the San Joaquin River basin. The CVP service area on the Westside of the San Joaquin Valley drain agricultural return flows with significant elevated salt loads into the San Joaquin River. To meet the Vernalis objective, the Bureau of Reclamation supplements flows on the San Joaquin River with releases from New Melones Reservoir on the Stanislaus River by reducing allocations to SEWD and CSJWCD. Despite the take away, the Bureau is unable to meet the Vernalis standard in years when runoff is below average. Eastern San Joaquin County and Delta interests have pushed for the development of water quality objectives up-stream of the confluence of the San Joaquin and Stanislaus Rivers.

2.3 Regional Groundwater Flow Patterns

Regional groundwater flow patterns have been significantly altered since pre-development conditions. The pre-development and current/post-development groundwater flow patterns are discussed below.

2.3.1 Pre-Development Conditions

Groundwater was used for agriculture in the Central Valley starting around 1850, prior to which time the groundwater system was in a state of hydrologic equilibrium (Williamson, et. al., 1989). Under equilibrium, or steady-state conditions, groundwater flowed from the natural recharge areas along the perimeter of the valley towards the low areas along the San Joaquin River. The natural groundwater and surface water discharge was through the Delta westward to San Francisco Bay. Under pre-development conditions groundwater gradients within San Joaquin County were likely similar to the topographic gradient, or around 0.0012 ft/ft.

2.3.2 Post-Development Conditions

Beginning in 1850 the development of groundwater for agriculture expanded rapidly. Within the Central Valley, irrigated agriculture has grown from less than 1 million acres around the turn of the century, to an estimated 7 to 8 million acres at present. Within eastern San Joaquin County, an estimated 800,000 af/yr of groundwater was being extracted by 1993. In Bulletin 118-80, DWR designated the Basin as 'critical overdrafted'.

Figures 2-1 through 2-4 illustrate groundwater table contours for spring and fall 1993 and 1998. The map clearly shows the significant cone of depression east of Stockton. Regional groundwater flow now converges on this low point, with relatively steep groundwater gradients (0.0018 feet/feet) westwards towards the cone of depression, and eastward gradients from the Delta area on the order of 0.0008 feet/feet. The eastward flow from the Delta area is significant because of the typically poorer quality water.

2.3.3 Groundwater Level Trends

The groundwater level trends illustrate the change in groundwater flow patterns described above. Hydrographs for selected wells and sub-regions are presented in Figures 2-7 through 2-21 and a map of the well locations is shown on Figure 2-22.

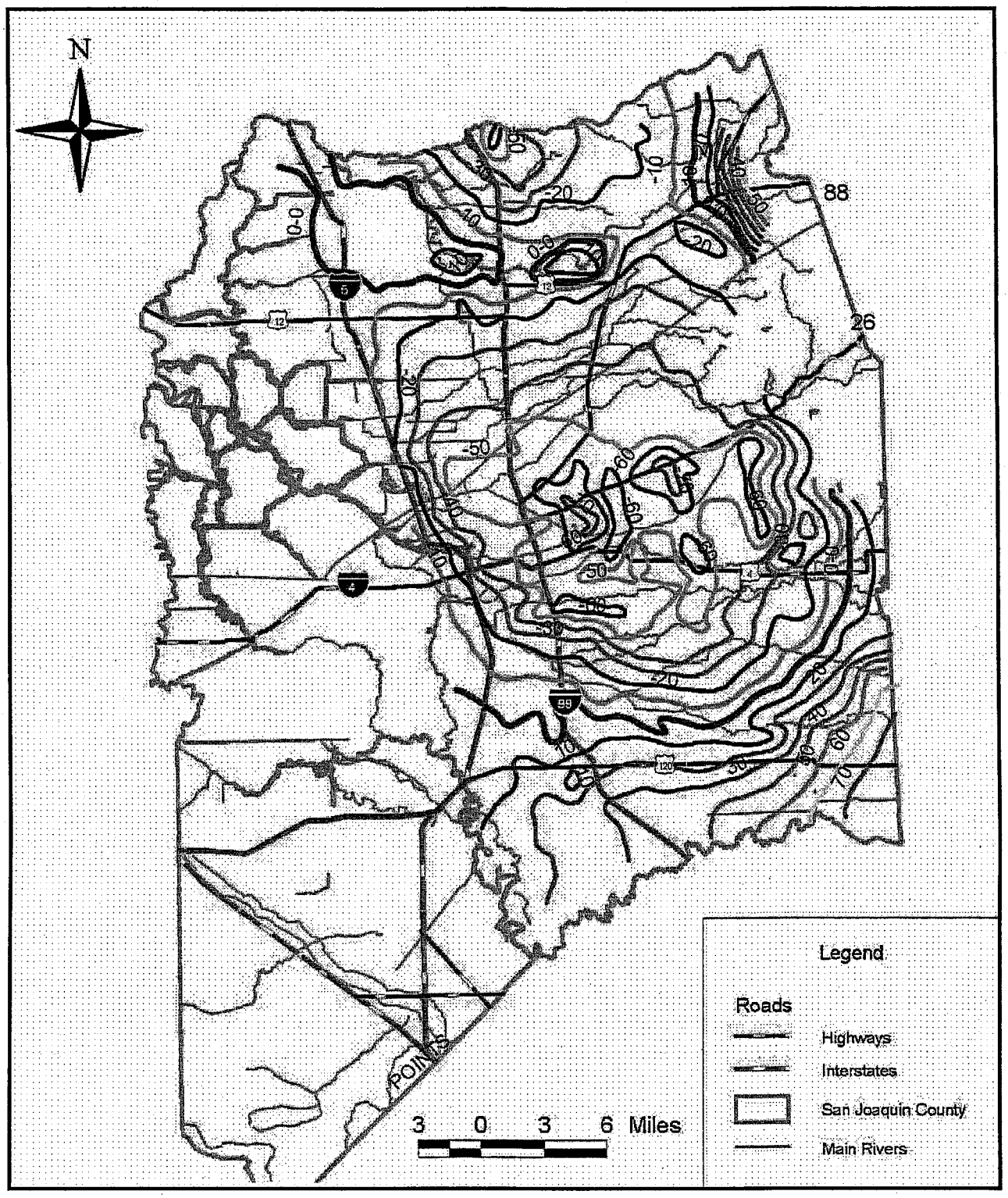


Figure 2-3 Spring 1993 Groundwater Contours
Source: Camp Dresser & McKee Inc.

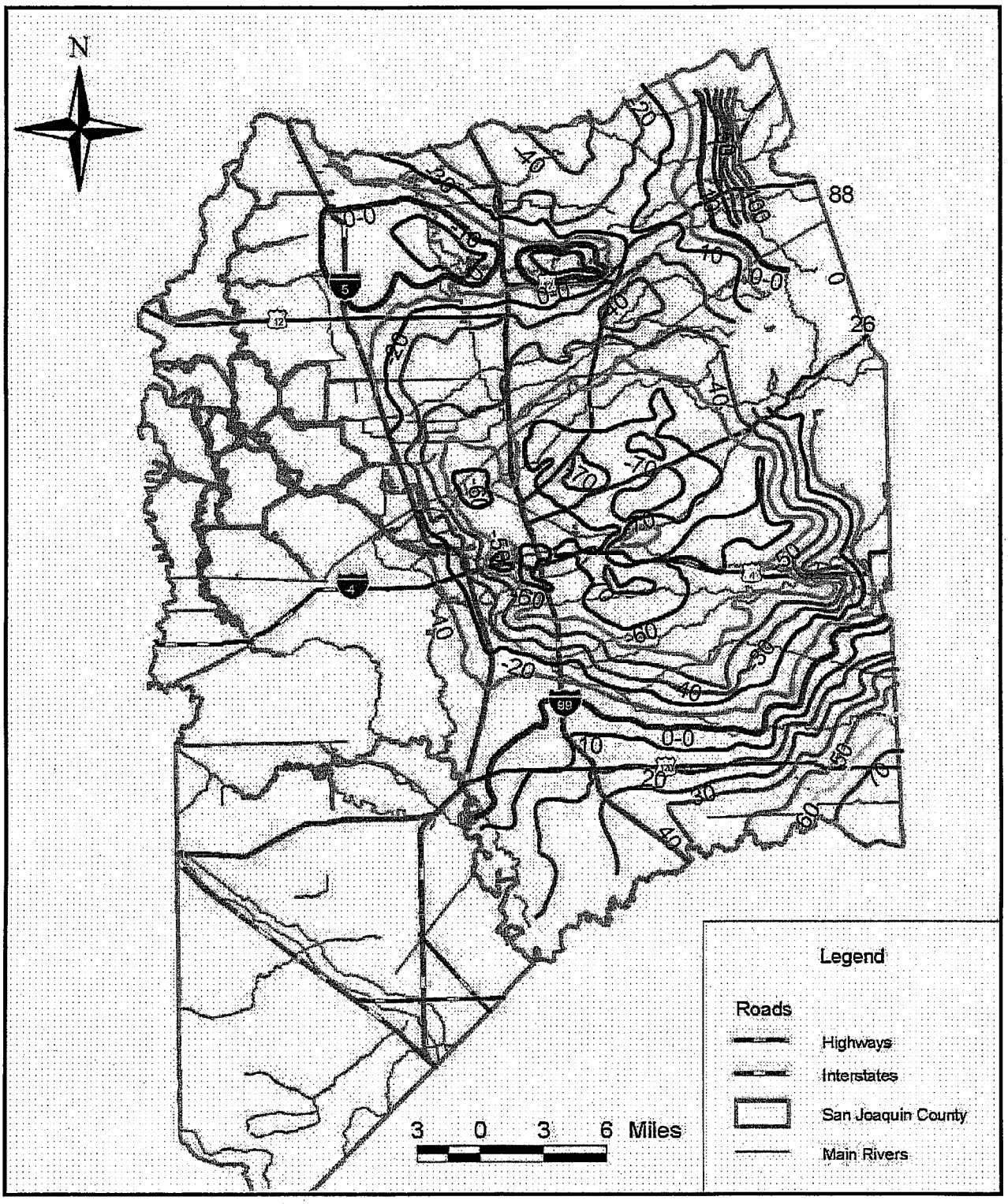


Figure 2-4 Fall 1993 Groundwater Contours
Source: Camp Dresser & McKee Inc.

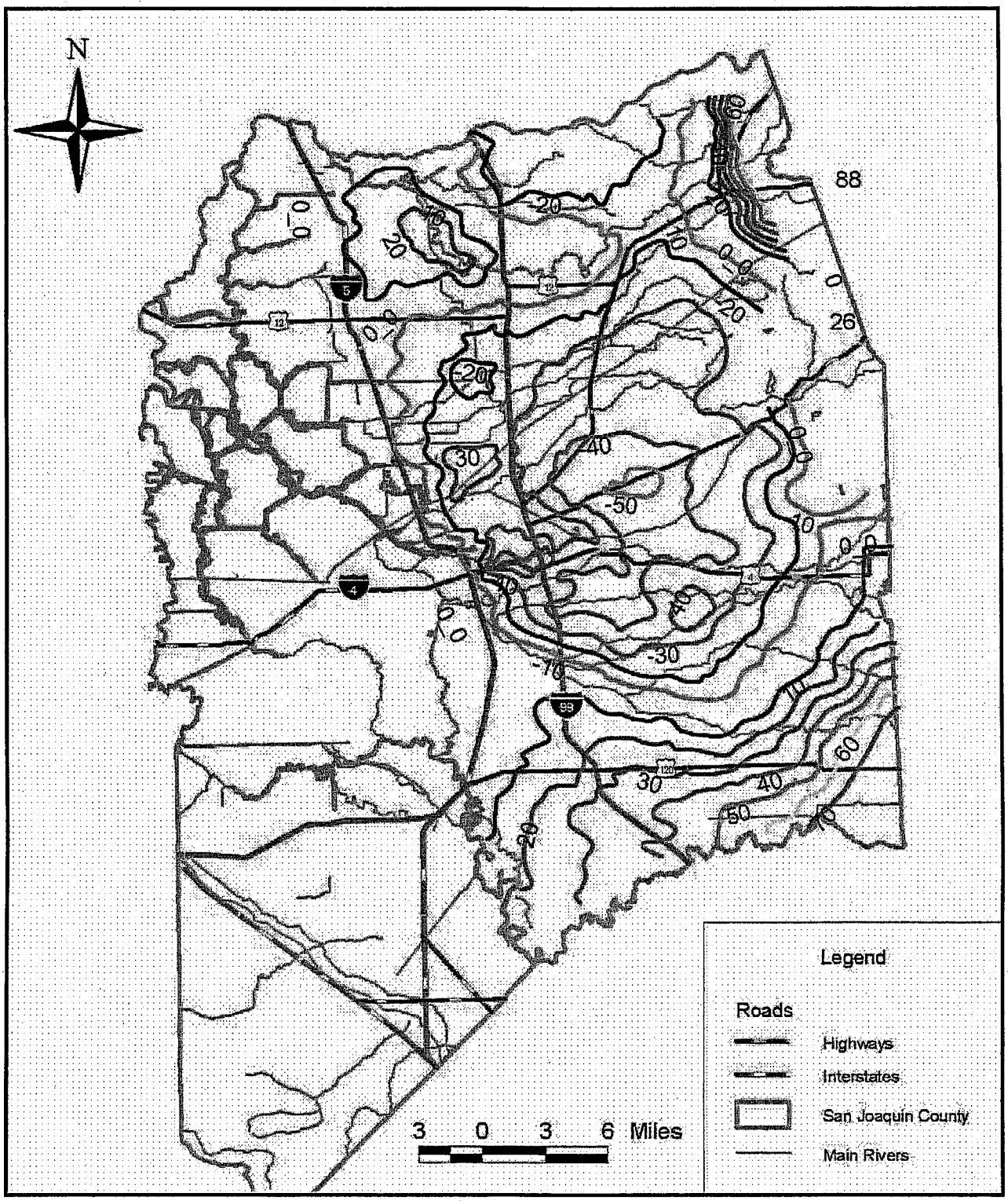


Figure 2-5 Spring 1998 Groundwater Contours
Source: Camp Dresser & McKee Inc.

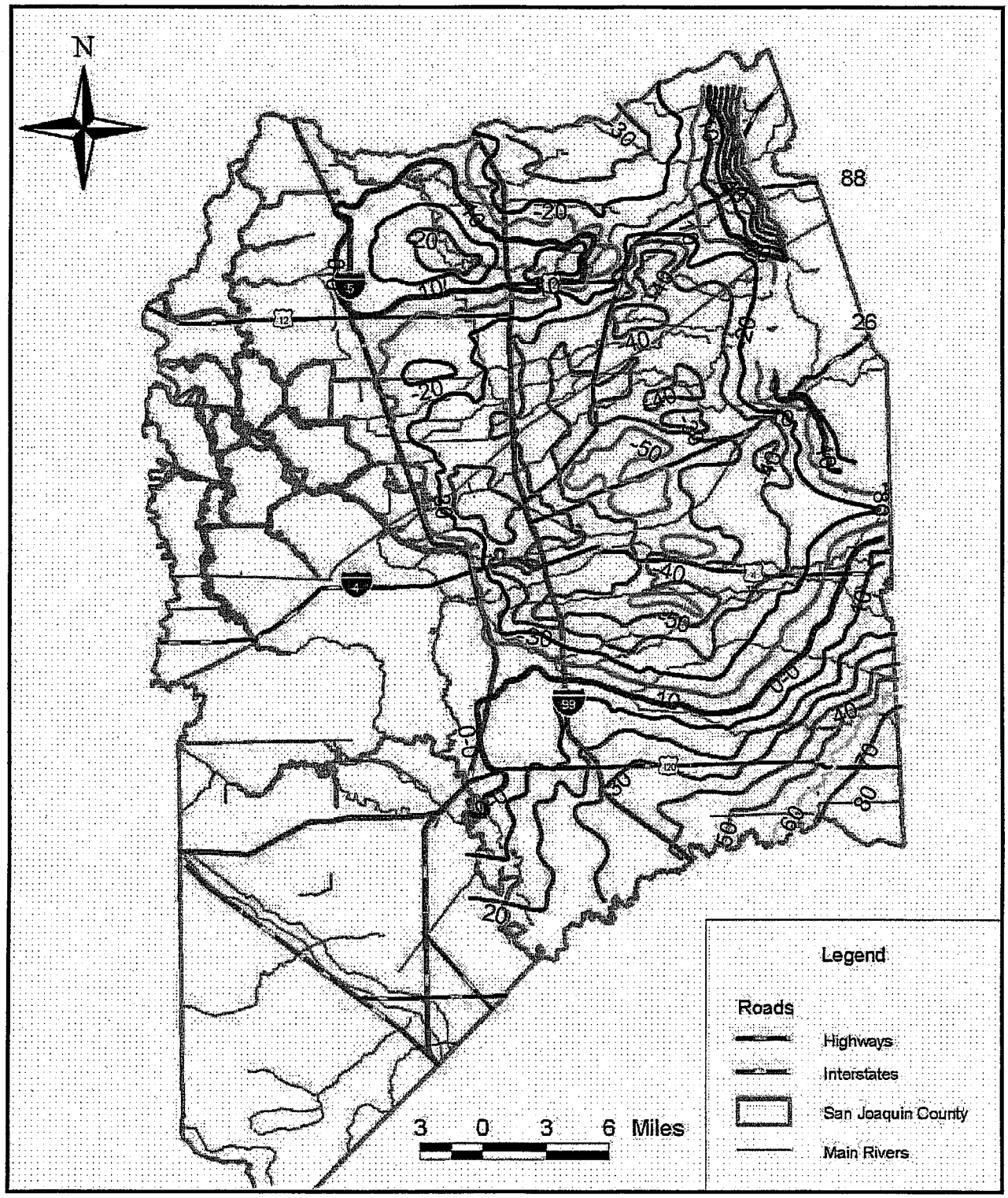


Figure 2-6 Fall 1998 Groundwater Contours
Source: Camp Dresser & McKee Inc.

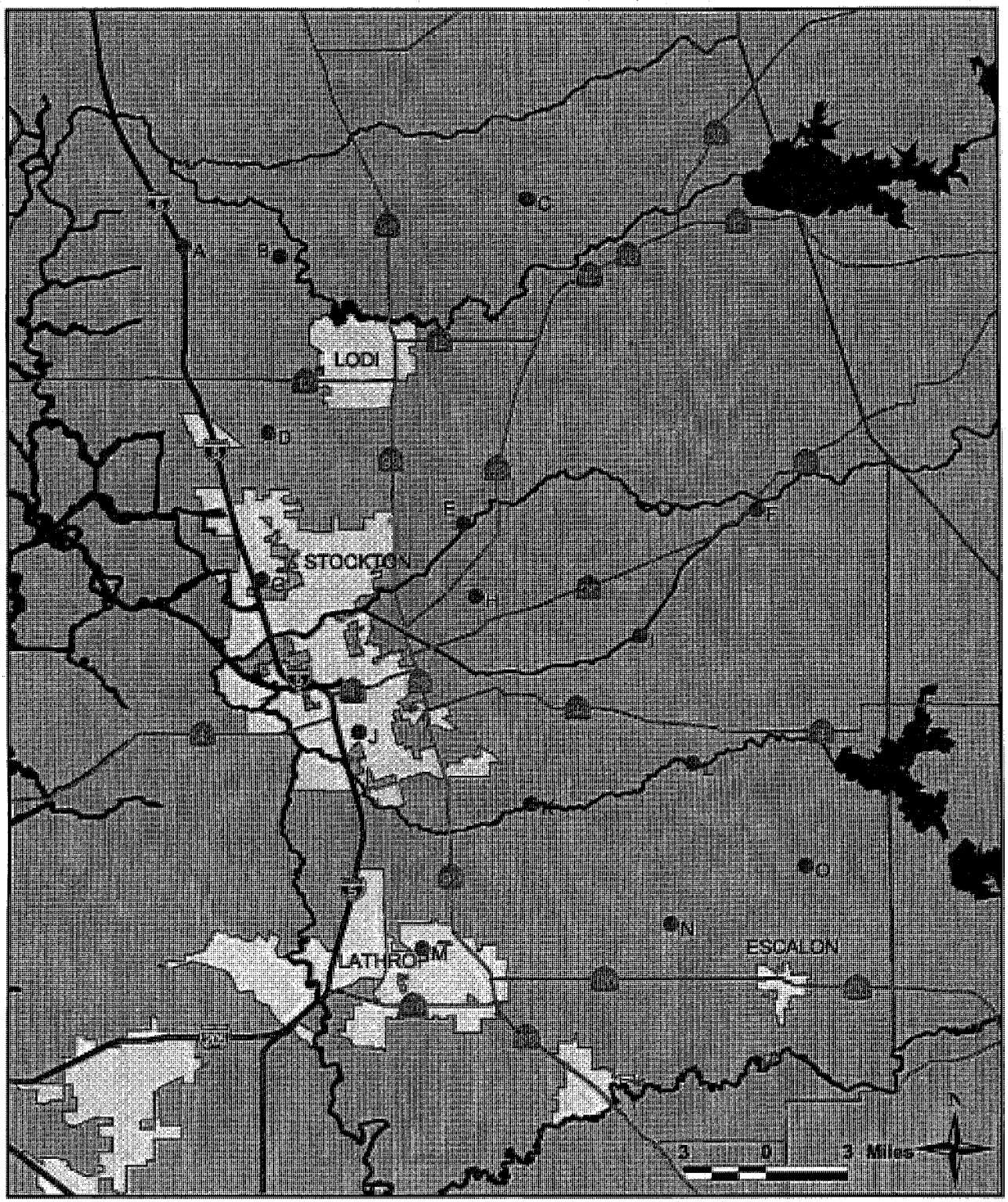


Figure 2-7 Groundwater Well Locations
Source: California Department of Water Resources, Water Data Library at http://well.water.ca.gov/

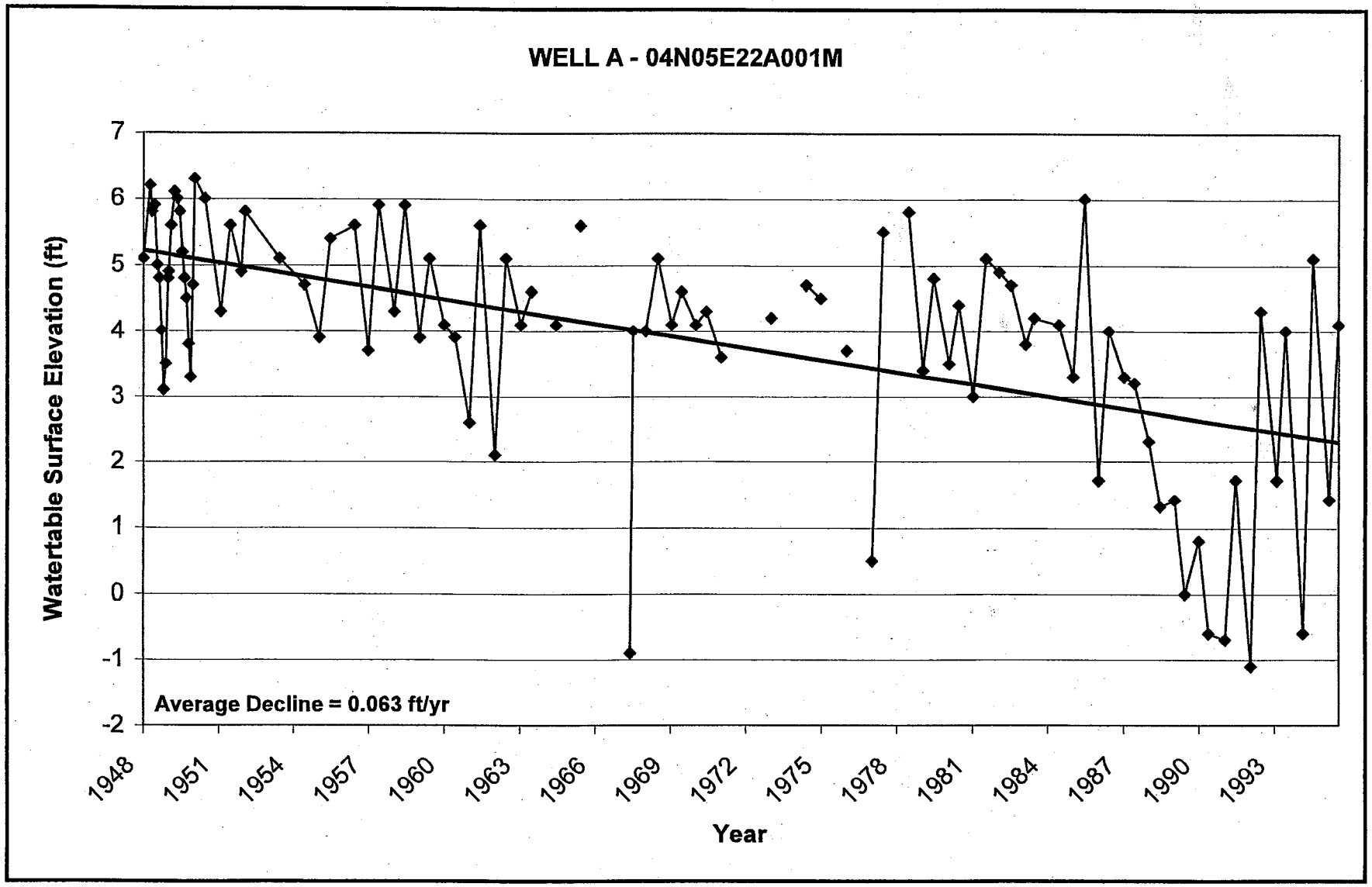


Figure 2-8 Hydrograph Well A
Source: California Department of Water Resources, Water Data Library at http://well.water.ca.gov/

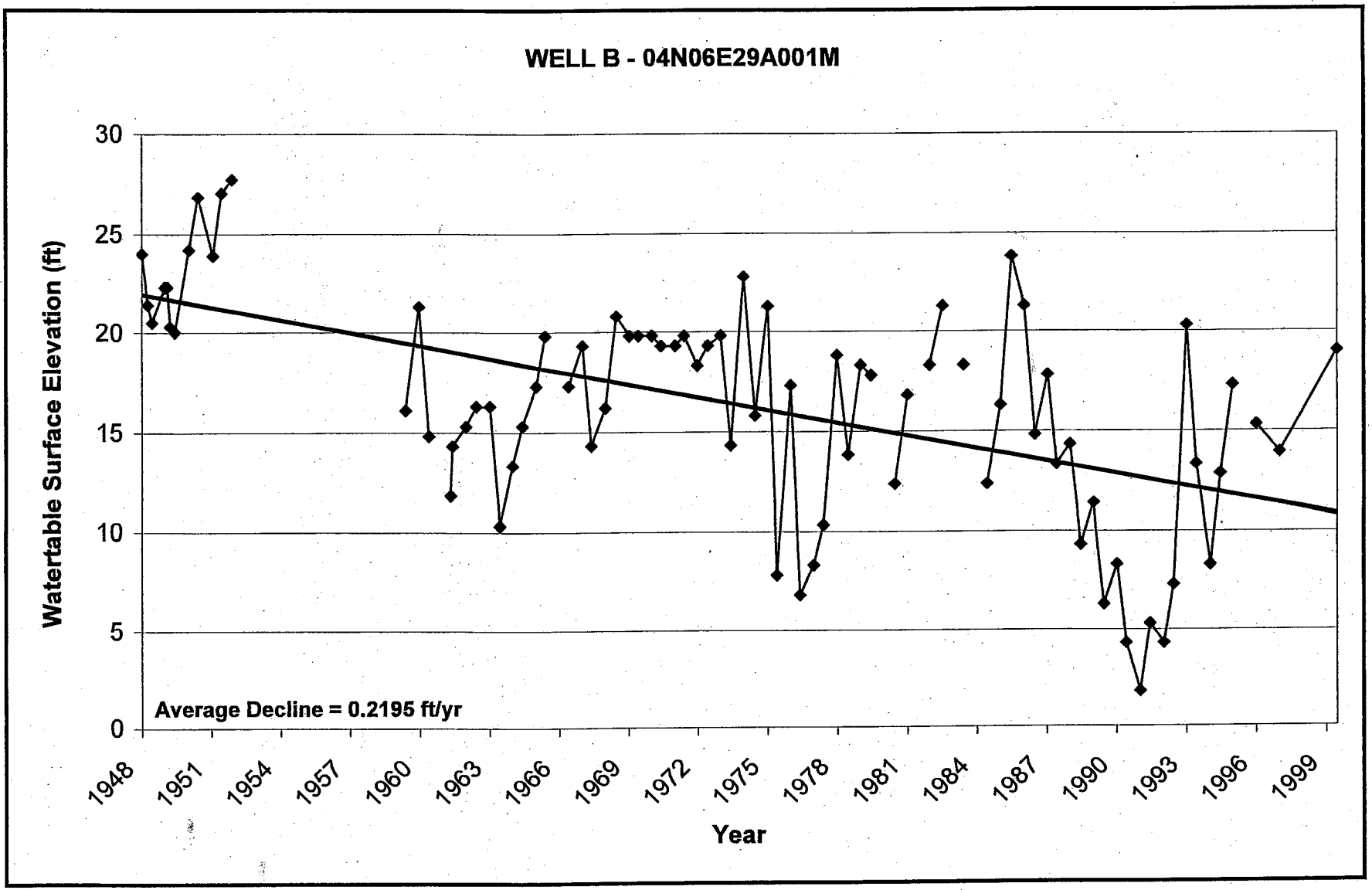


Figure 2-9 Hydrograph Well B
Source: California Department of Water Resources, Water Data Library at http://well.water.ca.gov/

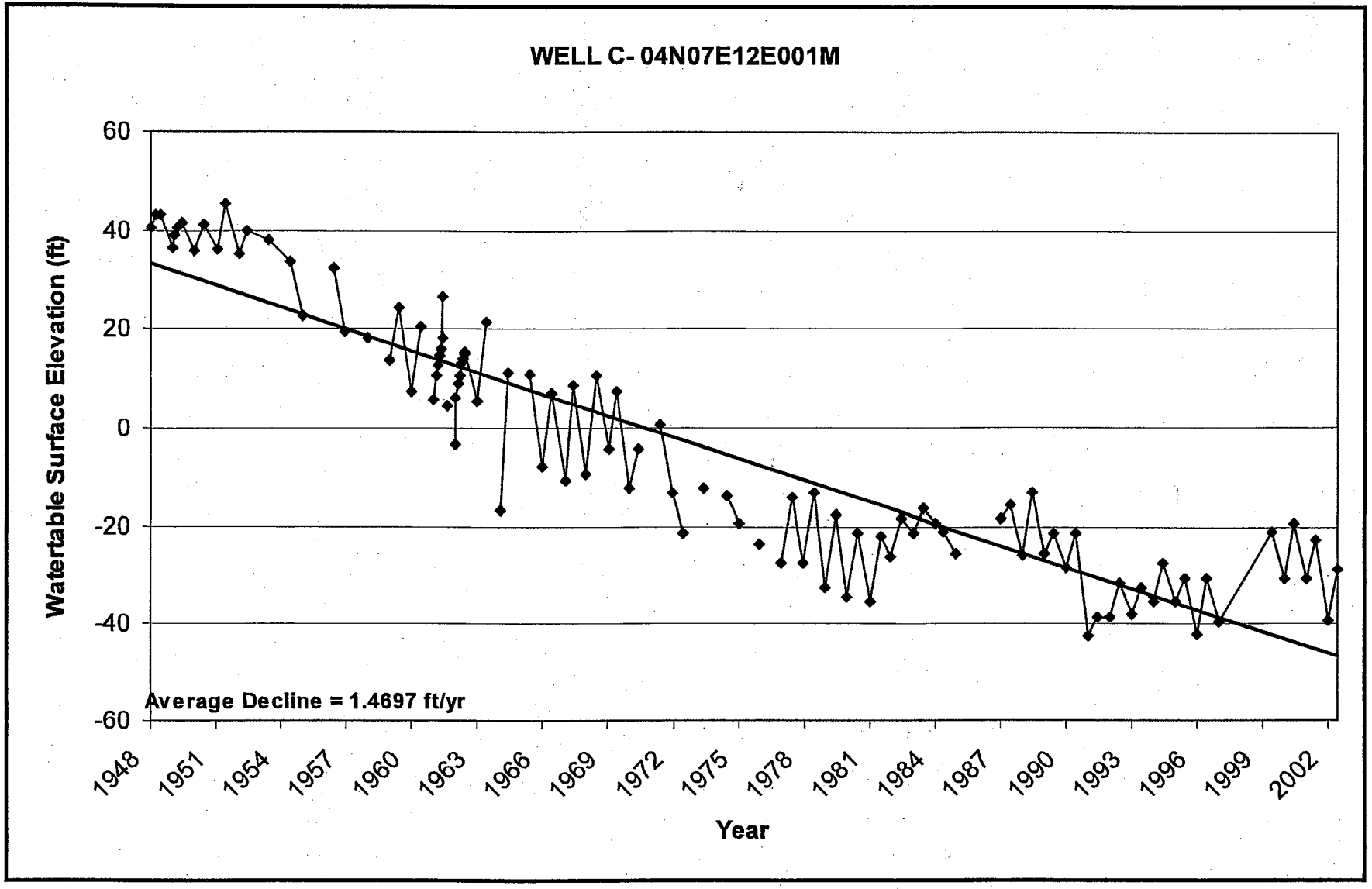


Figure 2-10 Hydrograph Well C
Source: California Department of Water Resources, Water Data Library at http://well.water.ca.gov/

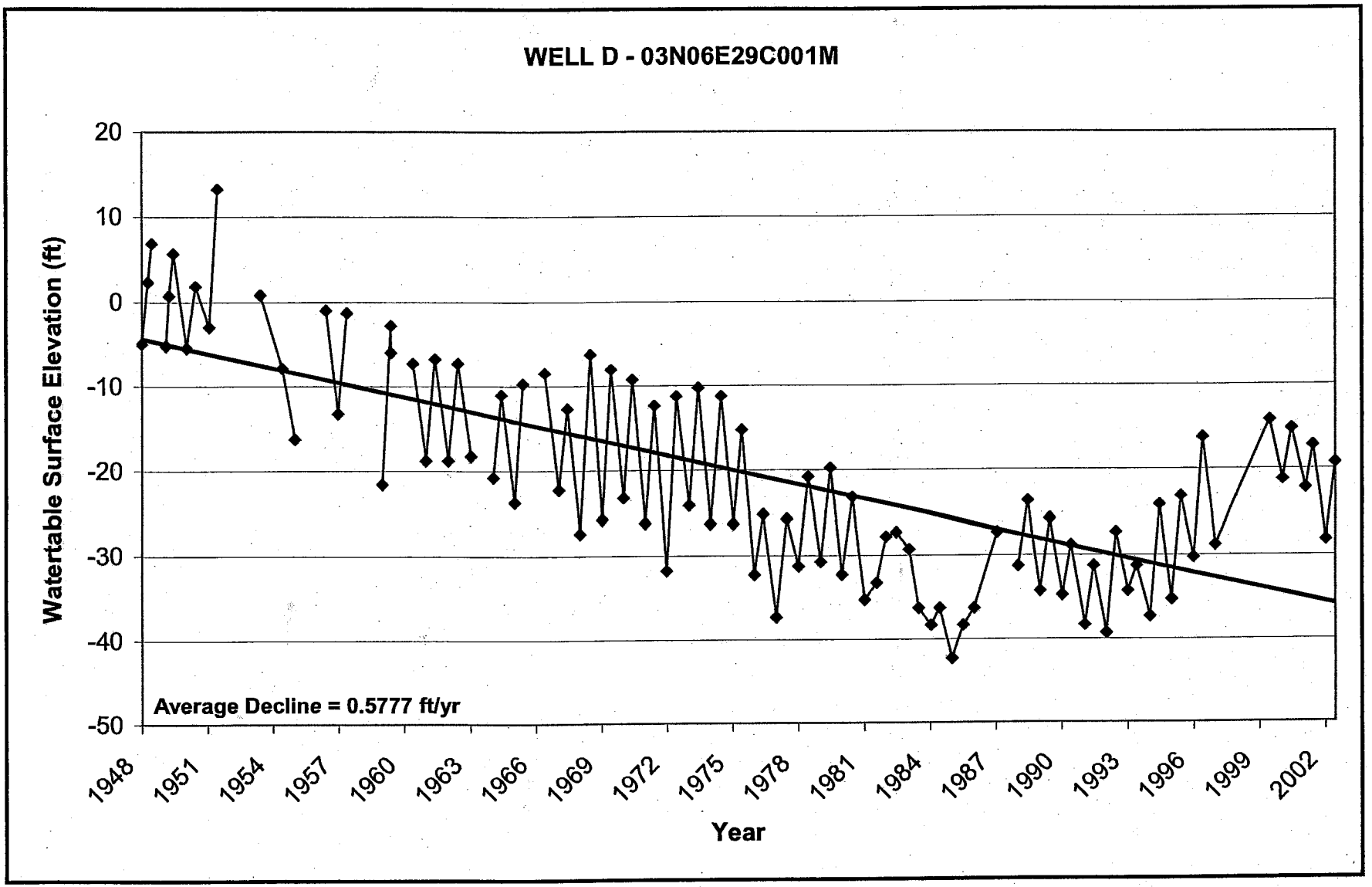


Figure 2-11 Hydrograph Well D
Source: California Department of Water Resources, Water Data Library at http://well.water.ca.gov/

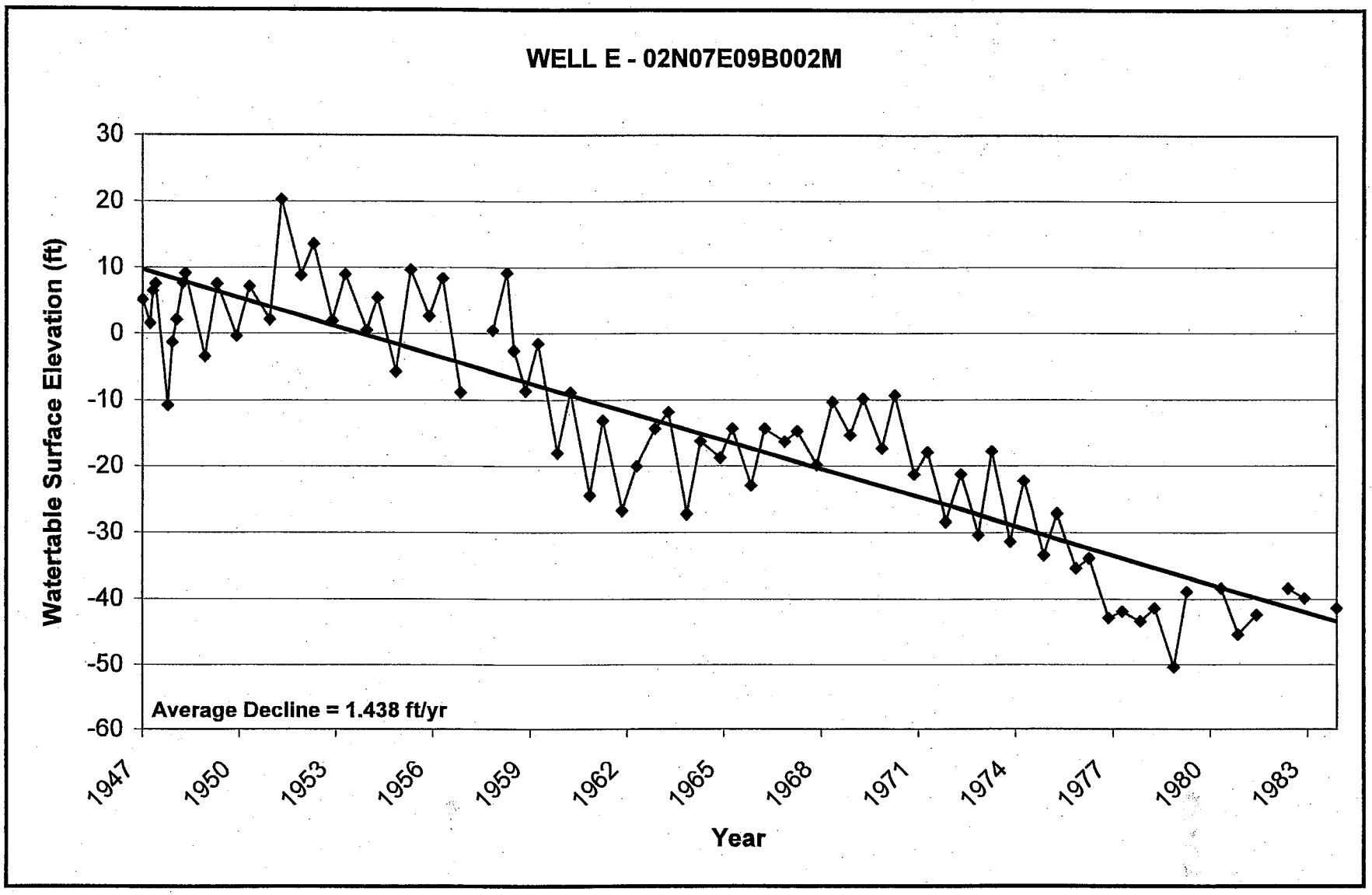


Figure 2-12 Hydrograph Well E
Source: California Department of Water Resources, Water Data Library at http://well.water.ca.gov/

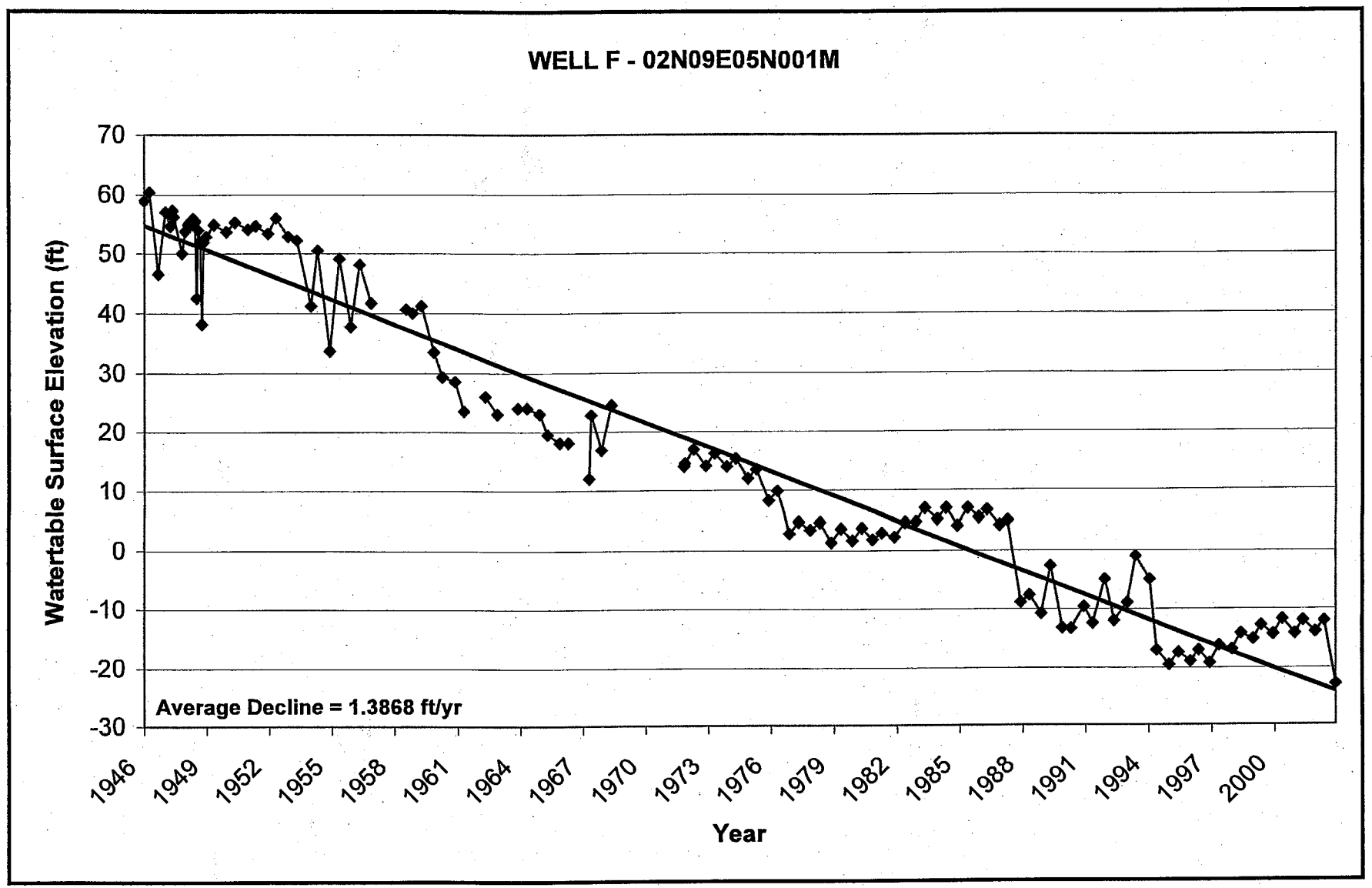


Figure 2-13 Hydrograph Well F
Source: California Department of Water Resources, Water Data Library at http://well.water.ca.gov/

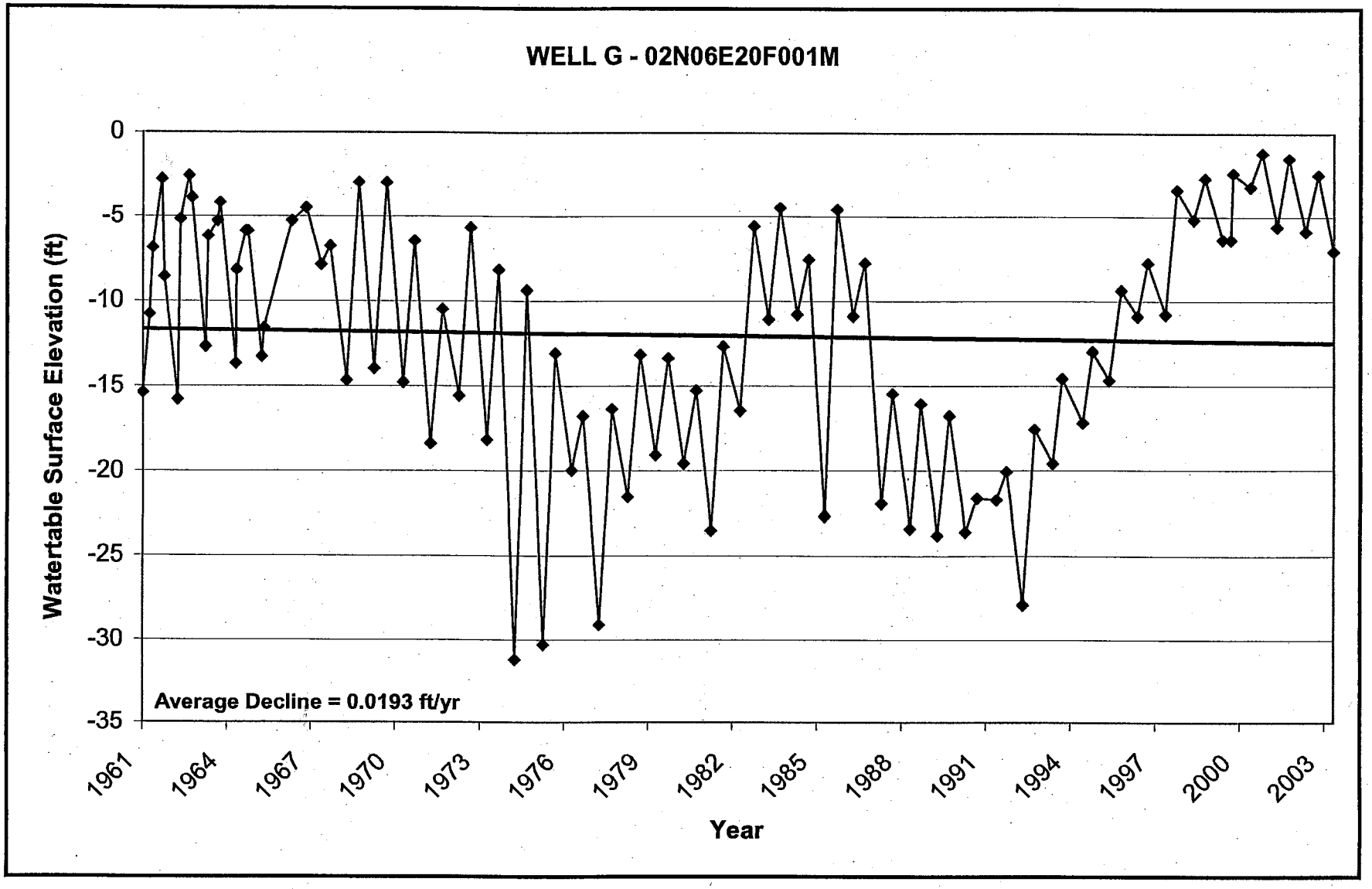


Figure 2-14 Hydrograph Well G
Source: California Department of Water Resources, Water Data Library at http://well.water.ca.gov/

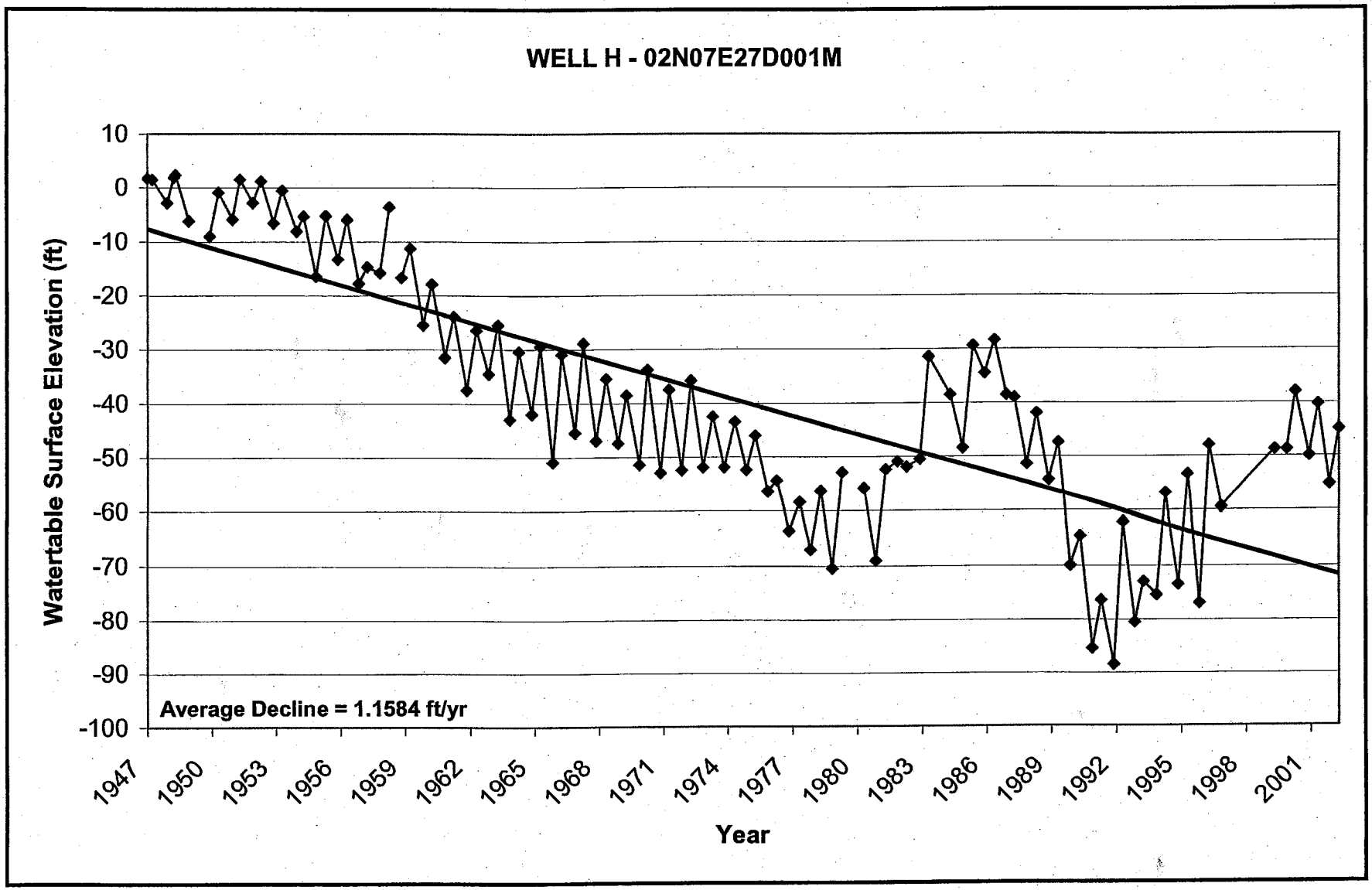


Figure 2-15 Hydrograph Well H
Source: California Department of Water Resources, Water Data Library at http://well.water.ca.gov/

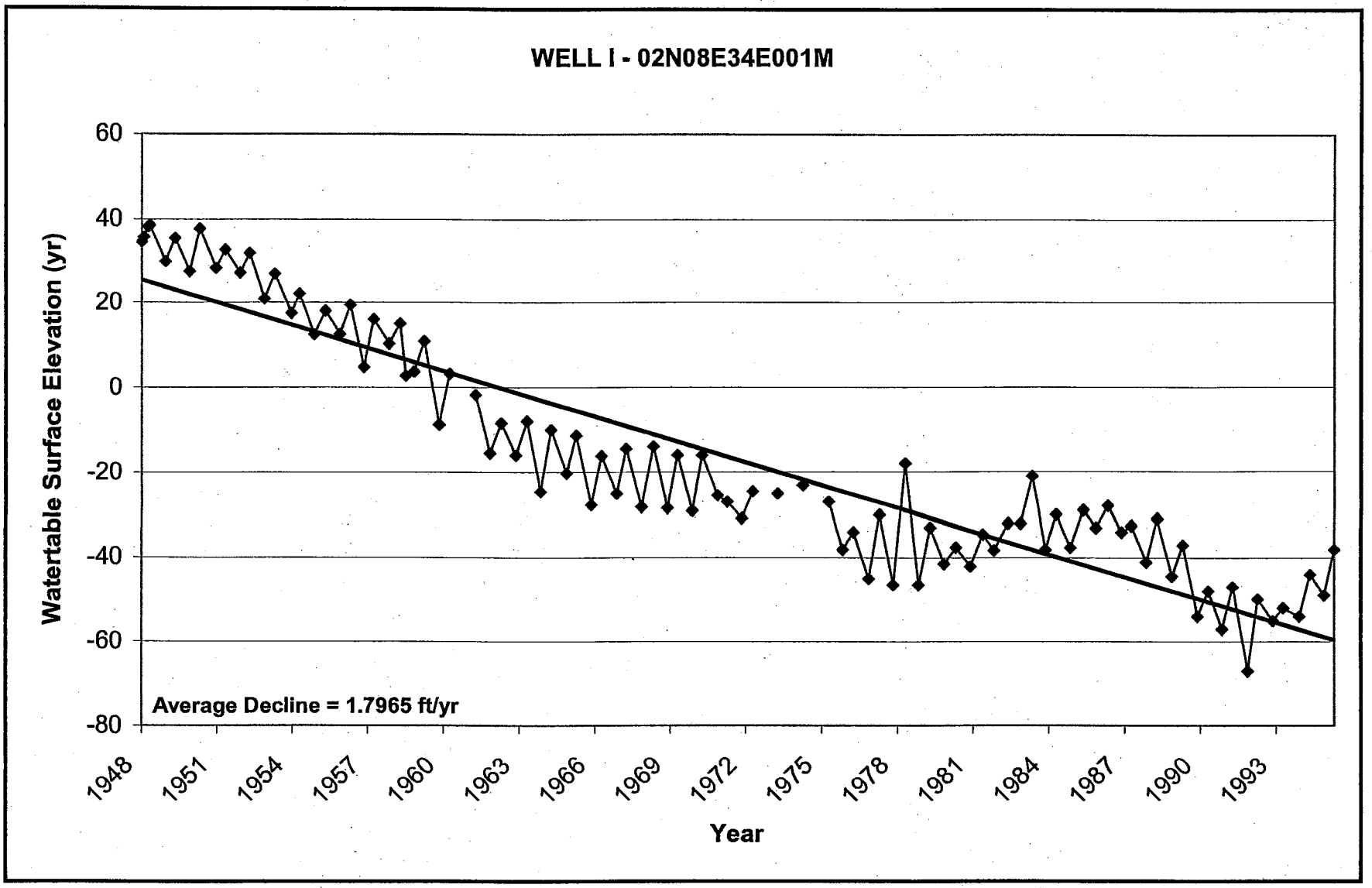


Figure 2-16 Hydrograph Well I
Source: California Department of Water Resources, Water Data Library at http://well.water.ca.gov/

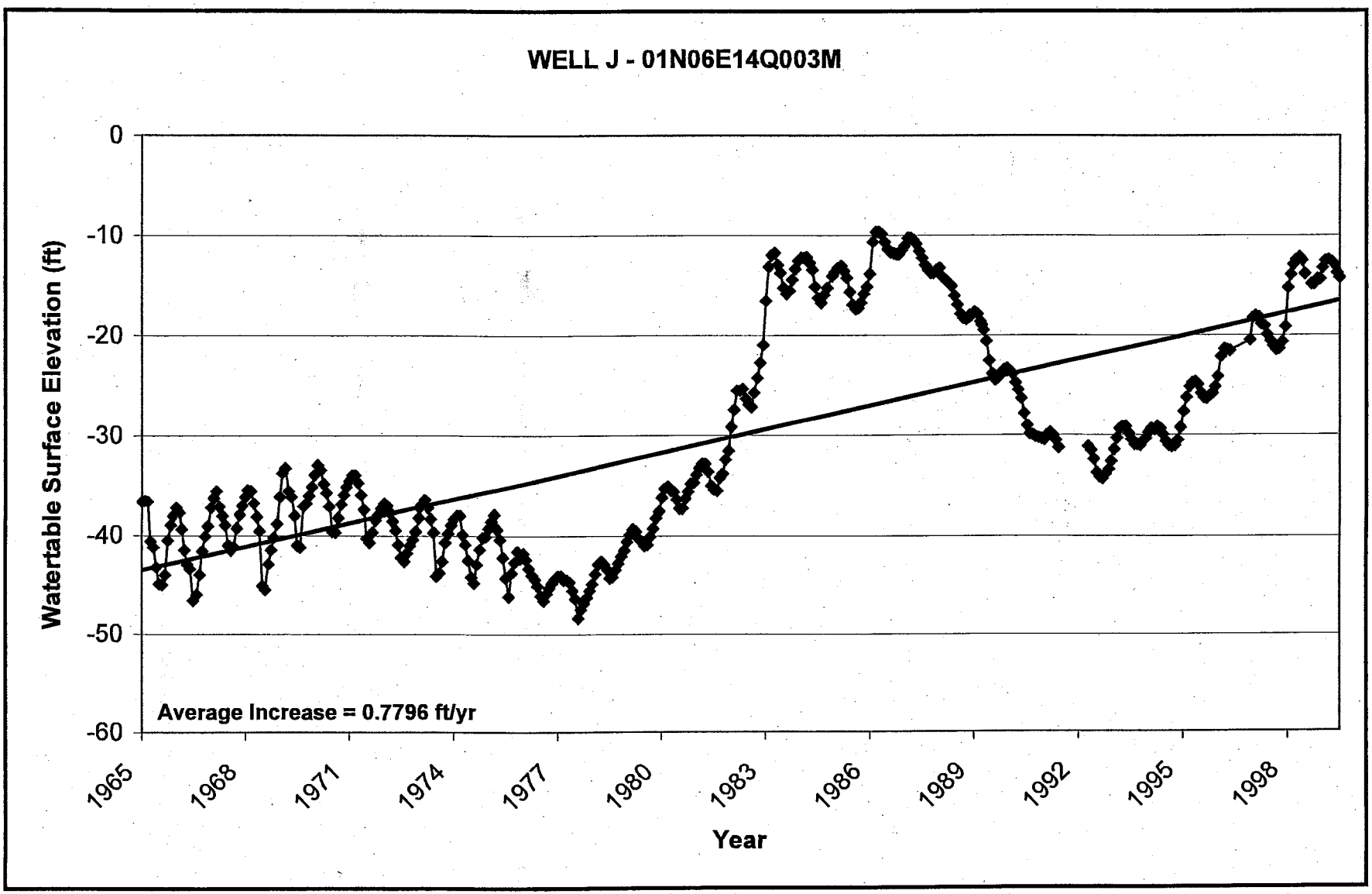


Figure 2-17 Hydrograph Well J
Source: California Department of Water Resources, Water Data Library at http://well.water.ca.gov/

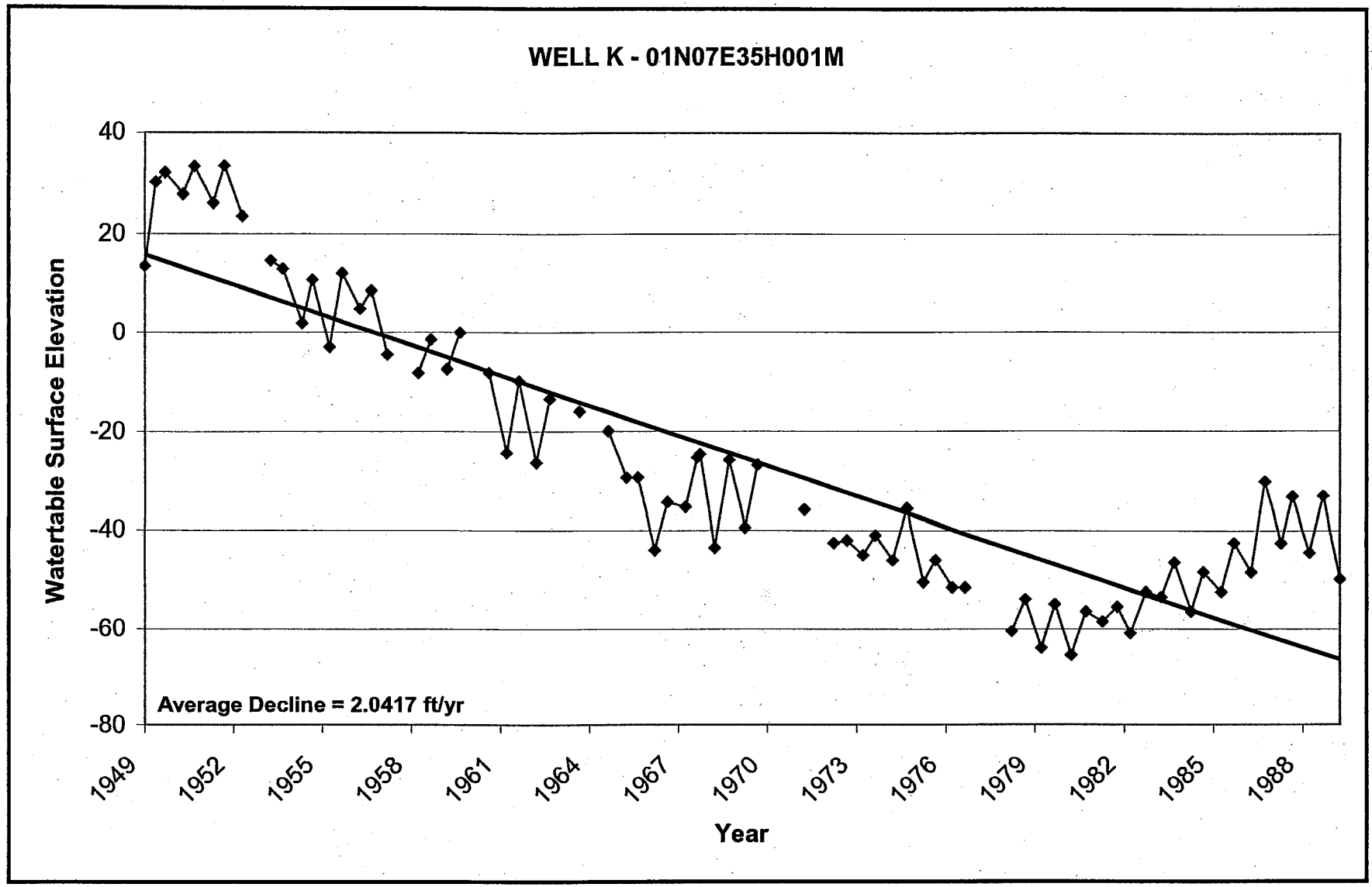


Figure 2-18 Hydrograph Well K
Source: California Department of Water Resources, Water Data Library at http://well.water.ca.gov/

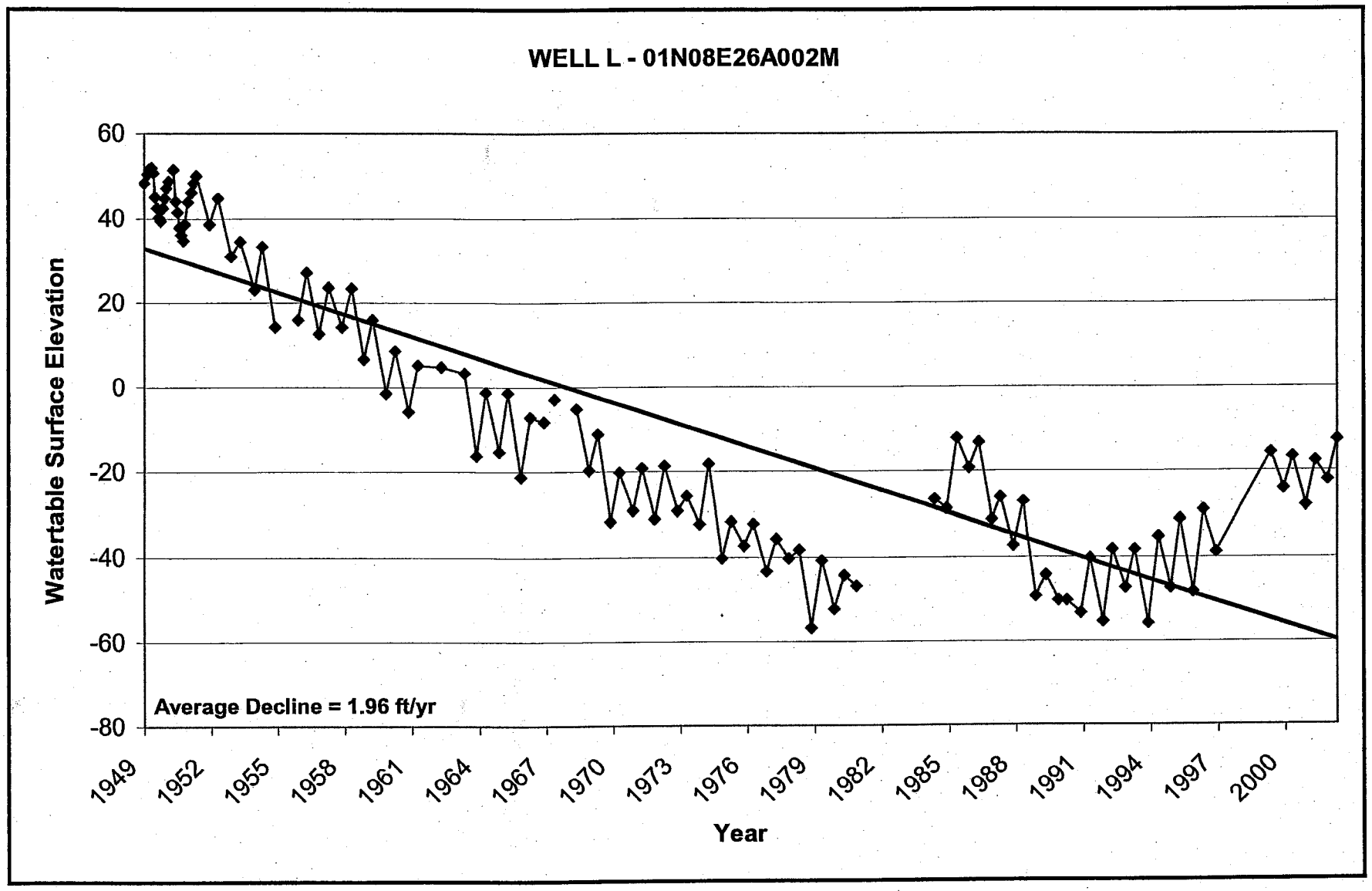


Figure 2-19 Hydrograph Well L
Source: California Department of Water Resources, Water Data Library at http://well.water.ca.gov/

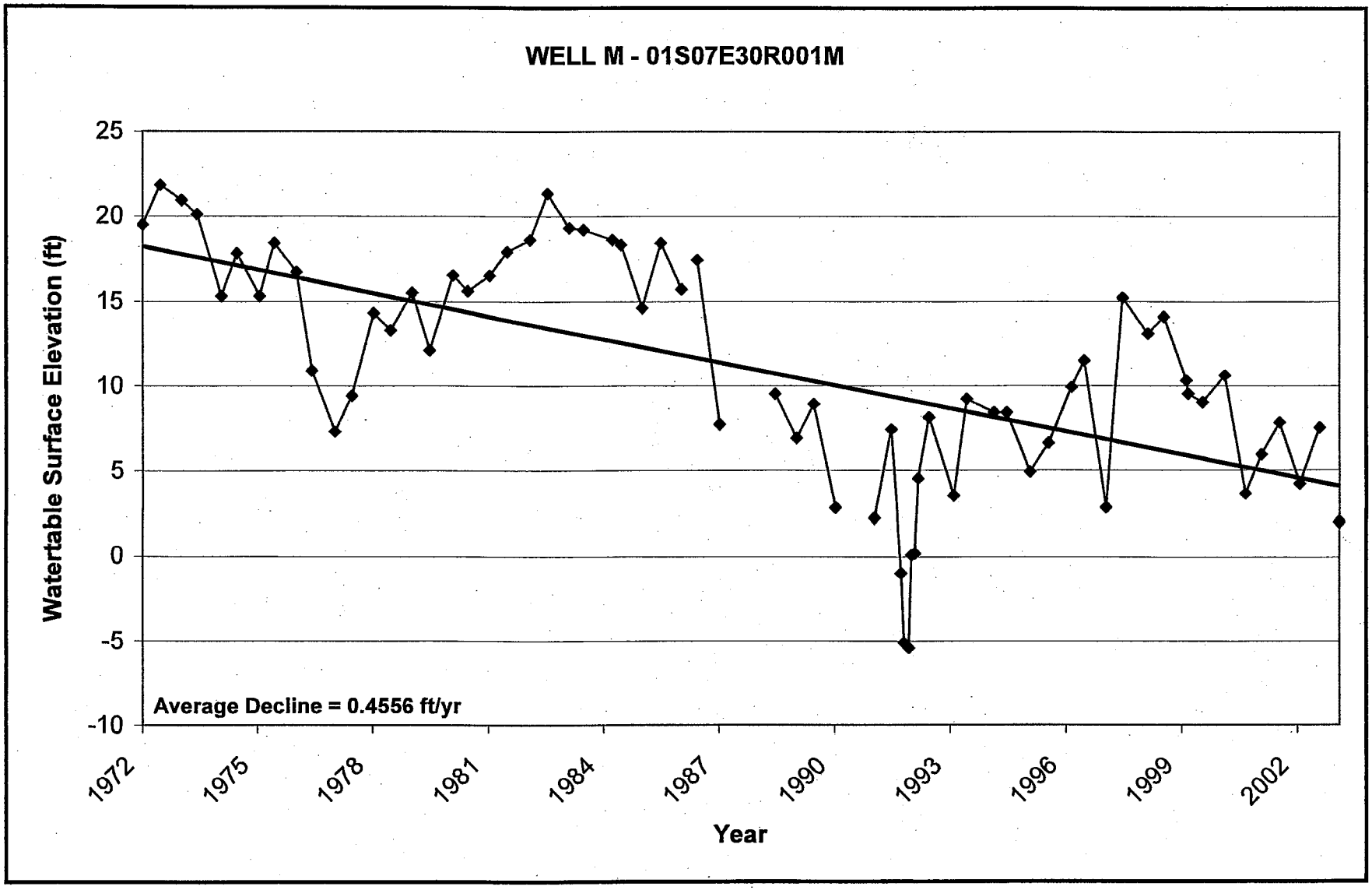


Figure 2-20 Hydrograph Well M
Source: California Department of Water Resources, Water Data Library at http://well.water.ca.gov/

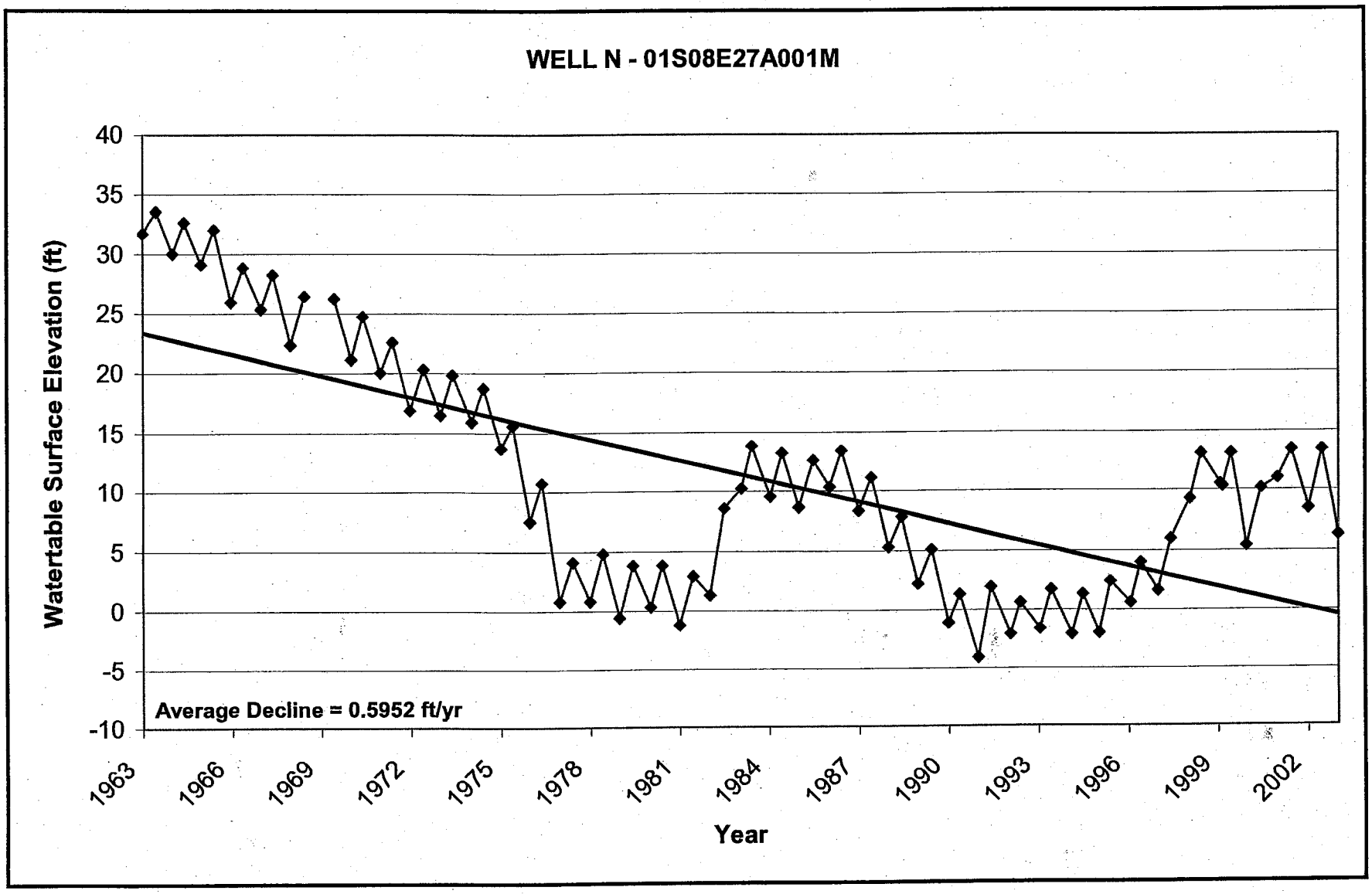


Figure 2-21 Hydrograph Well N
Source: California Department of Water Resources, Water Data Library at http://well.water.ca.gov/

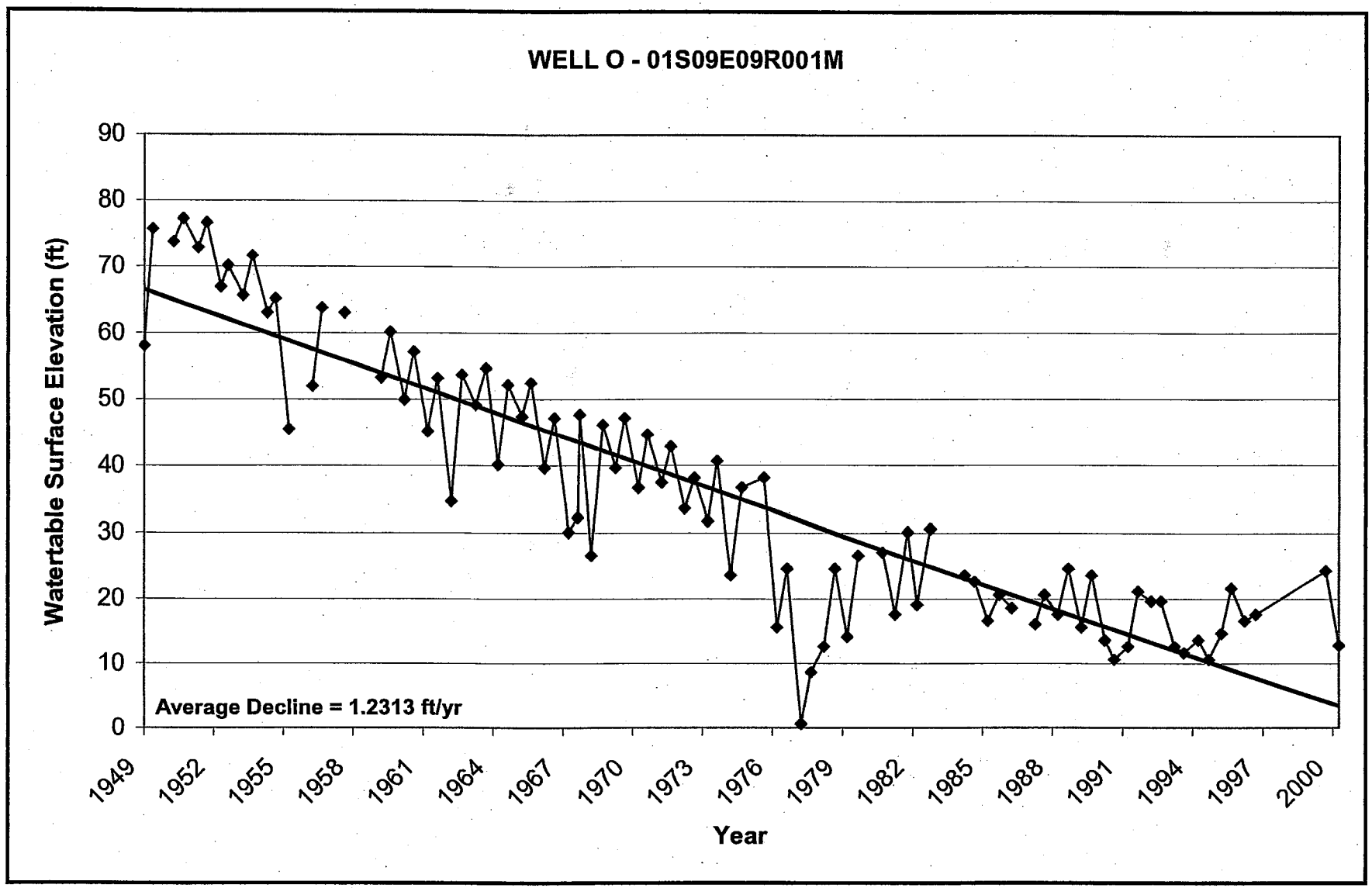


Figure 2-22 Hydrograph Well O
Source: California Department of Water Resources, Water Data Library at http://well.water.ca.gov/

Figures 2-9, 11, 12, 14, 15, 17, 18, and 21 illustrate groundwater levels for selected wells located in and around the principal cone of depression in eastern San Joaquin County. The groundwater levels in these wells clearly illustrate the significant decline in water levels since the 1960s, an average drop of 60 feet. The hydrographs of these wells illustrate average groundwater level drops of around 1.3 feet per year. In general, the lowest groundwater levels were reached in the late 1970s, recovering 10 to 20 feet, but then declined again in the mid-1990s. Wells in this area have a significant seasonal variation of 10 to 20 feet.

Figures 2-7, 8, 10, 13, 16, 19, and 20 illustrate groundwater levels for wells located further away from the main cone of depression, primarily further west and north. These wells show a less dramatic drop than the other wells, and more noticeable increase due to the wet years of 1981 through 1983 (total rainfall in 1983 was more than double the long-term average). The seasonal variation in these wells is distinct but not as pronounced as shown on the other hydrographs. In summary, the hydrographs reviewed illustrate the following general patterns:

1. In the central part of the County the groundwater table dropped continuously from the 1950s and possibly earlier to the mid 1980s. The decline was temporarily reversed due to climatic events.

2. In the northern part of the County groundwater table decline continued into the early 1990s.

3. Starting in the early 1980s a distinct drawdown and recovery cycle appears to have developed. The cycle covers a 10 to 15 year time period, and appears to be driven by climatic conditions more than long-term changes in groundwater use. This recovery and drawdown cycle may indicate that groundwater levels are beginning to equilibrate under current groundwater/surface water use patterns.

2.3.4 Groundwater Discharge and Recharge

The estimates of groundwater discharge and recharge presented in these sections are based on the modeling conducted by CDM for the San Joaquin County Water Management Plan, and the modeling originally conducted for the American River Water Resources Investigation (AWRI, 1996), and updated in 1999 for the Bureau of Reclamation by CH2MHill (CH2MHill, 1999). The results are for the Basin only.

2.3.4.1 Groundwater Pumping

Groundwater pumping records are not typically available for all wells within the study area. The approach adopted by DWR and other agencies to estimate groundwater withdrawals is based on land use. Figure 2-23 illustrates the 'simulated' total agricultural and municipal groundwater pumping for the model domain. Average annual groundwater withdrawal for the period from 1970 to 1993 for the Eastern San Joaquin portion of the model was 850,000 af.

2.3.4.2 Lateral Outflow

Under predevelopment conditions, lateral outflow from the Basin discharged to the San Joaquin River and the Delta area. For the period from 1970 to 1993, the net flow was positive, indicating no net groundwater outflow from study area.

2.3.4.3 Deep Percolation

The amount of water from natural and human activities that reaches the groundwater table is referred to as deep percolation. Deep percolation is the net of rainfall, applied irrigation water,

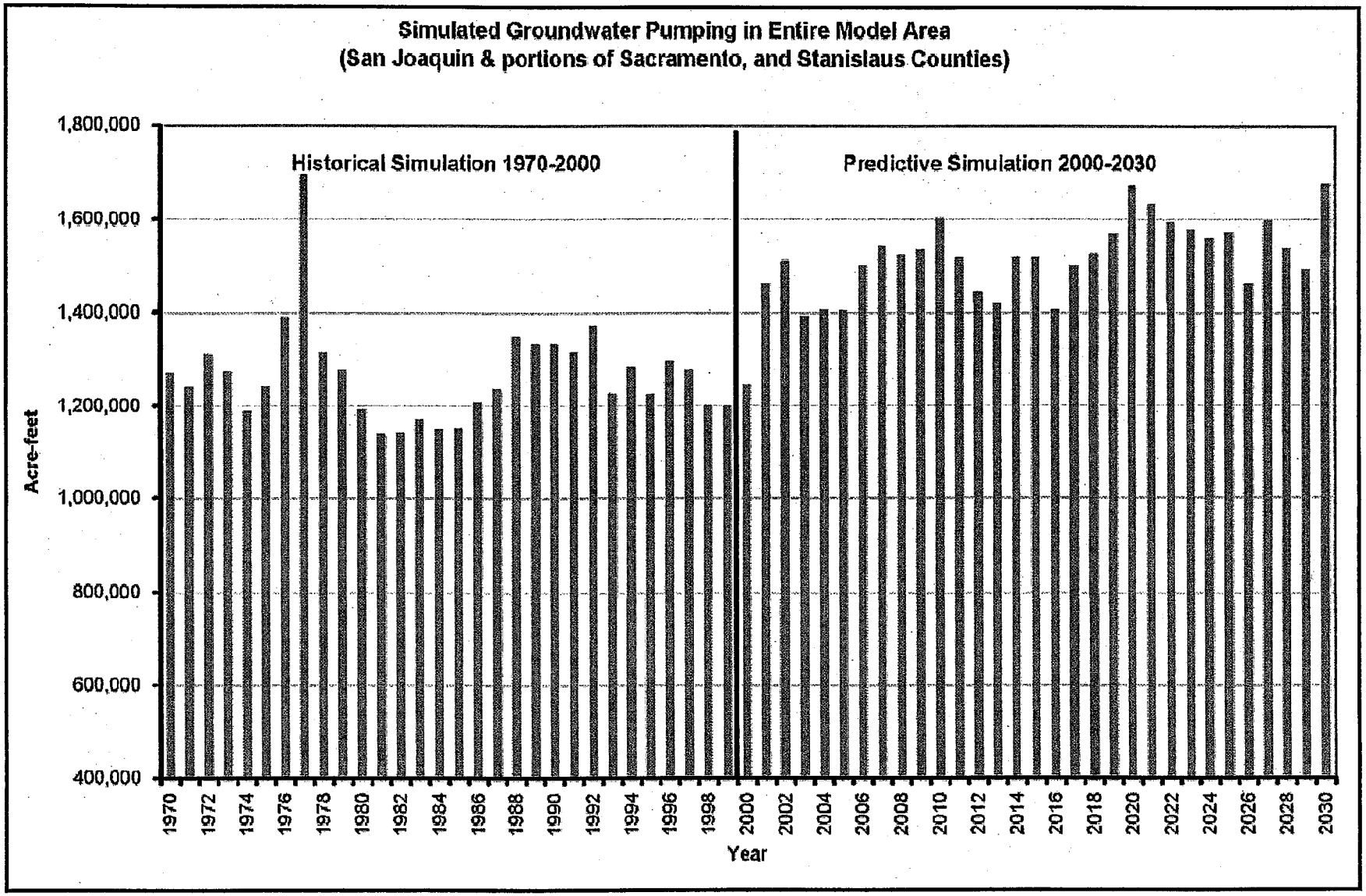


Figure 2-23 Simulated Groundwater Pumping
Source: Camp Dresser & McKee Inc.

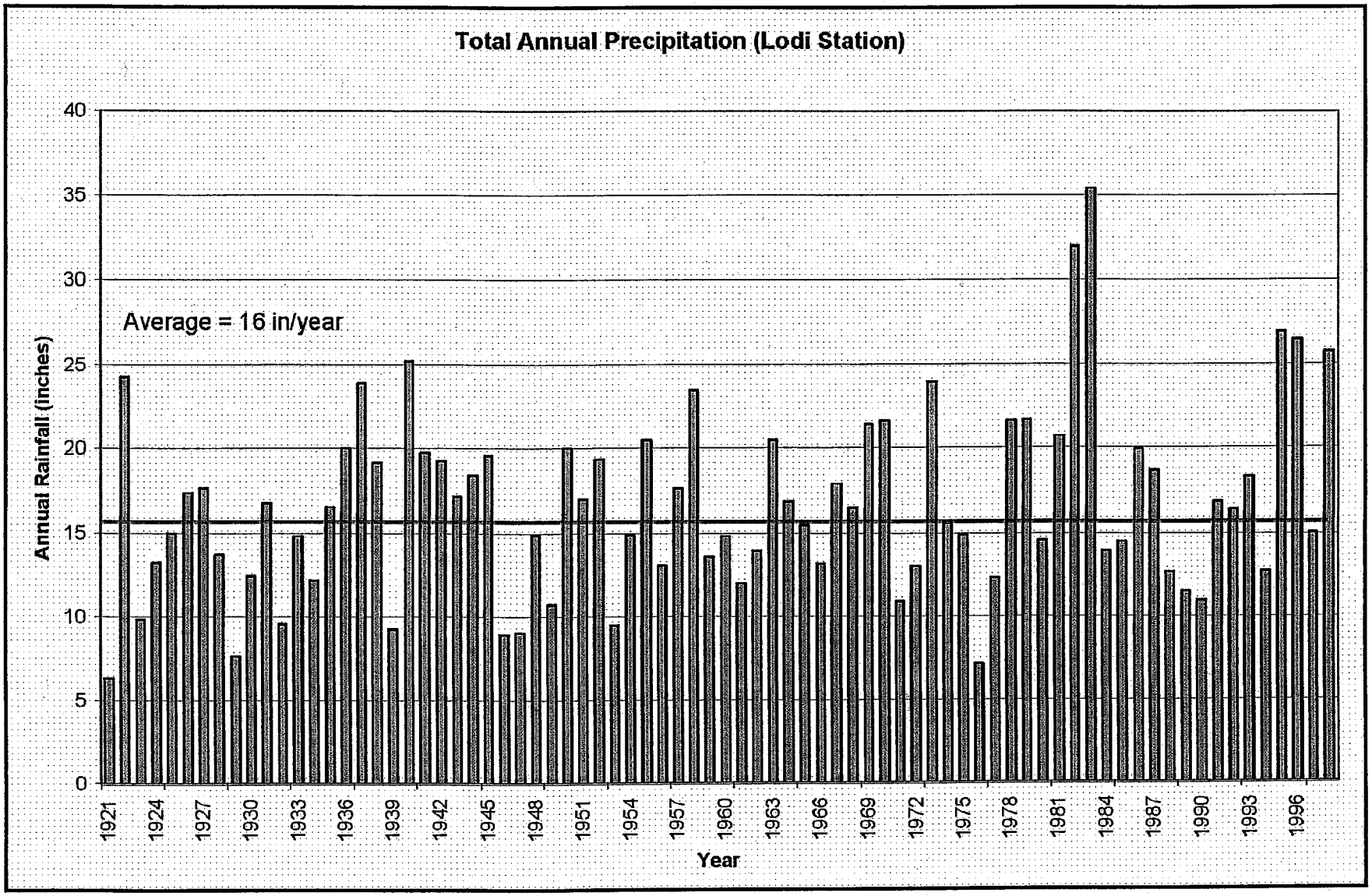


Figure 2-24 Annual Precipitation (Lodi Station)
Source: Camp Dresser & McKee Inc.

consumptive use, evapotranspiration, runoff, and unsaturated zone retention. Average rainfall within the study area is 14-16 inches per year. Figure 2-24 illustrates total annual rainfall for the Lodi Station. Within the Basin the estimated net deep percolation based on the modeling results is 590,000 af. Figure 2-25 illustrates the deep percolation for eastern San Joaquin County.

2.3.4.4 Lateral Inflow

Lateral inflow into the study area occurs primarily across the northern, western and southern boundaries. Under predevelopment conditions a net outflow existed, however due to the changed hydraulic conditions in eastern San Joaquin area there is now a net groundwater inflow. The groundwater model estimates net lateral inflow to be 120,000 af for the 1970 to 1993 period.

2.3.5 Surface Water Interaction

A large number of streams and rivers dissect the study area. The rivers that have a regional impact on the hydrogeology are Cosumnes River, Mokelumne River, Dry Creek, Calaveras River, Stanislaus River, Tuolumne River, and San Joaquin River.

Based on modeling results for the five-year period from 1989 to 1993, the Tuolumne and the upstream reaches of the Mokelumne and San Joaquin Rivers were gaining rivers – that is groundwater discharged into the rivers. The Calaveras, Dry Creek, Stanislaus, and the downstream reaches of the Mokelumne and San Joaquin Rivers were all losing rivers – i.e. surface water recharged the groundwater. On average from 1970 to 1993, there was a groundwater gain from streams of 140,000 af and a groundwater loss to streams of 100,000 af. The net gain to the groundwater system was 40,000 af.

2.3.6 Groundwater Balance

Current and historical groundwater pumping rates exceed the sustainable yield of the underlying groundwater basin on an average annual basis. Based on a simplified groundwater balance, as shown in Table 2-3, the net groundwater overdraft is estimated to be approximately 160,000 af/yr.

The result of long-term groundwater overdraft is two fold: significant decline in groundwater levels and increased accretions from area waterways. Although increased accretions to the groundwater basin from high quality surface water sources are desirable, accretions in the western fringes of the Basin and the Lower San Joaquin River are undesirable due to elevated salinity levels. Saline groundwater intrusion in the City of Stockton has forced the closure of several wells.

Approximately 222,400 acres in Eastern San Joaquin County irrigate with groundwater only and an additional 129,300 acres irrigate with both groundwater and surface water. At an extraction rate of 850,000 af and a combined groundwater irrigation area of approximately 352,000 acres, the average rate of groundwater extraction is 2.42 ft/ac. To eliminate groundwater overdraft and maintain the basin safe yield, the average rate of extraction would need to be reduced by 0.45 ft/ac to 1.96 ft/ac.

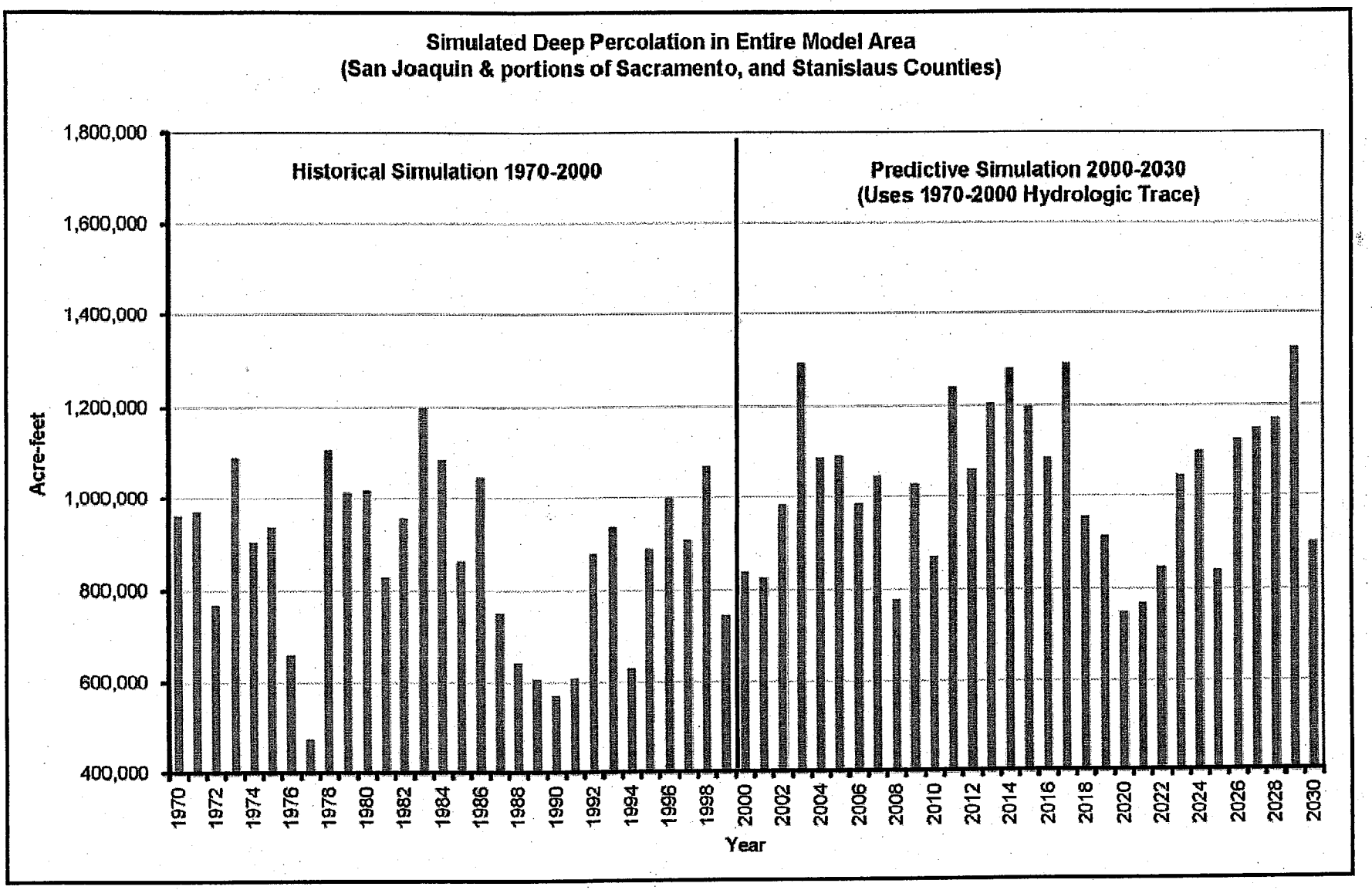


Figure 2-25 Simulated Deep Percolation
Source: Camp Dresser & McKee Inc.

Table 2-3 Simplified Groundwater Balance for Eastern San Joaquin County		
Groundwater Flow Component	**Average Value**	**Explanation**
Inflows (af)		
Deep Percolation/Recharge	608,400	Net infiltration from rainfall, irrigation, canal leakage etc.
Gain from Streams	198,170	Net inflow from streams to groundwater system
Lateral Inflow	98,000	Net of subsurface inflows and outflows.
Total Inflows	**904,577**	
Outflows (af)		
Groundwater Pumping	867,600	Net agricultural, municipal and industrial pumping
Loss to Streams	108,898	Net outflow from groundwater system to streams
Lateral Outflow	35,300	Subsurface Outflows
Total Outflows	**1,011,815**	
Groundwater Overdraft (af)		
Mined Aquifer Storage	107,238	Total Inflows minus Total Outflows
Estimated Saline Intrusion	42,000	Lateral Saline Intrusion into the Stockton Area
Total Estimated Overdraft	**150,700**	Sum of Mined Aquifer Storage and Saline Intrusion
Source: San Joaquin County Water Management Plan Volume I		

2.3.7 Saline Groundwater Intrusion

Groundwater flow in the Basin now converges on the depression with relatively steep groundwater gradients eastward from the Delta toward the cone of depression as depicted in Figures 2-3 and 2-4. The eastward flow from the Delta area is significant because of the typically poorer quality water now moving eastward in the Stockton area. Increased lateral inflow from the west is undesirable, as this water is typically higher in TDS and chloride levels and causes the degradation of water quality in the Basin. Figure 2-9 illustrates the approximate location of the 300 mg/L isochlor as measured in 2000. Projections indicate that the rate of eastward migration of the saline front is approximately 150 to 250 feet per year. Figure 2-9 also shows the projected 2030 location of the 300 mg/L isochlor under no-action conditions.

Degradation of water quality due to TDS or chloride contamination threatens the long-term sustainability of a very important water resource for San Joaquin County, since water high in TDS and/or chloride is unusable for either urban drinking water needs or for irrigating crops. Damage to the aquifer system could for all practical purposes be irreversible due to saline water intrusion, withdrawal of groundwater from storage, and potentially subsidence and aquifer consolidation. The saline intrusion problem is not well understood by the Authority. Further studies and monitoring methods are necessary to ensure the problem is addressed and monitored adequately. Section 4 discusses further the current groundwater monitoring program and future actions to be undertaken by the Authority and its member agencies.

2.3.8 Baseline Conditions

A no-action, or baseline simulation, was conducted to predict how current groundwater and surface management practices, projected out to 2030, would impact the Basin. Groundwater modeling has shown that unless there is a change in how groundwater is used or managed, levels will continue to decline and storage will continue to be reduced. Figure 2-26 shows the corresponding simulated groundwater table for the year 2030 under baseline conditions. A large portion of the Basin is shown to have groundwater levels 60 to 80 feet below sea level.

Further exacerbating the groundwater conditions, as already mentioned, is the lateral inflow of saline water from the west, which could render parts of the aquifer unusable. Figure 2-27 illustrates the approximate location of the 300 mg/l chloride concentration contour as of 1996 as well as the projected 2030 contour. Groundwater modeling has indicated that the rate of eastward movement of this line is approximately 150 to 250 feet per year. Figure 2-27 also shows the projected location of the 300 mg/L chloride concentration line by the year 2030 under baseline conditions.

In other portions of California's Central Valley, declining groundwater levels have also resulted in land subsidence. Generally, this is not a widespread problem in the Basin, but may be a localized issue in some areas.

2.4 Urban Water Demands

The population of San Joaquin County is growing rapidly. The current population is expected to increase by approximately 83 percent by 2030 from nearly 600,000 to 1.1 million. While increases in urban water demands will largely be offset by the development of agricultural lands, the changes in differing water quality needs and demand patterns will further stress the ability of urban purveyors to meet the areas water needs. Because water use per acre varies by city, an analysis of each cities acreage and usage was undertaken. The area for each city was determined from 1996 DWR Land Use Surveys.

In consideration of planned growth, future water demands are based on each city's sphere of influence. Future water demands assume that by the 2030 planning horizon, each city's sphere of influence will be fully developed and will maintain a similar water demand. Table 2-4 indicates that the total 1996 urban demand was 82,600 af annually, which is projected to increase by 146,000 af/yr to 241,100 af/yr by 2030. Unforeseeable changes such as general plans revisions, changes in population density and increased water conservation can affect the accuracy of the projected water demand. It is recommended that the projections be updated as DWR Land Use Surveys for San Joaquin County become available.

2.5 Agricultural Water Demands

The agricultural water demands presented in this Plan are based on the 1996 DWR Land use survey. Based on the associated land use and crop type, applied water demands under average conditions were identified and summarized by Water District in Table 2-5. The entire applied water demand for non-urban and non-riparian vegetative areas in San Joaquin County in 1996 is approximately 1,522,000 af/yr, 954,000 af of which is needed in Eastern San Joaquin County. Table 2-5 assumes that agricultural lands outside of the urban spheres of influence will remain in production and that any agricultural lands within the urban spheres of influence will be developed by the 2030 planning horizon. The decrease in agricultural demand within city's sphere of influence is estimated to be 132,000 af. With this decrease, the projected agricultural demand in 2030 is estimated to be 1,390,000 af per year.

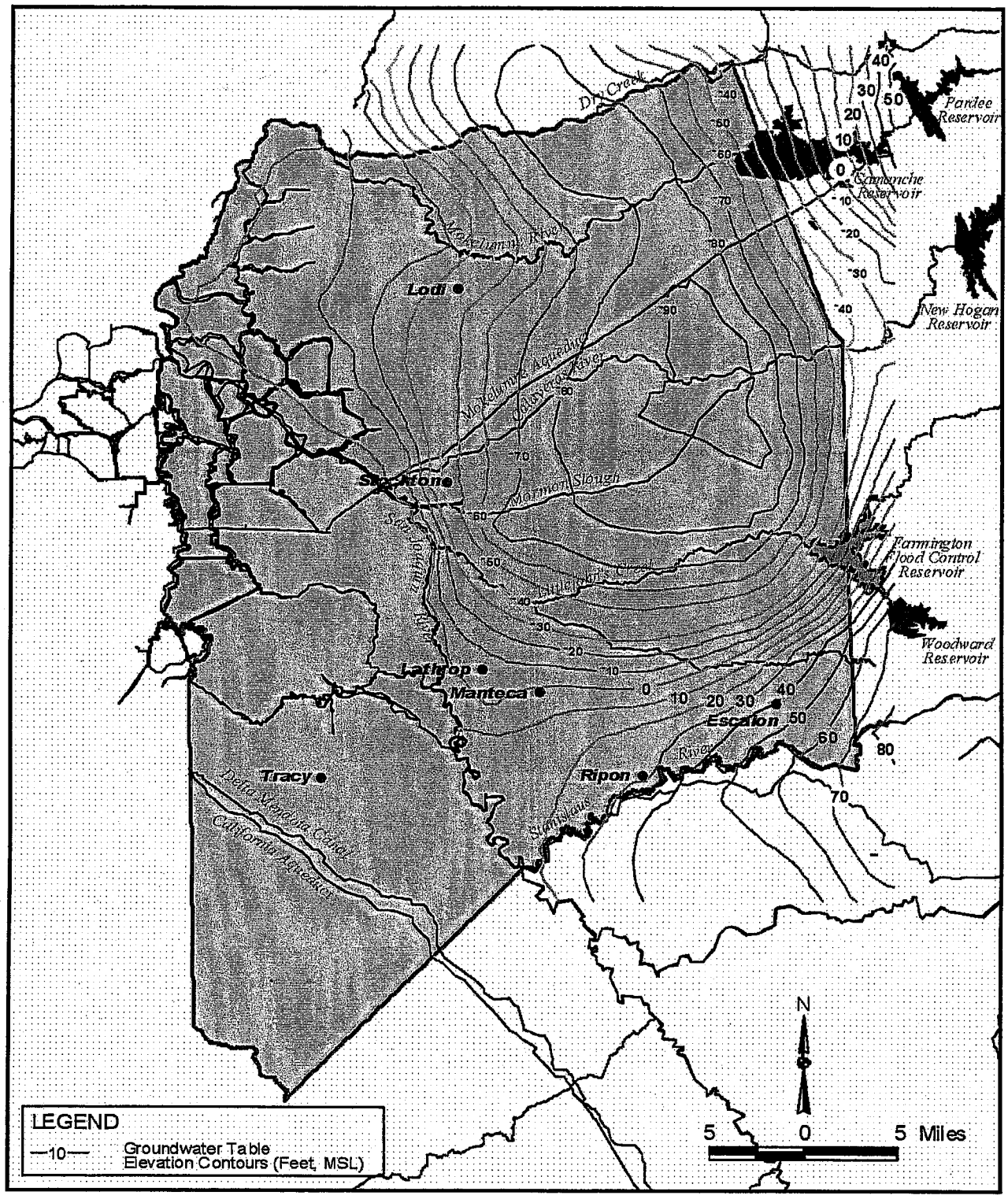


Figure 2-26 Simulated 2030 Groundwater Table Under Baseline Conditions
Source: Camp Dresser & McKee Inc.

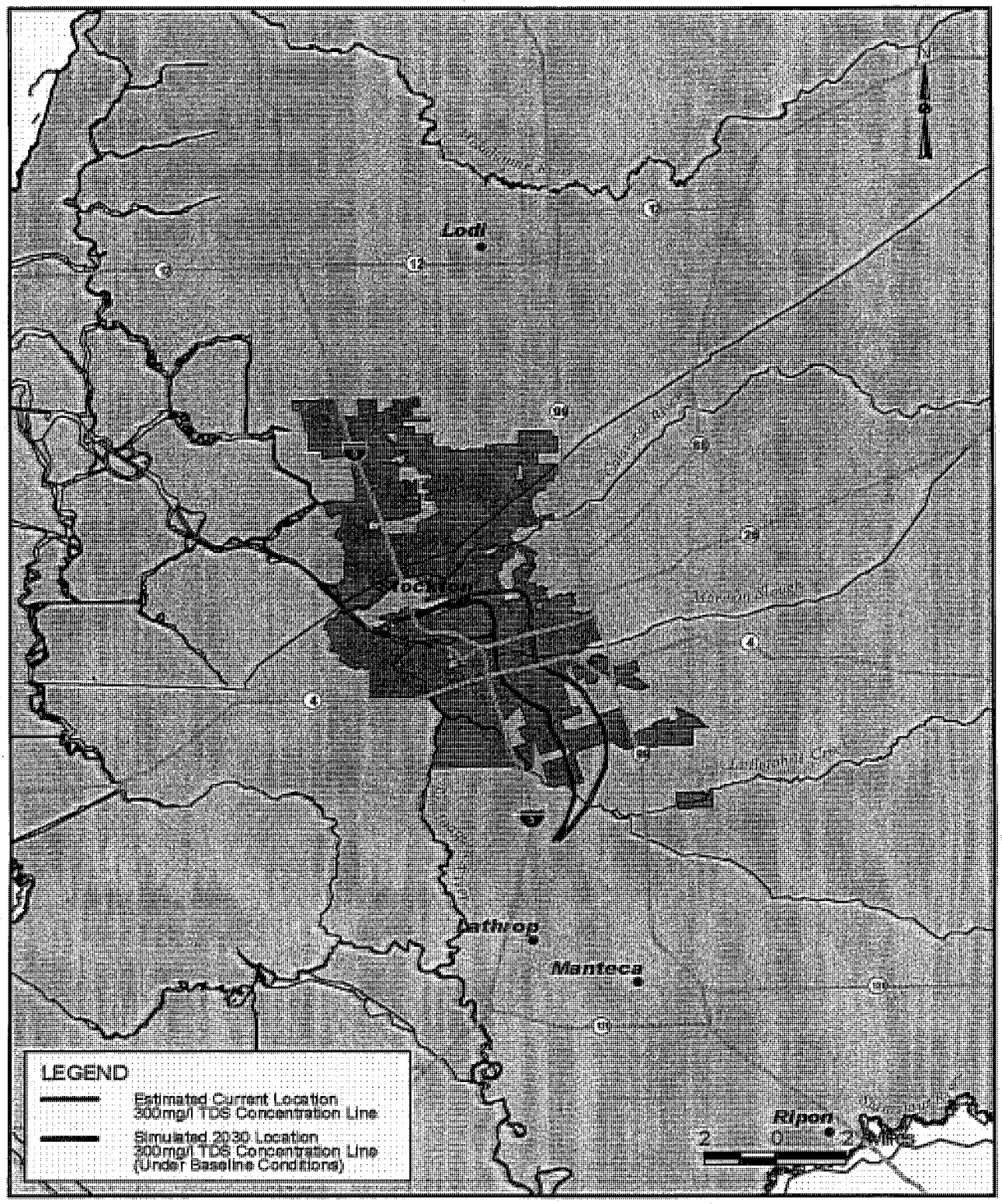


Figure 2-27 Estimated 2000 and Projected 2030 Saline Front
Source: Camp Dresser & McKee, Inc.

Table 2-4 Future Urban Water Demands

City	"1996" Current Demand[3] (af)	Current Land Use (acres)	Water Use/ Acre[4] (af/ac)	Future Land Use (acres)	Future Demand (af)	Net Increase in Demand (af)
Escalon	1,400	932	1.5	2,106	3,200	1,800
Lathrop [1]	2,900	3,409	0.85	13,254	11,300	8,400
Lodi	16,600	6,071	2.7	9,650	26,400	9,800
Manteca	11,200	5,056	2.2	14,140	31,300	20,100
Ripon	3,500	1,764	2.0	6,676	13,200	9,700
Stockton [2]	47,000	29,746	1.6	61,353	96,900	49,900
Total	**82,600**				**241,100**	**146,600**

Source: San Joaquin County Water Management Plan Volume I

Notes:

1. Lathrop water use per acre is lower than the remainder of the cities because their developments are less dense than other cities. The city's future projections indicate that their water use per acre will increase to 1.4 ac-ft/ac. To maintain consistency, the water use per acre has been calculated as if it will stay the same over time. It is difficult to predict how development patterns will change, and the error that could be associated with this assumption is less than 0.5 percent of the future County demand.
2. The demand for the city of Stockton only reflects the water use within city limits. Water providers for the Stockton area also provide significant water to the urban areas outside of the city limits. Total water deliveries for the Stockton urban area are approximately 62,000 ac-ft.
3. Current year represents "1996". Individual city water usage data is based on information gathered during the development of the San Joaquin County Water Management Plan, 2001.
4. Water usage on a per acre basis is used to simulate groundwater withdrawals in the Camp Dresser & McKee developed DYNFLOW Groundwater Model for Eastern San Joaquin County.

The estimated and projected water demands presented are based on the following assumptions:

1. Drastic changes in cropping patterns will not change drastically.

2. Applied water demands include evapotranspiration, system losses, tailwater drainage, and percolation to groundwater.

3. Applied water demands do not include conveyance losses or off-farm demands. The applied water demand is the information necessary for the groundwater model, which also takes into account the differences in consumptive use for each parcel of land. Urban areas have different consumptive use than agricultural areas, and consumptive use also varies between different types of crops. Therefore, the applied water demand will usually be less than the diversion amounts maintained by each district.

The decrease of 132,000 af of agricultural water use can be compared to an increase in urban water use of 146,000 af. In terms of net demand, this is not a significant change. This similarity in demand is due to an approximate one-to-one conversion rate between urban and agricultural use for each acre. The usage rates for agricultural and urban water use are similar, with urban water use slightly higher per acre. Most land around urban areas is currently farmed; thus, in order for the urban areas to expand, agricultural land would be converted at an approximate one-to-one ratio. Because each acre of new urban land results in 1 less acre of agricultural land, and the water use figures are similar, the water demands are projected to remain essentially constant throughout the planning period.

Table 2-5 Estimated and Projected Agricultural Water Demands
(Applied Water Requirement under Average Conditions)

District (Within San Joaquin County Only)	1996 Estimated Applied Water Demand (af/yr)	2030 Projected Applied Water Demand (af/yr)
North Delta Water Agency	**37,244**	**37,244**
Central Delta Water Agency	**209,622**	**209,622**
South Delta Water Agency	206,759	206,759
West Side ID	17,205	17,205
City of Tracy	34,192	-
Banta-Carbona	42,585	42,585
Lathrop	21,225	-
South Delta Area (Total)	**321,966**	**266,549**
Del Puerto WD	**15,529**	**15,529**
Plain View WD	**11,217**	**11,217**
North San Joaquin WCD	**88,022**	**88,022**
Woodbridge ID	**102,517**	**102,517**
Lodi	**5,124**	-
Stockton East WD	151,210	151,210
Stockton	38,701	-
SEWD (Total)	**189,911**	**151,210**
Central San Joaquin WCD	**159,554**	**159,554**
Oakdale ID	**48,391**	**48,391**
South San Joaquin ID	126,709	126,709
Manteca	21,663	-
Escalon	1,761	-
Ripon	9,508	-
SSJID (Total)	**159,641**	**126,709**
Unincorporated Areas	**173,390**	**173,390**
Total	**1,522,128**	**1,389,954**

Notes:

1. This table was modified based on comments received on the Draft SJCWMP. It was compiled from the DWR land use information linked to Private, State and Federal water district outlines in a GIS system. There are significant areas of overlap between city limits, spheres of influence, and between water districts themselves. Bearing this in mind, there are bound to be variations and differences between these estimates and those compiled using different methodology. The figures in this table represent theoretical applied water requirements for average conditions.
2. The quantity of water actually pumped, diverted and applied will be significantly different due to a variety of factors including distribution system inefficiencies and losses (ranging from 10 to 20 %), climate, soil conditions, etc. The loss of agricultural land to urban expansion is illustrated by the reduction in agricultural acreage currently located within urban spheres of influence.
3. Agricultural lands in urban areas and urban spheres of influence are phased out completely by 2030. Other changes are likely to impact water demand, such changes in cropping patterns, irrigation methods, and farming of previously vacant land. However, these changes have not been quantified in any systematic or reliable basis.
4. Urban development will be undertaken by increasing urban densities through infill of spheres of influence. Development according to this guideline has yet to gain market acceptance and widespread application in the County. However, current development patterns, and their associated average unit water usage rates, are assumed to apply in the future.
5. Local urban development practices will result in new developments with similar water use rate. Water use figures were calculated for each individual urban area, and these figures were applied to future development. Each urban area has a unique unit water use rate based upon local factors, such as amounts of open space and conservation practices. As best management practices are implemented with respect to water conservation, projected water demands for urban developments may actually be conservative as compared to past conservation efforts.
6. The urban spheres of influence reflect 2030 development. The urban spheres reflect the local plans for where expansion could occur in the future, but it is possible that the development will occur in different areas, or in different amounts than predicted. The State Department of Finance predicts future populations; the projected 2030 population can fit within the spheres at current urban densities.

The assumptions in Table 2-5 simplify the process of predicting future water demands. The analysis undertaken does in no way imply that other changes in urban development and agriculture are not likely, nor are the assumptions intended to discourage implementation of structural or policy changes that improve water use efficiency. For the purposes of the Plan, extensive analysis of the sensitivity of the assumptions on the projected water demand was not

undertaken. From a water resources planning perspective, the demands presented are sufficient.

2.6 Water Supplies

The California water rights system, considered a dual system, recognizes both riparian and appropriative rights. Appropriative rights date back to the mid-1800's during the California Gold Rush under the "*First-in-Time, First-in-Right*" doctrine. The Water Commission Act of 1913 required that a permit be issued for appropriation of surface water and that the right be assigned a priority based on the date issued. Today, the SWRCB is the regulatory agency through which surface water rights are appropriated. Water rights acquired prior to December 14, 1914 are not subject to State Board regulation; however, Article X, § 2 of the California Constitution mandates that water must be put to "...reasonable and beneficial use..." or risk loss of water right. (http://ceres.ca.gov/, 2003)

The State defines groundwater as either the underflow of a surface stream, a definite underground stream, or percolating waters. The appropriative water rights system applies to the first two definitions, but does not apply to percolating waters. Percolating waters are treated similarly to riparian water rights in that groundwater may be put to beneficial use in an amount proportional to the size and needs of the property. Only relatively recently have local public agencies and the State begun to look at the management of groundwater to prevent excessive overdraft. Disputes in groundwater rights have created adjudications in some basins whereby groundwater is extracted by court order.

2.6.1 Surface Water Supplies

Water supplies in San Joaquin County are subject to the complex system of riparian and appropriative rights and are further complicated by numerous agreements and water service contracts. Table 2-6 provides a synopsis of the major water rights and contracts held by San Joaquin County water agencies. It is estimated that San Joaquin County has approximately 1.2 million af/yr of surface water available. This amount includes approximately 500,000 af/yr applied by farmers in the Delta.

The actual quantity of water delivered varies significantly from year to year due to contractual and water right conditions. The actual quantities utilized within San Joaquin County also vary significantly with climatic fluctuations, infrastructure limitations, and facility operation. For example, although SEWD has an interim contract with USBR for 75,000 af/yr from New Melones Reservoir, this full quantity has yet to be made available to SEWD.

Surface water supplies are likely to decrease in the future. As shown in Table 2-6, there are several current contracts for "interim" supplies, which are available subject to requirements of upstream or senior rights holders. As development increases in areas with senior water rights, San Joaquin County's surface water supplies will be reduced.

2.6.2 Groundwater Supplies

Groundwater pumping quantities in San Joaquin County are not recorded at the water district or county level. Consequently, an accurate assessment of the quantity of groundwater used is difficult to establish. The approach adopted by DWR and other agencies to estimate groundwater withdrawals is based on land use and population. Using a similar approach with groundwater modeling, CDM estimated that the total agricultural and municipal groundwater pumping in Eastern San Joaquin County has averaged approximately 870,000 af/yr for the last 20 to 30 years. Sustaining the current rate of groundwater pumping in Eastern San Joaquin

County will further decline groundwater levels and saline groundwater will continue to migrate east into the Basin as described in Section 2.2.8.

Table 2-6 Summary of Current Water Rights and Contracts[1]

District/Agency	Source River/Reservoir	Wet Year Quantity	Dry Year Quantity	Comments
SEWD	Calaveras/ New Hogan	40,115	<40,115	Firm, dry[2]
		27,000	<27,000	Estimated unused portion of CCWD's 43,500 af allocation
	Stanislaus/ New Melones	75,000	<75,000	Interim, subject to other users requirements and availability
WID	Mokelumne/ Camanche	60,000	39,000	Firm
		See note[3]	0	Nonfirm
NSJWCD	Mokelumne/ Camanche	20,000	0	Subject to EBMUD supply and future requirements
CSJWCD	Stanislaus/ New Melones	80,000	<80,000	49,000 af firm supply, 31,000 af interim supply subject to other user's requirements
SSJID/OID	Stanislaus/ New Melones	320,000	<320,000,	Estimated use in County. [4]
CDWA	Delta	226,000	226,000	Estimated based on current demand.
SDWA	Delta	225,000	225,000	
City of Tracy	Delta Mendota Canal/CVP	10,000	10,000	CVP Contract and water purchase agreements with Local Irrigation Districts
		7,500	7,500	
West Side ID	San Joaquin River	30,000	30,000	Dependent on flow
	Delta Mendota Canal/CVP	7,500	7,500	CVP Contract
Plain View WD	Delta Mendota Canal/CVP	21,000	21,000	CVP Contract
Banta-Carbona WD	Delta Mendota Canal/CVP	25,000	25,000	CVP Contract
	San Joaquin River	30,000	30,000	Depends on flow
Hospital WD	Delta Mendota Canal/CVP	34,000	34,000	CVP Contract

Notes:

1. The figures in this table are not necessarily authoritative and are provided for general information purposes only. The actual quantity of water available from year to year and the quantity that is actually used vary significantly.
2. New Hogan Reservoir has an estimated yield of 84,100 af/yr. SEWD contract with the Bureau of Reclamation is for 56.5% of the yield, and Calaveras County Water District rights to the remaining 43.5%. CCWD currently uses approximately 3,500 af of its allocation, and riparian demand is 13,000 af. Based on an agreement between CCWD and SEWD, SEWD currently has use of the unused portion of CCWD's allocation.
3. Under the WID-EBMUD water right settlement agreement, 60,000 af per year is the firm portion of the Woodbridge Irrigation District Water Rights. 60,000 af is the minimum amount available to WID during any year when the inflow to Pardee Reservoir is greater than 375,000 af. When the Pardee inflow is less than 375,000 af, the minimum amount available to WID is 39,000 af. WID is entitled to divert water in excess of the 60,000 af under the priority of its water right licenses when such water is available at WID's point of diversion and is surplus to EBMUD's downstream commitments under the Joint Settlement Agreement.
4. OID and SSJID share equally rights to 600,000 af/yr when available. Of its 300,000 af/yr share, OID applies approximately 20,000 af/yr in Eastern San Joaquin County. SSJID is located completely within San Joaquin County. In years when the full allotment is not available, the amount is less than 320,000 af and is based on a formula which is part of the agreement with USBR.

3 Basin Management Objectives

Senate Bill (SB) 1938, created in 2002, requires that agencies that elect to, "Prepare and implement a groundwater management plan that includes basin management objectives for the groundwater basin that is subject to the plan. The plan shall include components relating to the monitoring and management of groundwater levels within the groundwater basin, groundwater quality degradation, inelastic land surface subsidence, and changes in surface flow and surface water quality that directly affect groundwater levels or quality or are caused by groundwater pumping in the basin." In addition, local agencies that do not adopt or participate in a plan fulfilling the requirements of SB 1938 shall not be eligible for State funding intended for groundwater projects. The Authority has developed the following qualitative Basin Management Objectives (MO) for the GMA.

3.1 Groundwater Levels

Management Objective #1: Groundwater Levels

Maintain or enhance groundwater elevations to meet the long-term needs of groundwater users within the Groundwater Management Area.

Groundwater Management Plan elements contributing to the success of Basin MO #1:

1 Increased use of available and new surface water supplies;

2 Implementation of local and regional conjunctive use programs and projects;

3 Urban and agricultural incentive based conservation and demand management programs;

4 Basin-wide monitoring and science programs;

5 Development of operations criteria for protection against prolonged droughts and the prevention of Basin mismanagement; and

6 Development of sufficient local and outside revenue sources for projects and programs to meet the Basin MO #1.

3.2 Groundwater Quality

Management Objective #2: Water Quality

Maintain or enhance groundwater quality underlying the Basin to meet the long-term needs of groundwater users within the Groundwater Management Area.

Groundwater Management Plan elements contributing to the success of Basin MO #2:

- Development and implementation of saline groundwater intrusion control projects and programs;

- Increased coordination with regulatory agencies to better protect against and mitigate groundwater contamination;

- Monitoring and science programs focused on the source and migration of saline groundwater;
- Development of operations criteria for protection against prolonged droughts and the prevention of Basin mismanagement; and
- Development of sufficient local and outside revenue sources to meet Basin MO #2.

3.3 Surface Water Quality and Flow

Management Objective #3: Surface Water Quality

Minimize impacts to surface water quality and flow due to continued Basin overdraft and planned conjunctive use.

Groundwater Management Plan elements contributing to the success of Basin MO #3:

- Utilization of surface water supplies when available in a regional groundwater recharge program or conjunctive use program that is sensitive to downstream users and the environment;
- Avoidance or mitigation of projects that detrimentally affect surface water quality and flow;
- Increased understanding of the interaction between surface water and groundwater through basin-wide monitoring and science programs;
- Regular updates to the Eastern San Joaquin County Groundwater Model as new data becomes available; and
- Development of sufficient local and outside revenue sources for projects and programs to meet the Basin MO #3.

3.4 Inelastic Land Subsidence

Management Objective #4: Water Quality

Prevent inelastic land subsidence in Eastern San Joaquin County due to continued groundwater overdraft.

Groundwater Management Plan elements contributing to the success of Basin MO #4:

- Continue to monitor observations of datums and bench marks in order to assess if an inelastic land subsidence problem exists in Eastern San Joaquin County; and
- Should problems exist, the Authority will re-evaluate the need for inelastic land subsidence monitoring and prevention programs.

4 Groundwater Management Options

4.1 Conjunctive Use Options

Conjunctive Use, as defined by the DWR 2003 Draft Bulletin 118, is:

> "The coordinated and planned management of both surface and groundwater systems in order to maximize the efficient use of the resource; that is, the planned and managed operation of a groundwater basin and a surface water storage system combined through a coordinated conveyance infrastructure. Water is stored in the groundwater basin for later and planned use by intentionally recharging the basin during years of above-average water supply."

In order to successfully implement a conjunctive use program that will meet the goals of this Plan, the Authority must first identify and develop a list of water management options. An option, in the context of this Plan, is the method, program, or policy suitable for the broader conjunctive use program for Eastern San Joaquin County. The following section defines the concepts for the acquisition of new and maximization of existing surface water supplies, groundwater recharge techniques, and other options dealing with demand management and water reuse.

4.1.1 Surface Water Options

4.1.1.1 New Surface Water Supplies

Opportunities to obtain new surface water rights within California are limited. The SWRCB has designated most rivers in the region as generally fully appropriated in the summer months when demands for water are at their peak. Methods to acquire new surface water are described below.

Wet Year Flows

Wet year water, also known as flood-flows or unregulated flows, are defined as either releases made from upstream storage reservoirs to maintain adequate flood storage capacity or flows in excess of in-stream flow requirements. Developing cost effective methods to capture and store flood water is a major challenge due to the intensity and infrequency of major storm/runoff events. Capturing flood-flows are often associated with new or expanded reservoir storage either off-stream or on-stream. Major rivers and streams accessible to Eastern San Joaquin County have generally unappropriated flows in the late fall through spring months and are subject to water right permit approval by the SWRCB.

Water Transfers from Out-of-Basin

Water transfers have become a key component in water resources planning throughout the State. Entities import water from willing sellers to supplement their supplies. Water transfers often benefit both parties by helping sellers recover water development costs at prices often far below the cost of developing new supplies. The water rights of the sellers are not impacted by water transfers, which is an incentive for entities to promote conservation and water use efficiency. An example of a water transfer agreement in California is the transfer of Colorado River water from Imperial Irrigation District to the City of San Diego in return for irrigation system improvements and compensation for lost revenue due to land fallowing. Water transfers are subject to approval by the SWRCB except in the case of existing Pre-1914 water rights.

Exercise of Area of Origin Priority

The system of appropriated surface water rights in California is based on a system of hierarchy

and priority. However, protected areas or Areas of Origin within the Sacramento/San Joaquin Delta watershed receive priority when considering water right appropriations. Water code §1216 states that, "A protected area shall not be deprived directly or indirectly of the prior right to all the water reasonably required to adequately supply the beneficial needs of the protected area... by a water supplier exporting or intending to export water for use outside a protected area..." Historically, the interpretation of the statute has favored those who export water from the Delta, nevertheless pending legal action and political pressure could increase water allocations to Eastern San Joaquin County and give priority to future water right applications.

4.1.1.2 Maximizing Existing Surface Water Supplies

Agencies within Eastern San Joaquin County have existing water rights and contracts that cannot be fully utilized for a variety of factors including supply reliability and infrastructure limitations. The following section describes methods to maximize the use of existing supplies.

Re-operation of Existing Facilities

The re-operation of existing reservoirs is the intentional drawdown of stored water below the minimum capacity required for flood control purposes. In the context of a conjunctive use program, reservoir re-operation potentially utilizes a reservoir's carryover storage for groundwater recharge allowing for greater flood control capacity and a reduction in the foreseeable frequency of reservoir spills. Changes in the mode of operation could detrimentally affect other reservoir benefits such as hydropower, water supply, temperature control, and recreation. These impacts can vary the reservoirs ability to be re-operated for increased water supply benefits.

In-Basin Water Transfers and Purchases

Similar to water transfers from out-of-basin entities, agencies with extensive surface water rights could make water available to other agencies with limited water rights overlying more depressed groundwater levels within Eastern San Joaquin County. Additional investments in infrastructure resulting in increased efficiency could facilitate the transfer or sale of water. In order to avoid the loss of water rights through non-use, water districts and agencies could transfer their rights to other in-basin users. Examples of in-basin water transfer include purchases by the City of Tracy from the West Side and Banta-Carbona Irrigation Districts and by the City of Stockton from SSJID/OID.

4.1.2 Groundwater Recharge Options

In 2001 SEWD, in conjunction with the USACE and other local sponsors, completed the Farmington Groundwater Recharge/Seasonal Habitat Study. This Study explored the feasibility of groundwater recharge methods in the context of San Joaquin County's available surface water supplies and availabilities. The Study explores the benefits and drawbacks of the various methods used to recharge groundwater including detailed cost comparisons. The groundwater recharge methods are discussed below and summarized in Table 4-1.

4.1.2.1 Direct Recharge to Groundwater

Field Flooding

Field flooding consists of ponding surface water on seasonally fallowed agricultural areas in the late fall, winter, and early spring months for the purpose of recharging the groundwater Basin. In general this option could be used in fields with permeable soils and with little or no vertical impediments. Very few minor site preparations are necessary to percolate substantial amounts of water, making this method economical. Recharge efficiencies can also be increased with the addition of internal berms and check structures creating recharge cells for the purpose of

keeping water from draining from the field too quickly. Field flooding is not effective on permanent crops such as orchards, but is very feasible on vineyards and certain row crops. There could be additional environmental benefits to this approach, such as providing seasonal habitat to migratory waterfowl.

Spreading Basins and Recharge Ponds

Unlike field flooding, spreading basins or recharge ponds are dedicated facilities constructed solely for recharge and seasonal habitat. Spreading basins are not rotated into production during the growing season. Spreading basins consist of relatively shallow basins, which are excavated to a depth of several feet. If present, shallow fine-grained sediment, hardpan, or clay may be excavated to provide more favorable recharge conditions in recharge ponds.

Recharge Pits

Recharge pits are similar to spreading basins and recharge ponds but are generally deeper and may be located in an existing natural or manmade depression such as a gravel quarry or flood control detention basin. Recharge pits require extensive excavation making them well suited for areas with an extensive aquitard or hardpan layer. Although not as cost effective as field flooding or spreading basins, existing quarries and flood control detention basins could serve as seasonal recharge pits with minor site improvements and minor changes in operation.

4.1.2.2 Injection Wells

Injection wells pump water directly into the groundwater aquifer. Injecting water into the aquifer system is an effective option for providing hydraulic control in well-defined hydrogeologic and hydraulic conditions. Complex injection/extraction well systems can be used for aquifer storage and recovery (ASR) projects. ASR systems often use treated water sources such as municipal supplies meeting safe drinking water requirements. Injection wells are also applicable in coastal settings where high quality reclaimed wastewater is injected to create a hydraulic barrier to seawater intrusion. Capital costs for ASR facilities include conveyance, treatment, and well construction costs.

4.1.2.3 In-lieu Recharge

In-lieu recharge is the direct substitution of surface water for groundwater creating a reduction in amount of groundwater pumped. Surface water can be substituted for groundwater in both urban and agricultural areas.

Agricultural In-lieu

Agricultural in-lieu recharge offers significant opportunities within Eastern San Joaquin County. To successfully implement agricultural in-lieu, the delivery capacity of the conveyance system needs to be expanded and on-farm dual irrigation systems constructed. In the past water supply reliability and availability have deterred the use of surface water. If additional firm entitlements are not obtained for diversion during the irrigation season, additional storage and conveyance would be needed to meet the demands of growers. Successful in-lieu programs are often incentive based and will require the financial and political support of the community.

Urban In-lieu

Urban in-lieu recharge consists of utilizing surface water to meet municipal and Industrial (M&I) demands. Should reliable surface water sources become readily available to urban areas, urban in-lieu recharge programs can be achieved on the order of current water service costs. Although urban areas require capital investments for treatment facilities, cities often have existing distribution facilities or the means to construct them through connection and development fees.

Groundwater banking criteria is further discussed in Section 8 of this Plan.

4.1.2.4 Regional Groundwater Banking

The groundwater depletion has created a potential groundwater bank in Eastern San Joaquin County estimated at 1 to 2 million af of operable groundwater storage. Outside interests with surplus water could store water in the underlying Basin during wet years for use in subsequent dry years. Other groundwater banking options include regional partnerships with entities who would share in the financing of infrastructure improvements and projects for a portion of the project yield.

In 1995, the ESJPWA formulated the following principles of negotiation for a joint conjunctive use/groundwater banking project with EBMUD:

- The priority of any regional groundwater banking project shall be to:
    1. Eliminate overdraft of the underlying Basin.
    2. Restore Basin levels to a specified groundwater level.
    3. Supply the water needs of Eastern San Joaquin County.
    4. Meet the needs of project partners.
- Extractions and export of groundwater shall not cause water levels to fall below 1992 levels.
- Participation of outside interests shall not cause increases in costs to meet the needs of local water users.
- Adverse impacts to groundwater users shall be fully mitigated.
- Extraction and exportation of banked groundwater must adhere to the above principals.

Both parties could not come to consensus on the issues stated above. The Authority is open to suggestions to ensure that groundwater banking is a worthwhile investment in Eastern San Joaquin County.

Table 4-1 Groundwater Option Comparisons

Option Type	Recharge Method	Improvement Costs ($/af)	Infrastructure Requirements	Land Requirements	Effectiveness	Operation/ Maintenance
Surface Supply Options	Wet Year Flows	~$500	On or off-stream regulating reservoir	Extreme for new reservoir	Very effective based on reservoir size and frequency	Very high requirements
	Water Transfers - Out of Basin	$200-400	Conveyance and storage	Potentially land intensive	Effective based on quantity of water and agreement duration	Varies with infrastructure requirements and year to year availability
	Area of Origin Priority	$0-$350	Use of existing or new infrastructure	Potentially land intensive	Very effective	Varies with infrastructure requirements
	Reservoir Re-operation	~$100	Use of existing infrastructure and storage	Minimal	Less effective	Minimal based on existing facilities
	Water Transfers - In Basin	~$100-$200	Minor conveyance	Minimal	Less effective	Varies with infrastructure requirements and year to year availability
Groundwater Recharge Options	Field Flooding	$50 - $100	Uses Existing Infrastructure	Uses seasonally fallow areas	Somewhat effective only available seasonally	Significant effort
	Spreading Basin/ Recharge Pond	$100 - $150	New Infrastructure	Requires relatively large dedicated areas	Potentially effective, requires detailed field testing	Significant effort
	Recharge Pit	$400 - $450	New Infrastructure	Requires dedicated areas	Potentially effective, requires detailed field testing	Significant effort
	Leaky Canal	Varies	New Infrastructure	Land intensive	Potentially effective, conveyance benefits	Significant effort
	Injection Wells	$150 - $200	New Infrastructure	Requires dedicated areas	Potentially effective, requires extensive well field	Significant effort
	Agricultural In-lieu	$200 - $250	New / Or Existing Infrastructure	Existing Land Use	Very effective based on quantity of water	Additional effort required by owner and district
	Urban In-lieu	~$250-$400	New / Or Existing Infrastructure	Existing Land Use	Very effective based on quantity of water	Requires treatment plant O&M costs
	Regional Groundwater Banking	$200-$300	New / Or Existing Infrastructure	Potentially land intensive	Very effective, financial assistance through third party	Significant effort
Other Options	Water Reclamation	$300-$500	Retrofit of existing facilities	Minimal	Less effective due to treatment costs and public perception	Requires treatment plant O&M costs
	Agricultural Water Conservation	$200-$250	New Infrastructure	Minimal	Potentially effective	Significant effort

	Urban Water Conservation	$200-$250	New Infrastructure	Minimal	Potentially effective	Minimal
	Crop Rotation/Land Fallowing	~$50	None	Potentially land intensive	Potentially effective if mitigated	Minimal
Source: San Joaquin County Water Management Plan Volume I Farmington Groundwater Recharge and Seasonal Habitat Study						

4.1.3 Water Reclamation

Water reclamation or water reuse is the treatment of water that has been used previously and would otherwise be discharged out of the Basin. Municipal and industrial wastewater reclamation is becoming increasingly prevalent throughout the State as a viable alternative for compliance with regulatory waste discharge requirements. As municipalities and industries move to meet these waste discharge requirements with tertiary treatment, high quality supplies may become available for irrigation or other non-potable uses. Pending further growth of the reclaimed water market, Eastern San Joaquin County could put to beneficial use a substantial non-potable water supply; however, the resulting reduced supply to downstream users would need to be mitigated.

4.1.4 Water Conservation

Demand management is a key component for long-term planning and management of water resources. Implementation of best management practices (BMPs) can be more economical than developing new water sources and less damaging to the environment.

Urban Water Conservation

Active urban water conservation programs throughout the State potentially save 10 to 20 percent of the historical demand. BMPs included in such programs include water metering, tiered water pricing, rebates for water saving appliances and amenities, water-saving household plumbing devices, and education and outreach. Urban water conservation programs are eligible for State and Federal grants.

Agricultural Water Conservation

Crop science has determined that plants consumptively use a fraction of the total water applied during irrigation. Agricultural water conservation relates mainly to the use of more efficient irrigation technologies that reduce the amount of water applied while still meeting the consumptive needs of the plant. Increasing irrigation efficiency decreases the amount of water that is lost through evaporation during conveyance or application and the discharge of tailwater to surface streams. Growers moving from flood irrigation to drip and sprinkler systems often report irrigation efficiencies upwards of 90 percent.

It should be noted that the conversion to drip and sprinkler irrigation is not suited for all crop types and in some cases does not provide its intended benefits. Some crops are sensitive to changes in irrigation methods and may either produce crops of poorer quality or, in some cases, actually increase the consumptive demand of the plant. Excess applied surface water resulting in tailwater drainage is a benefit to the groundwater Basin when allowed to percolate and may be a major source of water for downstream users who depend on return flows. Extensive analysis should be undertaken prior to implementation of agricultural water conservation measures to ensure the intended benefits are realized.

Voluntary Crop Rotation

A voluntary crop rotation program is intended to be exclusively at the discretion of the local grower. Removing acreage from production does in fact save water; however, the economic consequences are not acceptable to the member agencies of the Authority. As an incentive based program, growers opting for crop rotation could be compensated based on conserved water thus reducing the economic impacts. Substantial analysis must be undertaken to ensure that crop rotations do not adversely impact the agribusiness of Eastern San Joaquin County, downstream users depending on return flows, or the environment.

4.2 Groundwater Contamination

Groundwater contamination and the continued degradation of groundwater quality is a global threat to all groundwater users. The Authority recognizes that the long-term sustainability of the underlying Basin cannot be accomplished without adequate groundwater quality protection, contamination prevention, and remediation programs. As depicted in Table 3-2, numerous local, State, and Federal agencies currently regulate activities with potential impacts to groundwater quality and enforce monitoring and remediation requirements.

The Authority has discussed the issue of managing groundwater protection and contamination programs in Eastern San Joaquin County. A major concern of the Authority is that undertaking regulatory oversight will only duplicate the existing efforts of other regulatory agencies while financially burdening the community beyond its abilities. Increased coordination with regulatory agencies and a concerted effort to ensure its activities do not degrade water quality is potentially less resource intensive for the Authority and a more efficient method of protecting groundwater quality throughout the Basin. The Authority will continue to lead the pursuit against saline groundwater intrusion.

The following policies reflect the Authority's desire to address groundwater contamination and groundwater quality degradation:

1. Coordinate with local, State, and Federal agencies to ensure the underlying Basin is adequately protected against groundwater contamination and to ensure all contaminated sites are documented and mitigated by the responsible parties.

2. Continue to manage efforts to combat saline groundwater intrusion.

3. Strive to improve groundwater quality when technically and economically feasible. Authority actions degrading groundwater quality are not acceptable.

4. Require recharge projects to identify and evaluate impacts to groundwater quality and the potential for mobilization of soil and source water contaminants.

5. Consider current and future water quality standards in the planning and design of projects identified in this Plan.

Table 4-2 Local, State, and Federal Regulatory Agencies Involved in Groundwater Quality Protection and Remediation

	Agency	Well Standards	Direct Groundwater Recharge	Land Fills	Pesticide Use	Ag/Urban Runoff	Database	Underground Storage Tanks	Water Quality Standards	Groundwater Remediation	Standardized Laboratory Analysis	Groundwater Monitoring and Science
Local	San Joaquin County - Environmental Health	X	X	X			X	X		X		
	Local Solid Waste Agencies			X						X		
	San Joaquin County - Agricultural Commissioner		X		X	X	X					
State	Department of Water Resources	X	X				X		X			X
	State Water Resources Control Board		X	X	X	X	X	X	X	X		
	Central Valley Regional Water Quality Control Board		X	X	X	X	X	X	X	X		
	Integrated Waste Management Board			X						X		
	Department of Pesticide Regulation		X		X	X	X					
	Department of Health Services		X						X		X	
Federal	Environmental Protection Agency		X	X	X	X	X	X	X	X	X	X
	US Geological Survey	X	X							X		X

5 Groundwater Monitoring Program

Marked changes in groundwater levels and groundwater quality during the 1960's prompted the DWR to initiate a groundwater investigation in Eastern San Joaquin County. Completed in 1967, DWR Bulletin No. 146 San Joaquin County Groundwater Investigation recommended that a groundwater monitoring program be established to track changes throughout the Basin. In the fall of 1971, the San Joaquin County Flood Control and Water Conservation District (County) initiated the collection and management of groundwater data and the production of semi-annual groundwater reports.

In December of 2000, Montgomery Watson Harza (MWH) performed an evaluation of the County's groundwater monitoring program and recommended improvements to better assess groundwater level conditions and saline intrusion and to develop measurement and sample collection protocols. Since that time the County has continued to implement the recommendations of the evaluation and will work closely with and meet the monitoring needs of the Authority.

5.1 Current Groundwater Monitoring Program

The current groundwater level monitoring program includes semi-annual groundwater level measurements of over 550 wells (exact number varies from year to year) of which approximately 300 are measured by County staff. Water level measurements are taken in October and April in order to capture groundwater levels after and before peak groundwater pumping occurs. According to the MWH evaluation, both the frequency of measurement and the spatial adequacy of the monitoring well network are sufficient to determine regional groundwater trends throughout the Basin.

The data collected is stored electronically in a database for further analysis. DWR posts a portion of the data on the internet at http://wdl.water.ca.gov/gw/admin/main_menu_gw.asp. In 2003, San Joaquin County Public Works Staff, in conjunction with Kennedy/Jenks Consultants, reformatted the database to facilitate advanced analysis of groundwater data in a Geographic Information System (GIS). Future upgrades include electronic data collection and the availability of the groundwater database and analysis capabilities over the internet.

As documented in Section 2, saline intrusion from the west threatens the health of the underlying Basin. The County supports a limited effort groundwater monitoring program which includes the annual groundwater quality sampling of approximately 40 municipal and domestic supply wells (exact number varies from year to year) measured by County staff or obtained from the various urban water purveyors. The analysis typically includes chloride, electrical conductivity (EC) and total dissolved solids (TDS). Water quality sampling occurs in October when chloride levels are generally highest during the year. According to the MWH evaluation, the spatial adequacy of the monitoring well network is not sufficient to determine the source, aerial and vertical extent, and the rate of migration of saline groundwater. The data collected is stored electronically in a database for further analysis.

5.1.1 San Joaquin County Groundwater Data Center

The San Joaquin County Groundwater Data Center (GDC) is a Countywide centralized interactive groundwater information vehicle that provides access to groundwater data collected and shared by agencies throughout San Joaquin County. Over half of the water used in San Joaquin County comes from groundwater. It is vital that we protect and ensure the long-term health and sustainability of the underlying groundwater basin. The San Joaquin County GDC is the foundation for Countywide groundwater management efforts pursued by its water interests.

The GDC is essential to the groundwater management activities of the County. Currently, there is no centralized groundwater information source for San Joaquin County. Monitoring efforts undertaken by the San Joaquin County Flood Control and Water Conservation District (SJCFC&WCD), the San Luis and Delta-Mendota Water Authority (SLDMWA), the Northeastern San Joaquin County Groundwater Banking Authority (GBA), and other individual agencies and water districts generate data that reside in separate databases. The GDC would become the repository for groundwater data and would facilitate groundwater analysis essential to the groundwater management objectives of San Joaquin County. The GDC is not only a technical tool, but a public outreach tool as well. Through the internet, water users including County and agency staff, industry professionals, decision makers, and the general public will have access to groundwater data and historic semi-annual reports. Additionally, the concept of the GDC will extend into ongoing groundwater programs including the joint GBA/DWR/USGS Groundwater Recharge and Salinity Study and the Farmington Recharge Program.

Over the next 20-30 years, hundreds of millions of dollars will be invested for the management of groundwater in San Joaquin County. Water demand projections, basin health, and groundwater management effectiveness is based on groundwater data. The GDC is also a commitment to the development of a comprehensive quality assurance and quality control plan (QA/QC) that increases confidence in the quality and reliability of groundwater data.

The overall goals and objectives of the GDC are:

1. Create and maintain a working groundwater database for San Joaquin County.
2. Develop the tools necessary to analyze groundwater data.
3. Make groundwater information available to decision makers, agency staff, and the general public through the internet.
4. Create an efficient and enforceable QA/QC plan.
5. Utilize the proven and supported technologies in groundwater monitoring, database management, and Geographic Information Systems (GIS).

GDC Features:

1. *Create and maintain a working groundwater database for San Joaquin County.*

   The backbone of the GDC is the groundwater database. From the database, groundwater information can be queried and exported to groundwater analysis programs and applications. The groundwater database should have the following characteristics:

   - Secure from inadvertent or malicious deletions or manipulations
   - Efficiently designed to limit extraneous information
   - Expandable to include additional water quality fields, geologic data, well construction information, etc.
   - Portable data entry forms
   - Maintainable by existing staff with intermediate level database expertise

2. *Develop the tools necessary to analyze groundwater data.*

   GIS applications used to perform groundwater analysis are increasingly powerful. ESRI, the leader in GIS technology, has developed proven GIS tools that are capable of performing the following:

   - Groundwater level and water quality contouring
   - 3-D visualization of groundwater characteristics
   - Geospatial report generation
   - Relational data analysis

3. *Make groundwater information available to decision makers, agency staff, and the general public through the internet.*

   GIS is now available via the internet. Users will be able to access the database through the internet and will be able to query selected well data and view graphical representations of groundwater conditions. This eliminates the need for users to be trained in GIS and also the associated software license costs. The following is a list of on-line features:

   - Downloadable historic semi-annual groundwater reports
   - Graphical user interface (GUI)
   - County base map with crop information, well locations, agency boundaries, recharge areas, well fields, water level contours, etc.
   - Data query and download into MS Excel or HTML

4. *Create an efficient and enforceable QA/QC plan:*

   To effectively manage groundwater, decision makers need to know what is physically going on in the sub-surface. Over the next 20-30 years, San Joaquin County will invest hundreds of millions of dollars for projects in restoring and protecting the underlying groundwater basin. Therefore, confidence in the integrity and accuracy of groundwater data is of utmost importance. Also, State law mandates that agencies adopt groundwater monitoring protocols for quality assurance and quality control (QA/QC). By eliminating manual data entry through electronic data logging and utilizing advances in portable Global Positioning Systems, we can reduce human errors, create a monitoring system with quality assurance tests, and minimize labor costs associated with data entry and database correction. The new QA/QC plan will include:

   - Electronic data logging using Palm Pilots
   - Electronic data upload to database
   - Remote database entry forms
   - Location checks using hand-held GPS units
   - Telemetry and remote data logging
   - Monitoring protocols
   - Sampling techniques
   - Acceptable laboratory methods
   - Health and safety
   - Database security

5. *Utilize proven and supported technologies in groundwater monitoring, database management, and Geographic Information System (GIS).*

   Proven software and hardware technologies continue to redefine the field of environmental monitoring. The following applications will power the GDC:

   - ArcView 3.x/8.x
   - ArcView Spatial Analyst
   - ArcView 3-D Analyst
   - ArcPad
   - ArcIMS Application
   - Dedicated Server
   - ArcInfo
   - MS Access
   - MS SQL Server
   - Pendragon Forms
   - Personal Data Assistant (PDA)
   - Global Positioning System (GPS)

The GDC is expected to be publicly available in 2005.

5.1.2 Status of Monitoring Network Enhancements

As part of the monitoring program evaluation, MWH recommended that the depth specific monitoring well clusters be installed along the estimated saline front to capture better the geologic factors and physical flow driving saline intrusion. The report envisioned five general locations along Interstate 5 from North Stockton to the Lathrop and Manteca. Of the 5 recommended well clusters, two have been installed by the DWR at the Swenson Golf Course and the Sperry Road/McKinley Avenue stormwater detention basin in the City of Stockton. The County and the DWR continue to coordinate monitoring and installation efforts.

5.1.3 USGS and DWR Partnership

The Authority and its member agencies are co-participants with the United States Geological Survey (USGS) and DWR for the Groundwater Recharge and Distribution of High-Chloride Groundwater from Wells Study (Study). The purpose of the Study is to quantify the source, aerial extent, and vertical distribution of high-chloride groundwater and the sources, distributions, and rates of recharge to aquifers along selected flow paths in Eastern San Joaquin County. The information gained from the Study will answer many questions with respect to future water levels, water quality, and storage potential under current and future management of the Basin.

Historically, high-chloride groundwater along the San Joaquin River boundary of the Eastern San Joaquin Sub-basin (Basin) has been defined by interpolating the 300 mg/L isochlor based on limited groundwater quality data. Samples have measured in excess of 2,000 mg/L chloride. Consequently, the aerial and vertical distribution of high-chloride groundwater is poorly defined and the source of the high-chloride groundwater is unknown. Postulates on the origins of high-chloride groundwater include the accretion of poor-quality water from the San Joaquin River, incidental recharge of applied irrigation water and return flow, and upwelling of groundwater from beneath the base of freshwater. Also, local efforts to augment the natural recharge rate

are ongoing; however, the cumulative effect of ongoing groundwater recharge projects on water levels and water quality in aquifers is unknown. The scope of Study is explained in detail below.

1. Assembly and review of existing geologic, hydrologic, and water-quality data

Existing well logs, groundwater level, and groundwater quality data will be compiled and assembled into a GIS database. The GIS database will be used, updated, and revised throughout the study and will be the basis for a 3-D visualization. The GIS database will be used to evaluate the aerial extent of high-chloride water, and to draw geologic sections through the study area that define the aerial and vertical extent of aquifer deposits along three selected flow paths from sources of recharge to discharge areas near the delta. The aerial extent of high-chloride water and the geologic sections will be used to define data gaps that guide test-drilling and installation of observation wells. Existing water-quality data in the area of high-chloride water and along the three study flow paths will be used to define the quality of native ground water and its geochemical evolution prior to collection of new data.

2. Collection of geochemical and geophysical data

Water chemistry data will be collected from up to 60 existing production and the 12 observation wells installed as part of this study. The data will be used to define the source, movement, and age of water from wells and the aerial and vertical extent and source of high-chloride water to wells along the three study flow paths. Samples will be analyzed for major ions, nutrients, selected trace elements, and stable oxygen and hydrogen isotopes.

Selected trace elements including bromide, iodide, boron, and barium will be used in conjunction with chloride data to determine the source of high-chloride water in wells. The stable isotopic composition of water from wells also will be used to determine the hydrologic and evaporative history of the Basin. Selected samples will be analyzed for tritium, carbon-14, and carbon-13 to determine the age of groundwater. Selected samples will also be analyzed for noble gasses to determine the recharge mechanism as either focused recharge from stream infiltration or aerial recharge from precipitation or irrigation return.

Electromagnetic logs will be collected from existing observation wells and at the multiple-well sites drilled as part of this study. The logs will be used to determine if saline water is present at depths not sampled by well screens. Sequential logs done annually as part of this study will be used to determine if chloride concentrations are increasing at depths where screens are not located.

Well-bore flow and depth-dependent water quality data (Izbicki and others, 1996) will be collected from selected production wells to determine at what depths high-chloride water enters the well under pumping conditions. Water movement through selected abandoned wells will be measured using low-flow current meters (such as an electromagnetic or heat-pulse current meter) to determine the direction and rate of water movement through the well casing under non-pumping conditions.

3. Test drilling and well installation

Three multiple-well sites, each containing three to four 2-inch diameter wells, will be drilled along one study flow path. The wells will define movement of recharge water laterally and vertically through the flow system. Deeper wells at each site will define potential high-chloride source water from underlying bedrock. Similarly, shallower wells at each site will define potential high-chloride source water from irrigation return and, at the down gradient site, brackish water from delta sediments.

4. Telemetry

Selected wells (as many as 10) will be instrumented to provide real-time water-level data and potentially water-quality data (such as pH and specific conductance). Data will be output through satellites using the Geostationary Observational Environmental System (GOES) and uploaded to the Automatic Data Acquisition System (ADAPS) on California District computers. Graphical and tabular data will be available in near-real time through the Internet. Where available the data also will be output through local Supervisory Control and Data Acquisition (SCADA) systems. Equipment will be calibrated and serviced at 15-week intervals by U.S. Geological Survey personnel.

5. 3-D Visualization

Spatial data will be stored in a GIS which will be the basis of a 3-D visualization of the ground water flow system using Earth Vision computer software. The visualization will incorporate hydrogeologic units and spatially connect data in the area of high-chloride water and along study flow paths. The visualization will be a tool to evaluate data uncertainty and illustrate the effects of aquifer hydraulic properties and ground-water flow on the movement of high-chloride water toward wells.

6. Data Interpretation and Report Preparation

Sources of high-chloride water to wells will be determined primarily from trace-element to chloride ratios and further refine by ^{18}O and Deuterium analysis. Results will be compared to similar data collected in coastal aquifers elsewhere in California. The recharge temperature and tritium/helium-3 age of younger ground water will be estimated using the computer program NOBLEGAS. Recharge temperature will be used to evaluate focused sources (such as infiltration from stream flow) and diffuse sources (such as infiltration of precipitation, and irrigation return) of ground-water recharge. Changes in ground water chemistry and the age of older ground water interpreted from carbon-14 data will be evaluated along selected flow paths using the computer program NETPATH.

Interim papers describing the source of high-chloride water to wells and the movement and age of water from wells will be published during the course of the study. Annual progress meetings with cooperators and stakeholders will be held. A final report integrating information from all aspects of the study including data review, well installation, data collection, telemetry, and 3-D visualization will commence at the end of the Study.

7. Project Costs

The total cost of the study is $2,579,350. The proposed USGS contribution will be $625,000 over 5 fiscal years as well as an additional $625,000 from the DWR over the first 3 fiscal years. Member agencies within the Authority will contribute the remaining $1,322,350 over next 5 fiscal years.

5.2 Monitoring Protocols

In order to ensure that groundwater data is collected in a systematic and consistent manner, the Authority has adopted the Groundwater Monitoring Program Quality Assurance/Quality Control (QA/QC) Plan, prepared by MWH in 1998. The QA/QC Plan addresses the following items: monitoring and sampling preparations, sample collection procedures, chain-of-custody procedures, sample transport, laboratory procedures and methods, and data validation and reporting. The QA/QC Plan can be obtained at the San Joaquin County Department of Public Works Stormwater Management Division. The revised QA/QC plan proposed as part of the GDC is expected to be completed by the spring of 2005.

6 Financing Options

The development of new water supplies and the necessary infrastructure is a major financial undertaking. It is absolutely necessary for the Authority and its member agencies to leverage as much support for outside funding. The following section is intended to provide stakeholders with a general overview of the potential funding sources, programs, and project partnerships available to the Authority.

6.1 Funding Sources

6.1.1 Federal Funding

Federal funds can be made available to the Authority and its member agencies through a variety of mechanisms including, but not limited to, subsidies, appropriations, in-kind services, grants, loans and cost-sharing agreements. Securing these funds is accomplished through the following processes.

Legislative Approach - Federal funding can be secured through the legislative process to directly fund an approved project. This approach is initiated by a request by the Authority to a local congressional representative. The project may require the establishment of Federal interest through an act of Congress and funded in subsequent years (e.g. Farmington Program). If, however, the project is consistent with the goals and objectives of an existing Federal program, an appropriation can be made that same year (e.g. MORE WATER Project). Competition for funds through Congress is fierce and will require the broad support of local, regional, and State interests.

Federal Agency Interest - Funding can also be secured for projects directly from Federal agencies. Local projects, consistent with the goals and objectives of an agency, are eligible for funds and in-kind services through directed actions and partnerships (e.g. Joint USGS/DWR/Authority Groundwater Recharge and Distribution of High-Chloride Groundwater from Wells Study). Federal agencies commit to projects during their respective internal budgeting processes and have the flexibility to disperse funding over several years.

Federal Assistance Programs - Finally, a third option is to apply for project funding under an existing grant, loan, or assistance program administered by any of the various Federal agencies. Potential partnering agencies include the USBR, Environmental Protection Agency (EPA), USACE, United States Department of Agriculture (USDA), National Fish and Wildlife Service (NFWS), and the National Oceanic and Atmospheric Administration (NOAA). Eligibility, cost sharing, and application requirements vary between the programs.

6.1.2 State Funding

State funds are similar to Federal funds in that they can also be secured through the legislative process, state agency interest, and through competitive grants and assistance programs. The availability of State funds for water resources projects is a reflection of the current fiscal climate and can vary significantly. Voter approval of Proposition 50, the $3.4 Billion Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002, is expected to carry many of the water resources development programs of interest to the Authority for the next few fiscal years including CALFED, Integrated Storage Investigations, and other groundwater recharge construction grants and loans.

Legislative Approach – Although the dollar amounts available from the State are usually not as substantial as Federal, the State process can be somewhat more streamlined than the

Federal approach. Appropriating funds through the State legislature is extremely competitive and subject to the State budget climate.

State Agency Interest – Discretionary funds may be available in the form of directed action assistance or in-kind services. Partnerships with the agencies such as the DWR Division of Planning and Local Assistance (DPLA) and CALFED may yield monies and services to projects (e.g. Joint USGS/DWR/Authority Groundwater Recharge and Distribution of High-Chloride Groundwater from Wells Study).

State Assistance Programs - Finally, a third option is to apply for project funding under an existing grant, low interest loan or assistance program administered by any of the various State agencies. Under Proposition 13, the Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Act of 2000, approximately $200 million statewide for groundwater management and recharge projects were provided through the DWR DPLA. Similarly, Proposition 13 provided a major source of funding for the CALFED Bay-Delta Program and other such programs administered by SWRCB. Most recently, voters approved the $3.44 Billion Proposition 50, the Water Quality, Supply and Safe Drinking Water Projects, Coastal Wetlands Purchase and Protection Act of 2002. Proposition 50 is expected to provide similar funding opportunities for the next few years.

6.1.3 Local Funding

Local funds are available from a variety of sources including general funds, water rates, developer fees, connection fees, capital improvement programs, acreage or *ad valorem* assessments, and taxes. Local funds can be raised by individual agencies and districts or through more regional efforts such as the San Joaquin Council of Governments (SJCOG). The implementation of assessments and taxes is subject to Proposition 218 voting requirements. The Authority member agencies have the power to issue bonds for capital projects separately or jointly as the Authority. The following sections briefly explore the revenue generating mechanisms available for bond repayment and annual operations and maintenance costs.

Assessments – The Authority has the power to implement a number of funding mechanisms available including the exercise of provisions set forth in Water Code Sections 10750 *et. seq.* Upon adoption of the Plan, the Authority could choose to equitably assess parcels within the GMA for the purpose of implementing the Plan subject to a Proposition 218 vote. The Authority does not have a time table by which this particular funding mechanism will be exercised. In addition, benefit assessments consistent with the existing statutory authorities of the member agencies could be used to generate revenues.

Sales Tax – Local sales tax measures such as Measure K, the ½ % regional transportation sales tax initiative, could be pursued by the Authority for the implementation of the Plan. The Authority or a similar broad stakeholder based Authority is necessary to garner the support of the voters. Through 2011, over its 20 year life span, Measure K is expected to generate over $750 million.

Water Service Fees – The Authority or its member agencies could revise or formulate a fee structure for the water served either at the wholesale or retail level. Revenue generated could be directed towards the debt service of capital projects or for the implementation of the Plan.

Developer Fees – Mitigation fees paid by new urban developments are currently collected by cities and counties. Specifically, a Water Impact Mitigation Fee is collected per new residential building permit within a defined area to finance capital repayment of bonds used to construct the

Goodwin Tunnel Project and the New Melones Conveyance Project. Similar development fee structures could be developed by the member agencies of the Authority to ensure that urban growth is apportioned their fair share for future water resources in Eastern San Joaquin County.

Groundwater Banking and Transfer – Enormous opportunity exists for the utilization of the underground storage potential of the underlying Basin estimated at 1.2 – 1.5 million acre-feet. To regional and Statewide interests, the benefits of a conjunctive use program involving over a million acre-feet of underground storage is undeniable. Constructing and financing the infrastructure necessary to accommodate a groundwater bank of this magnitude will require several sources of funding for capital recovery, operations and maintenance, and mitigation. The evolving California water market could potentially enable Eastern San Joaquin County to provide economic alternatives to regional and statewide water interests while also concurrently meeting the Basin Management Objectives. The San Joaquin County Groundwater Export Ordinance currently protects Basin users from the potential ill-effects of export, however the San Joaquin County Board of Supervisors are amenable to proposed amendments made by Basin stakeholders and banking partners.

7 Plan Governance

Water interests in San Joaquin County have historically been fragmented, but have realized that projects developed in a collaborative process have the potential to exhibit greater and more far reaching benefits to all involved parties while increasing its implementability and fundability. Implementation of the water management options can best be achieved by continuing to work in a collaborative fashion to develop a broad base of political and financial support. Currently, the powers and term of the Authority are limited thus, if the Authority member agencies decide that the Authority should implement the Plan, then additional powers are necessary. The Authority has explored numerous options concerning the appropriate organization and powers needed to implement the plan and the best management framework that addresses the concerns of the Authority member agencies.

7.1 Member Agency Concerns

Throughout the development of the Plan, the Stakeholder group voiced their concerns over the purpose and need for a new or expanded Authority. The following concerns are presented as follows:

- Does the purpose, goals, and objectives of the current Authority provide for the implementation of the Authority Plan?
- What powers are necessary for the implementation of the Authority Plan?
- Does expanding the powers of the Authority threaten projects previously set in motion by individual agencies or smaller partnerships?
- How will stakeholders be represented in the new Authority?
- How can we engage all Basin stakeholders including those who showed no interest in participating in the past?
- How do we include Cal Water in a Joint Powers Authority?
- How will individuals and special interest groups be allowed to participate?
- How will the Authority relate to other groundwater management efforts in San Joaquin County (e.g. San Joaquin County Groundwater Export Ordinance, Mokelumne River Water and Power Authority – MORE WATER Project, Eastern Water Alliance – SEWD, NSJWCD, & CSJWCD)
- How will the Authority coordinate with Basin neighbors outside of the Groundwater Management Area?
- How will the new Authority be funded?
- Should the Authority be allowed to construct projects or should the member agencies be the ones to construct projects?
- Should votes be weighed by acreage, water use, monetary contribution, or not weighted at all?

With the above concerns in mind, the Authority is currently exploring a number of potential governance models suitable for the unique situation in Eastern San Joaquin County.

7.2 Organizational Structures

Organized stakeholder groups come in all shapes and sizes and hold varying degrees of authority and powers. The form of a stakeholder group is entirely dependant on its function or activities. Stakeholders can be coordinated under one of various organizational structures for representation, including 1) Joint powers agreement (JPA), 2) Memorandum of understanding, 3) various types of water districts (e.g., water replenishment district, water conservation district). The following subsections discuss each type of organizational structure in more detail.

7.2.1 Joint Powers Agreement

Pursuant to Government Code Section 6500 *et. seq.*, two or more public agencies may enter into a joint powers agreement for the purpose of exercising those powers common to each of the member agencies. Powers include but are not limited to: execution of contracts; employment of staff; issuance of bonds, acquisition of property, construction, operation and maintenance of facilities, and incurrence of debt. JPAs have the authority to prepare, adopt, and implement groundwater management plans developed pursuant to Water Code section 10750 *et. seq.* JPAs may also seek additional powers through the legislature.

Case Study: San Joaquin Council of Governments – The San Joaquin Council of Governments (SJCOG) is a joint powers authority comprised of the County of San Joaquin and the Cities of Stockton, Lodi, Manteca, Tracy, Ripon, Escalon and Lathrop. SJCOG serves as the regional transportation planning agency for San Joaquin County. SJCOG also analyzes population statistics, airport land use, habitat and open space planning, and other regional issues. SJCOG fosters intergovernmental and public coordination within San Joaquin County, in neighboring jurisdictions, and with other various State and federal agencies.

Measure K, the half-cent sales tax measure passed in 1990 for San Joaquin County, is administered by SJCOG and overseen by its Board of Directors. The SJCOG Board of Directors consists of one voting member from each of the member agencies and an additional member from San Joaquin County. Over the twenty-year life of Measure K, an estimated $750,000,000 will have been generated for regional transportation projects.

7.2.2 Memorandum of Understanding

A memorandum of understanding (MOU) is a somewhat more flexible organizational structure that allows signatory agencies to pursue a common purpose or goals. The organization formed by the MOU cannot directly enter into any contracts, incur debt, or employ staff directly. An organization formed under an MOU is adequate for consensus building and facilitation.

Case Study: : The Butte Basin Water Users Association - The Butte Basin Water Users Association in Butte County is an example of a group formed under an MOU who share common interests. In response to water management challenges encountered during consecutive drought years through the mid-1990's, agricultural and urban water purveyors organized themselves to combine financial and technical resources to better understand and manage the surface water and groundwater resources. In addition to promoting improved water management by individual agencies through the collective sharing of information, the organization was able to demonstrate broad local support for their efforts.

7.2.3 Various Types of Water Districts

The State of California recognizes the formal organization of various water districts as political subdivisions of the State. Examples of water districts include County water agencies, County water districts, resource conservation districts, water districts, water conservation districts, irrigation districts, water storage districts and water replenishment districts. In addition, specific legislation may also be sought to create a special district or to enhance its powers. Many of the individual entities represented on the water management plan stakeholder committee have utilized one of these acts as the basis for their organizational structure. Stakeholders may chose to annex adjacent lands, organize as a new special water district, or be incorporated into an existing district to exercise its powers. Additionally, a specific benefit zone can be created under the San Joaquin County Flood Control and Water Conservation District for the purpose of implementing a groundwater management program in Eastern San Joaquin County.

7.3 Management Framework Models

A Management framework model is a depiction of the relationship between the basin stakeholders, Authority, Groundwater Management Plan, and the Groundwater Export Ordinance. The following management framework models are depicted below.

7.3.1 Individual Interest-based

Depicted in Figure 7-1, an individual interest-based management framework reflects a philosophy whereby stakeholders would govern and develop water resources projects individually. Historically, this has been the approach to groundwater management and water resources development in San Joaquin County.

In the individual interest-based model, water districts, cities, and other mutual partnerships are free to develop and implement projects independently. Input from the public and comments from other affected agencies are dealt with during regular or mandated outreach opportunities or progress meetings. Individual entities may choose to develop projects pursuant to a regional groundwater management plan. However, project decision-making authority would remain exclusively within the jurisdiction of the entity sponsoring the project. Fund raising would also be the sole responsibility of the sponsoring entity.

The individual interest-based management approach allows agencies to focus their resources on projects specific to its needs; however, this approach may hinder the ability for agencies to coordinate project development in order to best meet the needs of the involved agencies and the region. Competition for State and federal funding is also an issue as projects demonstrating broad benefits to multiple agencies are given funding priority over narrowly scoped projects developed by individual entities.

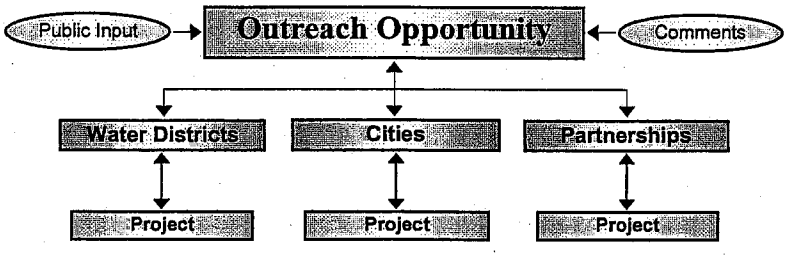


Figure 7-1 Individual Interest-based Model

7.3.2 Mutual Interest-based

The mutual interest-based model reflects a governance framework that creates a stakeholder group of common interests with the powers to undertake specific goals and objectives. The current Authority structure is a form of the mutual interest based approach. A stakeholder group such as a JPA or coalition, represented by individual agencies overlying the Basin, would be responsible for providing a consensus based forum in which projects can be developed by Basin stakeholders in a manner that maximizes benefits to all involved parties and the region as a whole. Projects developed with input from the stakeholder group would ensure consistency with the Plan.

The distinct advantage to this approach is the benefit of regionalism. Broad based support for a project is a deterrent to litigation, protest, and opposition. In addition, regional projects are more competitive in the funding arena both at the State and federal levels. A potentially negative aspect of this management framework is the perceived loss of control over a project. Nonetheless, a project will be weighed and measured on its merits and its fate decided on by its constituents. It is highly unlikely that a mediocre project without broad based consensus will survive an onslaught of political, legal, and regulatory challenges.

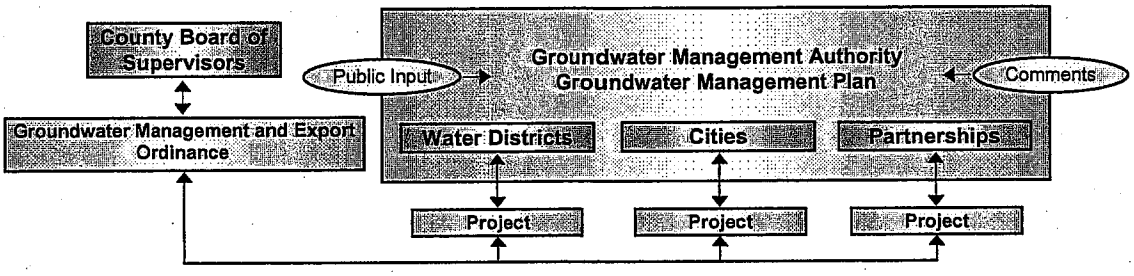


Figure 7-2 Mutual Interest-based Model

Presented in Figure 7-2 is an example of a mutual interest-based governance framework in the context of the current Authority governance structure and groundwater management efforts. The Authority is a forum for its member agencies to develop groundwater recharge and banking projects and programs. The forum creates accountability for its member agencies to health of the underlying Basin. Development within the Authority ensures that projects are consistent with the Basin Management Objectives developed in this Plan to sustain the health of the Basin. The Authority would not be governed by the County Board of Supervisors, however, as currently structured, should a Groundwater Export Permit be necessary for an export project, Board of Supervisor approval would be required. The Board of Supervisors of San Joaquin County would remain a member agency of the Authority.

7.4 Dispute Resolution

The Authority has served as a regional planning body and a forum for member agencies to share their groundwater management efforts and ensure that those efforts do not detrimentally affect other member agencies. In order to avoid potential conflicts between Basin stakeholders, the Authority employs the following:

- **Expanded Membership:** Authority membership is diverse as are the myriad of water challenges and issues facing Eastern San Joaquin County. In 2001, the Central Delta Water Agency and the South Delta Water Agency became full contributing and voting member agencies to the Authority. In 2004, amendments to the Authority JPA included

language to include California Water Service Company as an appointed voting member to the Authority Board of Directors. Associate membership (ex-officio) was also extended to the San Joaquin Farm Bureau Federation as their input and support is essential to the success of the Authority. Other members have been contemplated such as SSJID, OID, City of Lathrop, Manteca, Escalon, and Ripon, Calaveras County Water District, Stanislaus County, DWR, Freeport Regional Water Authority, and EBMUD.

- **Continued Use of the Authority as a Forum:** As the Authority looks to implement the Plan, the member agencies will move the outlined projects through the planning, permitting, and design stages and ultimately to construction. In a forum, implementing member agencies will be able to quantify the benefits of its projects to stakeholders and receive comments and suggestions before disputes arise.

- **Continued Facilitation by the California Center for Collaborative Policy:** The California Center for Collaborative Policy (Center) has been an integral part to the success of the Authority's consensus based process. The Center's presence has maintained an atmosphere conducive to openness, compromise, and agreement. It is expected that the Center will continue to facilitate Authority meetings and throughout the implementation of the Plan.

8 Integrated Conjunctive Use Program

The following section describes the options available to the Authority in the development of an Integrated Conjunctive Use Program. The Conjunctive Use Program is the key element in fulfilling the purpose of the Plan to ensure the sustainability of Groundwater resources in Eastern San Joaquin County. For organizational purpose, project options are grouped into water supply elements by source, surface water storage and major conveyance projects, and groundwater recharge components by program or entity.

8.1 Supply Elements

Supply elements are grouped by river system and are a combination of reallocations, new water, and transfers. Entitlements to water are supported by legal claims based on existing water right permits, water service contracts and agreements, and pending water right applications. A map of the waterways discussed can be seen in Figure 8-1.

8.1.1 Stanislaus River

As listed in Table 2-5, Stanislaus River supplies are available to the SSJID and OID via pre-1914 water rights and to the Stockton East Water District and Central San Joaquin Water Conservation District through Central Valley Project (CVP) contracts. SSJID and OID are senior water right holders to 600,000 af per year from the yield of New Melones Reservoir, 320,000 af of which are used directly in the GMA. SEWD and CSJWCD hold junior contracts for a total of 155,000 af subject to other users requirements.

The Stanislaus River watershed consists of approximately 904 square miles with an annual average runoff of approximately 1 million af. The majority of the runoff occurs from November to July and peaks during the summer months when snow melt is greatest. More than half the runoff is snowmelt-derived (USBR, Website, updated). The USACE constructed New Melones Dam on the Stanislaus River in 1978, replacing the original Old Melones Dam constructed in 1924 jointly by OID and SSJID. New Melones Reservoir has a capacity of 2.4 million af and is operated as part of the CVP under the USBR's Interim Operations Plan. The average annual runoff at New Melones for the 74 years from 1904 to 1977 was 1.12 million af.

Urban growth in South San Joaquin County in the Cities of Lathrop, Manteca, Escalon and Ripon and the increased irrigation efficiencies made over the years have made water available for transfer by SSJID and OID. Beginning in 2005, SSJID will serve the urban communities of Escalon, Manteca, Lathrop, and Tracy with surplus water through the South County Surface Water Supply Project. SSJID and OID also currently make available to SEWD up to 30,000 af/yr through the New Melones Conveyance System specifically for urban use as part of a 10-year water transfer agreement which expires in 2009. The agreement is renewable pending future water availability and negotiation. SSJID and OID have also made on occasion water available to CSJWCD for irrigation.

In 1978, New Melones Dam was completed and the reservoir was filled. At the time of development and construction of New Melones, the expected yield of the project was fully allocated to meet the needs of the contracts in the Eastside Unit of the CVP. SSJID and OID held the most senior of rights and were allocated their full historic diversion amount. CSJWCD executed both a firm and interim CVP contract and SEWD an interim CVP contract; both are junior to other CVP contract for New Melones water. The CVP contracts provide up to 155,000 af per year subject to inflow, storage, and senior requirements. CSJWCD would receive up to 49,000 af of firm yield and an additional 31,000 af when available. SEWD would receive up to 75,000 af when available.

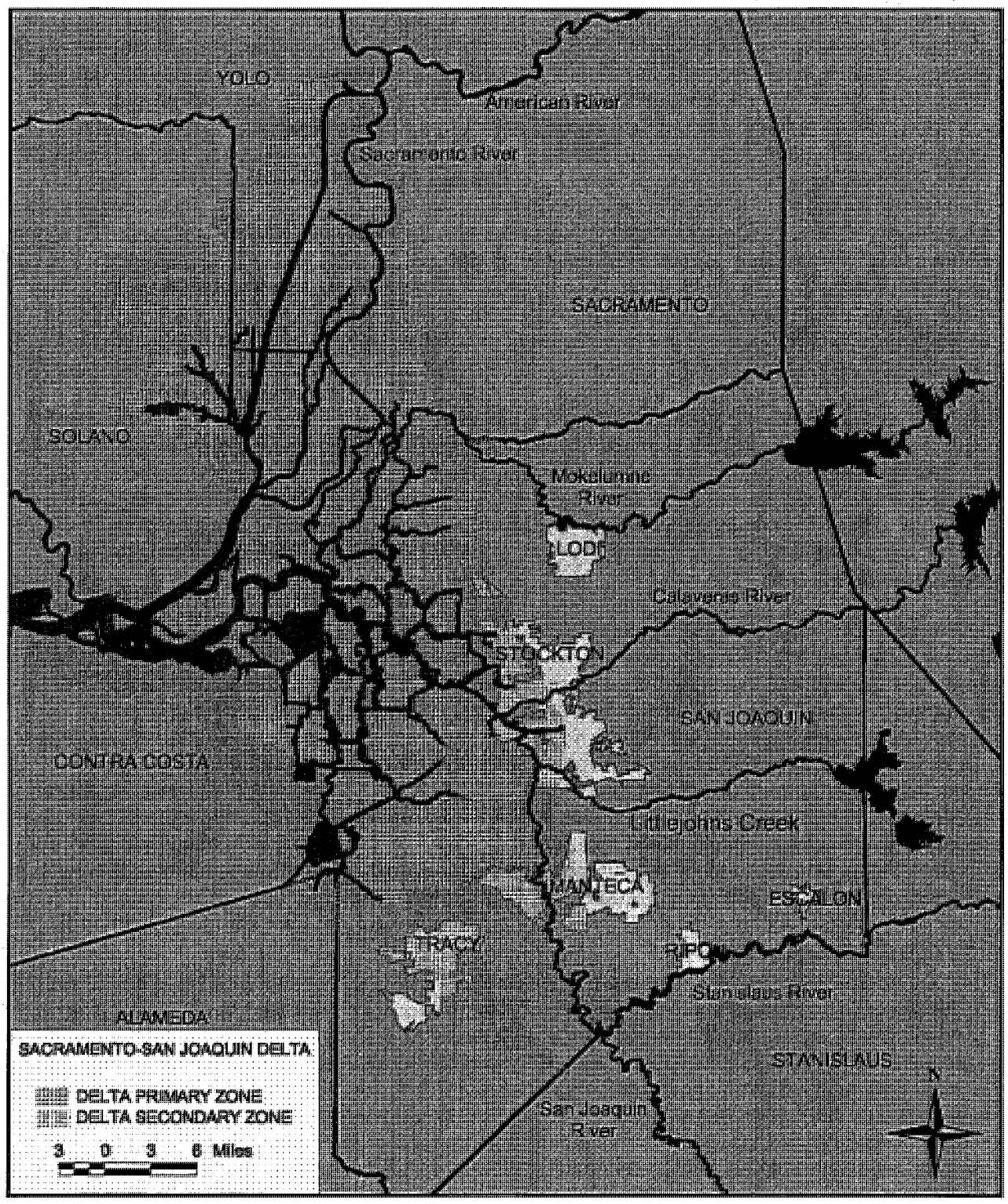


Figure 8-1 Regional Waterways

The severity in the quantity and quality of flow in the San Joaquin River directly affects the operation of New Melones Reservoir. Quality and flow of the San Joaquin River has seriously deteriorated since the completion of the Friant Dam, the Delta Mendota Canal, and California Aqueduct. Inflow to the Delta from the San Joaquin River consists primarily of high saline drainage from farmlands and wetlands in the CVP's Westside service area. As a result, hundreds of thousands of tons of concentrated salt flow into the San Joaquin River each year. The SWRCB established flow and water quality standards on the San Joaquin River near Vernalis and directed the USBR to meet these standards. Consequently, the USBR has elected to meet the Vernalis standards with substantial releases from New Melones Reservoir. These releases for water quality purposes directly reduce the amount of water available for the Stockton East Water District and the Central San Joaquin Water Conservation District under their respective CVP interim contracts. The USBR and the Central Valley Regional Water Quality Control Board have shown little interest in addressing salt drainage or the restoration of flows in the San Joaquin River in a manner that does not harm San Joaquin County interests.

Additionally, the Central Valley Improvement Act of 1992 (CVPIA) required more releases from the CVP for fish and wildlife system wide. The resulting actions have disproportionately affected New Melones Reservoir thus reducing the amount of water available for SEWD and CSJWCD. The USBR has made no real substantial progress towards revising the Interim Operations Plan for New Melones Reservoir, implementing source control programs for salinity in the CVP Westside service area, nor finding alternative sources for meeting the SEWD and CSJWCD water service contracts.

CDWA and SDWA are directly affected by the quantity and quality of flow in the San Joaquin River. CDWA and SDWA have been the lead proponents of alternative means for the USBR to meet the Vernalis flow objective. While CDWA and SDWA recognize the use of New Melones to improve water quantity and flow in the San Joaquin River at Vernalis, it is neither a permanent solution nor a solution that is acceptable economically to San Joaquin County as a whole. San Joaquin County, Delta interests, and Eastern San Joaquin County have been supportive of measures that would restore the San Joaquin River through in-stream releases at Friant Dam, the establishment of water quality and flow standards upstream of Vernalis, and recirculation of Delta exports through the Delta-Mendota Canal and the San Joaquin River. Modeling has shown that any of the above options if implemented would free up water in New Melones for the SEWD/CSJWCD contract entitlements.

8.1.2 Calaveras River

The Calaveras River is the primary surface water supply for the City of Stockton and SEWD. In 1963, the USACE constructed New Hogan Dam for flood control, recreation, and water supply purposes. The Calaveras River watershed consists of 363 square miles and stretches from the Sierra Nevada foothills to San Joaquin River in west Stockton. New Hogan Reservoir is primarily derived from rainfall and has a capacity of 317,000 af. The USACE operates New Hogan when flood control releases are necessary and reserves approximately 165,000 af of reservoir capacity for flood control storage. SEWD operates New Hogan and schedules releases at all other times. By agreement, SEWD is entitled to 56.5% of the yield to New Hogan with the remaining yield reserved for Calaveras County Water District (CCWD). Currently, SEWD utilizes CCWD's unused supply. CCWD currently uses approximately 3,500 af per year and estimates it will use up to 5,300 af per year in 2040; however, growth in Calaveras County could spur interest in expanding use of its New Hogan supply (CCWD, 1996).

8.1.3 Mokelumne River

The Mokelumne River watershed encompasses approximately 660 square miles stretching from the high Sierra Nevadas westward to the Delta. Major facilities located on the Mokelumne are the Salt Springs Reservoir on the North Fork of the Mokelumne and the Pardee and Camanche Reservoirs on the rivers main stem. Salt Springs Reservoir, the largest of seven Pacific Gas & Electric (PG&E) reservoirs (Project 137), was built in 1963 and is operated for hydropower generation. Pardee and Camanche are both owned by EBMUD. Pardee Reservoir, which is upstream from Camanche, has a capacity of 197,950 af and is operated as a water supply reservoir. Reservoir water from Pardee is conveyed by the Mokelumne River Aqueducts to the EBMUD service area some 82 mile away. Camanche Reservoir, with a capacity of 417,120 af, is operated for flood control and also to meet instream flow requirements and down stream entitlements. Snowmelt comprises a large portion of the watersheds runoff. Both Pardee and Camanche generate incidental hydro power at 30 MW and 9.9 MW respectively. (EBMUD, Urban Water Management Plan 2000)

In-stream flow requirements and water rights on the Mokelumne form a complex hierarchy of entitlements. Under the Joint Settlement Agreement on the Lower Mokelumne River Project (JSA), minimum in-stream flows, reservoir pool elevations, and fisheries enhancements are implemented conditional to the FERC Permit of Pardee and Camanche Reservoirs. Subsequently, the D-1641 of the SWRCB reaffirms the validity of the JSA commitment to establishing adequate Bay-Delta flows and water quality. Additionally, provisions in the Lodi Decree protect groundwater levels in the City of Lodi from flow related deficiencies and inadequate groundwater levels. Table 8-1 depicts the target JSA release and in-stream flow requirements.

Table 8-1 Lower Mokelumne In-stream Flow Requirements

Year Type	Requirements (cfs)	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (af)
Normal	Minimum Camanche Reservoir Release	325	325	325	325	325	325	325	325	325	100	100	100	194,000
Below Normal		250	250	250	250	250	250	250	250	250	100	100	100	154,000
Dry		220	220	220	220	220	220	220	220	100	100	100	100	130,000
Critical		115	130	130	130	130	130	130	100	100	100	100	100	80,000
Normal	Expected Flow below Woodbridge Diversion Dam	100	100	100	100	100	100	150	300	300	25	25	25	86,000
Below Normal		100	100	100	100	100	100	150	200	200	20	20	20	73,000
Dry		80	80	80	80	80	80	150	150	20	20	20	20	52,000
Critical		75	75	75	75	75	75	75	15	15	15	15	15	52,000

Note: Minimum releases from Camanche Reservoir are approximately and should not be used to determine the actual available quantity of water available for new uses on the Mokelumne River.

Source: MORE WATER Project Phase I - Reconnaissance Study Summary Report, 2004

EBMUD must also meet the requirements of both upstream and downstream water right holders. Increasing demands of upstream developments in Alpine, Amador, and Calaveras Counties are recognized by the SWRCB as having priority to Mokelumne River water. Downstream users served by Camanche Reservoir include WID and NSJWCD. WID holds both pre and post-1914 water rights. In years when Mokelumne inflow is greater than 375,000 af, WID is entitled to 60,000 af. When Mokelumne inflow is less that 375,000 af, WID is entitled less than 60,000 af to a minimum of 39,000 af. Through conservation and irrigation efficiency efforts, WID has made 6,000 af per year available to the City of Lodi. Under the agreement, the

City of Lodi will pay WID $200 per af for water delivered by the existing WID canal system. WID will use the proceeds to replace the aging WID Dam. The new WID Dam will allow Lodi Lake to remain full year round thus enabling WID to serve recharge areas during the late fall and winter months. The dam will also feature state of the art fish ladders making it easier for spawning salmon to reach the Fish Hatchery at Camanche Reservoir.

NSJWCD has attempted to acquire a firm supply from the Mokelumne River through the SWRCB, however, in D-858 of 1956, the State Engineer gave priority to EBMUD for Mokelumne River water and cited the Folsom South Canal (FSC) as the preferred surface water supply for NSJWCD. The FSC was planned as part of the Auburn-Folsom South Unit of the CVP for the conveyance of American River Water stored behind Folsom Dam and the proposed Auburn Dam. Auburn Dam and the remaining reaches of the FSC were never completed. The USBR has no plans or intentions to extend the FSC into San Joaquin County to its planned terminus 20 miles southeast of Stockton.

Also in D-858, the State Engineer granted NSJWCD a permit to divert Mokelumne River water from December 1st to July 1st which is surplus to EBMUD's needs until the FSC is completed as envisioned by the CVP or until EBMUD uses its full entitlements. EBMUD has agreed to store up to 20,000 af per year pursuant for NSJWCD subject to inflow and other requirements. The interim nature of the water supply and the extensive use of private groundwater wells have reduced the

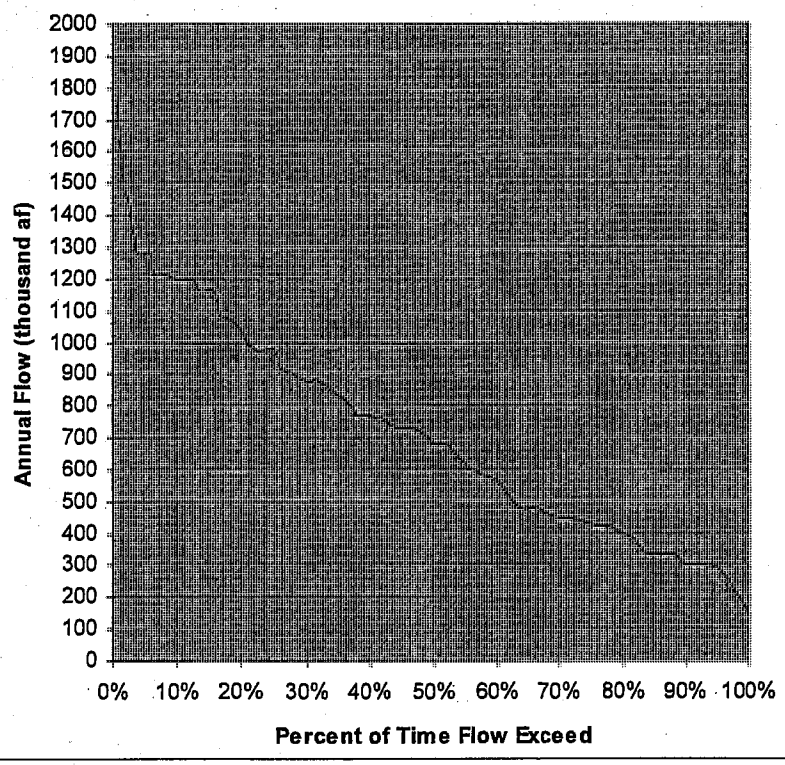
Table 8-2 Water Available from the Mokelumne River (af)

Year	Total		Year	Total	
1922	194,274		1961	0	
1923	7,909		1962	0	
1924	0		1963	0	
1925	0		1964	0	
1926	0		1965	316,779	
1927	0		1966	6,968	
1928	0		1967	289,774	
1929	0	13-year Period	1968	0	
1930	0		1969	463,970	
1931	0		1970	209,374	
1932	0		1971	93,591	
1933	0		1972	0	
1934	0		1973	0	
1935	0		1974	272,910	
1936	0		1975	97,983	
1937	19,096		1976	0	
1938	519,170		1977	0	
1939	0		1978	0	
1940	0		1979	0	
1941	119,569		1980	156,188	
1942	274,525		1981	0	
1943	286,933		1982	656,659	
1944	0		1983	1,146,269	
1945	0		1984	380,946	
1946	33,755		1985	4,503	
1947	0		1986	378,552	
1948	0		1987	0	
1949	0		1988	0	
1950	0		1989	0	
1951	453,705		1990	0	8-year Period
1952	603,929		1991	0	
1953	18,421		1992	0	
1954	0		1993	0	
1955	0		1994	0	
1956	341,038		1995	500,787	
1957	0				
1958	322,485		**Minimum:**	**0**	
1959	0		**Maximum:**	**1,146,269**	
1960	0		**Average:**	**43,173**	
Number of diversion years in 74-yr period:				**26**	**(35%)**

Source: MORE WATER Project Phase I – Reconnaissance Study Summary Report, 2004

demand for surface water to less than 3,000 af per year. Water demands in the EBMUD service area are not expected to rise considerably over the next 20 to 40 years. Water for NSJWCD is available from the Mokelumne River in above average and wet years.

Figure 8-2 Mokelume River Flow Duration Curve
Mokelumne River Hill Gage



Additional supply from the Mokelumne River is possible in a major regional conjunctive use project. The Mokelumne River Regional Water Storage and Conjunctive Use Project (MORE WATER Project) is currently being studied by the Mokelumne River Water and Power Authority (MRWPA). In 1990 the MRWPA submitted applications to the SWRCB for unappropriated flood flows on the Mokelumne River from December 1 to June 30. The application seeks to divert up to 1000 cfs to storage and up to 620 cfs for direct use. Historic alternatives for capturing the water include Middle Bar Dam and on-stream reservoir, Duck Creek Reservoir and off-stream diversion, and direct diversions on the Lower Mokelumne River from Camanche Reservoir to Interstate 5. Preliminary studies have shown that substantial 'new water' is available for use in Eastern San Joaquin County; however, the facilities necessary to capture water intermittently are expensive and may remain idle in some years. Table 8-2 depicts the available water from the Mokelumne River surplus to all in-stream and user requirements over the historic 74-year hydrologic record. Based on the historic Mokelumne Hill gage record, there is substantial water available on an interim basis as depicted in Figure 8-2.

8.1.4 Sacramento-San Joaquin Delta

The City of Stockton has long looked to the Sacramento-San Joaquin Delta as a potential source of water to meet long-term needs. In 1996 the City of Stockton submitted an application to the SWRCB seeking an increasing amount of water from 20,000 af initially up to 125,900 af per year. The Delta Water Supply Project seeks to replace existing surface supplies subject to future reductions, protect and restore groundwater levels to within a target safe yield of 0.6 af per acre, and provide a reliable water supply for planned growth outlined in the 1990 City of Stockton General Plan. The basis for the water right is Water Code Section 1485 whereby an agency may appropriate water from the Delta in a like amount to water discharged upstream into the San Joaquin River less any losses and the Area of Origin and Delta Protection Statutes which were enacted to protect against water exports. Any new diversion from the Delta is extremely contentious.

The health of the Delta is also linked to the water supply of Eastern San Joaquin County. Inflow into the Delta from the San Joaquin River is of poor quality and is diluted by higher quality flows from the Sacramento River. A number of Total Maximum Daily Load (TMDL) actions are underway for the San Joaquin River. The Regional Board is required to establish a TMDL load allocation for high priority impaired water bodies under the Federal Clean Water Act. A low dissolved oxygen TMDL is currently being formulated for the Stockton Deepwater Ship Channel which includes effluent from the City of Stockton Regional Water Quality Control Facility (Wastewater Treatment Plant). Additionally, a TMDL for salt and Boron is being formulated to control salt drainage into the San Joaquin River to meet the Vernalis standard. Improvement in delta water quality is the highest priority for both Delta interests and the City of Stockton Diversion Project.

8.1.5 American River

Eastern San Joaquin County has long been promised water from the American River by both the State and Federal Governments. The planned construction of the Auburn Dam, FSC and other smaller regulating reservoirs never came to fruition. The USBR's inaction and the current regulatory restrictions on water resources development have forced Eastern San Joaquin County to weigh other more expensive alternative water sources.

In 1990 San Joaquin County submitted an application to the SWRCB to appropriate wet-year water from either the South Fork of the American River via the completed Auburn-Folsom South Unit of the CVP or from Lake Natomas on the Lower American River. The application requests a diversion of up to 620 cfs between December 1 and June 30 subject to availability of unappropriated flow. The construction of the Auburn Dam, the Countyline and Clay Station Reservoirs, and the extension of the Folsom South Canal into San Joaquin County were never undertaken. In addition Sacramento County and environmental interests have long opposed the substantial delivery of water from Nimbus Dam to the detrimental health of the Lower American River.

In August 2003, San Joaquin County amended its American River application to move and consolidate the points of diversion on the South Fork of the American River and Nimbus Dam to the Sacramento River to coincide with the point of diversion of the Freeport Regional Diversion Project (Freeport Project) at a diversion rate of 350 cfs. In order to maintain the priority filing date, San Joaquin County needed to demonstrate that the amended amount requested at Freeport on the Sacramento River would be available on the South Fork American River. To support the amendment of the water right application, the Authority co-sponsored the San Joaquin County Amended Water Right Application 29657 South Fork American River Water Availability Study (Water Availability Study).

The Water Availability Study explores the hydrologic, regulatory, and water right constraints of the American River System. The Water Availability Study concluded that substantial water is available on the South Fork of the American River and would likewise be available for diversion downstream at Freeport on the Sacramento River in normal and wet years. The Water Availability Study also concluded that the 155 cfs Freeport Project capacity severely limits the amount available to San Joaquin County. By increasing the capacity of the diversion and conveyance elements of the Freeport Project to 350 cfs, the Authority could maximize its use of the American River Water Right Application.

The Water Availability Study concluded that the average annual yield available to San Joaquin County is limited by the physical capacity of the Freeport Project capacity of 155 cfs or approximately 44,000 af per year. An increase in capacity to 286 cfs could potentially increase

the average annual yield to 72,000 af per year. In the months of July-November, other supplies available either from the American or Sacramento Rivers through exchanges, transfers, banking partnerships, federal contracts, and additional water right fillings could significantly increase the yield to San Joaquin County. A more detailed description of the Freeport Project is found in Section 8.2.1.

8.2 Surface Storage and Major Conveyance Elements

The water sources described above require substantial investments in storage and conveyance in order to capture and put to beneficial use substantial amounts of water. The following elements are considered major reservoirs or new conveyance facilities. Final use is discussed in Section 8.3.

8.2.1 Freeport Regional Water Project

The Freeport Regional Water Authority (FRWA) was created by exercise of a joint powers agreement between Sacramento County Water Agency (SCWA) and EBMUD. FRWA's basic project purpose is to increase water service reliability for customers, reduce rationing during droughts, and facilitate conjunctive use of surface water and groundwater supplies in central Sacramento County. The Freeport Project will also provide EBMUD with flexibility in the event of an emergency or during Pardee System maintenance. The Freeport Project will provide up to 85 mgd of surface water to SCWA to be used conjunctively with groundwater to meet future supply needs of central Sacramento County and provide up to 100 MGD to EBMUD in dry years.

In 1970, EBMUD entered into a contract with the USBR for delivery of CVP water from the American River to be taken at Nimbus through the FSC to the Mokelumne Aqueduct. Legal challenges by American River interests culminated in the 1990 ruling of Alameda Superior Court Judge Richard Hodge (Hodge Decision). The Hodge Decision conditioned EBMUD's diversion from Nimbus on maintaining minimum in-stream flow requirements on the Lower American River necessary to protect the fishery. EBMUD continued to work with Sacramento County interests on diversion alternatives that could meet the dry year needs of EBMUD, protect and uphold the National Wild and Scenic Rivers designation of the Lower American River, and provide benefits to the region.

In 1993 the Sacramento Area Water Forum (Water Forum), a diverse group of water interests from the business, agricultural, environmental, citizen, and local government communities, began a collaborative process to devise a comprehensive plan to "Provide a reliable and safe water supply for the region's economic health and planned development to the year 2030, and Preserve the fishery, wildlife, recreational, and aesthetic values of the Lower American River." (Water Forum Agreement, 2000) In the context of the Water Forum, EBMUD and Sacramento County successfully developed a project that would move EBMUD's American River Diversion from Nimbus to the Sacramento River near the town of Freeport. In January 2001, EBMUD, Sacramento County interests, and the USBR executed a Memorandum of Agreement to fully explore the engineering feasibility of joint use facilities under the Freeport Project concept.

On July 20, 2001, EBMUD executed an Amendatory Contract with the USBR for water from the American River. Under the terms of the Amendatory Contract, EBMUD is entitled to divert its CVP supply from the Sacramento River only if its March 1st forcast of the expected October 1st total system storage is less than 500,000 af. The Amendatory Contract entitles EBMUD to divert up to 133,000 af in any one year and no more than 165,000 af total in any three-consecutive year period. While the Amendatory Contract allows for the diversion of up to

133,000 af in any one year, the diversion and transmission system is sized to convey no more than 112,000 af annually to the Mokelumne Aqueducts. Hydrologic records predict that the condition is expected to occur in the driest one-third of all years. EBMUD American River entitlements are also subject to curtailments pursuant to CVP drought conditions and regulatory requirements. The Freeport Project concept consists of the following facilities:

- a 185 MGD (286 cfs) intake facility and pumping plant on the Sacramento River near the community of Freeport;
- an 84-inch pipeline to convey water east to an 85 MGD SCWA water treatment plant;
- a 66-inch pipeline from the SCWA turnout east to the existing FSC;
- a 100 MGD (155 cfs) pumping plant near the terminus of the FSC;
- a 100 MGD (155 cfs) 66-inch pipeline from the terminus of the FSC to the Mokelumne Aqueducts; and
- an aqueduct pumping plant and pre-treatment facility near Camanche Reservoir.

The total preliminary cost of the Freeport Project is estimated at $690 million, $439 million of which will be funded by EBMUD (Freeport Regional Water Authority Website, 2004). Additional operations and maintenance costs are estimated to be approximately $130 per af. (Williamson, 2003)

In August 2003, the FRWA released the Freeport Regional Water Project (Freeport) Draft Environmental Impact Report/Environmental Impact Statement DEIR/EIS. The Freeport DEIR/EIS discloses potential environmental impacts of various alternatives to the Freeport Project. The preferred Freeport Project Alternative is depicted in Figure 8-3. The Final EIR/EIS was released in March 2004 and was certified on April 15, 2004. Construction of the intake and EBMUD portion of the Freeport Project is set to begin in 2007 and be completed in 2009 (Freeport Regional Water Authority Website, 2004).

Following the execution of the amendatory contract with the USBR, over 100 agencies served by the State Water Project (SWP) and CVP opposed the concept of EBMUD diverting water from the Delta in dry years. In 2003 State and Federal Contractors agreed to drop all but one suit and have pledged support for the Freeport Project through its construction. The terms of the settlement included provisions to include the EBMUD Amendatory Contract as an export under the Coordinated Operations Agreement. The settlement reduces the water supply impacts to the State and Federal Contractors. A separate settlement with the Santa Clara Valley Water District (SCVWD) would defer 6,500 af of EBMUD's diversion entitlement during the 1st year of a drought. Should the drought continue into a 2nd consecutive year, SCXWD would make available a like amount for EDMUD to divert.

On January 27, 2004, Contra Costa Water District (CCWD) became the last CVP Contractor to settle litigation against the Freeport Project. Under the terms of the settlement, the FRWA would use the joint Freeport project facilities to wheel up to 3,200 af per year under an existing CCWD CVP contract to the Los Vaqueros Reservoir near Brentwood. The settlement terms would offset the effects of lower quality water at the Los Vaqueros Reservoir intake in the Delta in years when EBMUD is diverting through the Freeport Project. The settlement with CCWD is the first allocation of EBMUD's unused capacity in the Freeport Project (California Water Law and Policy, 2004).

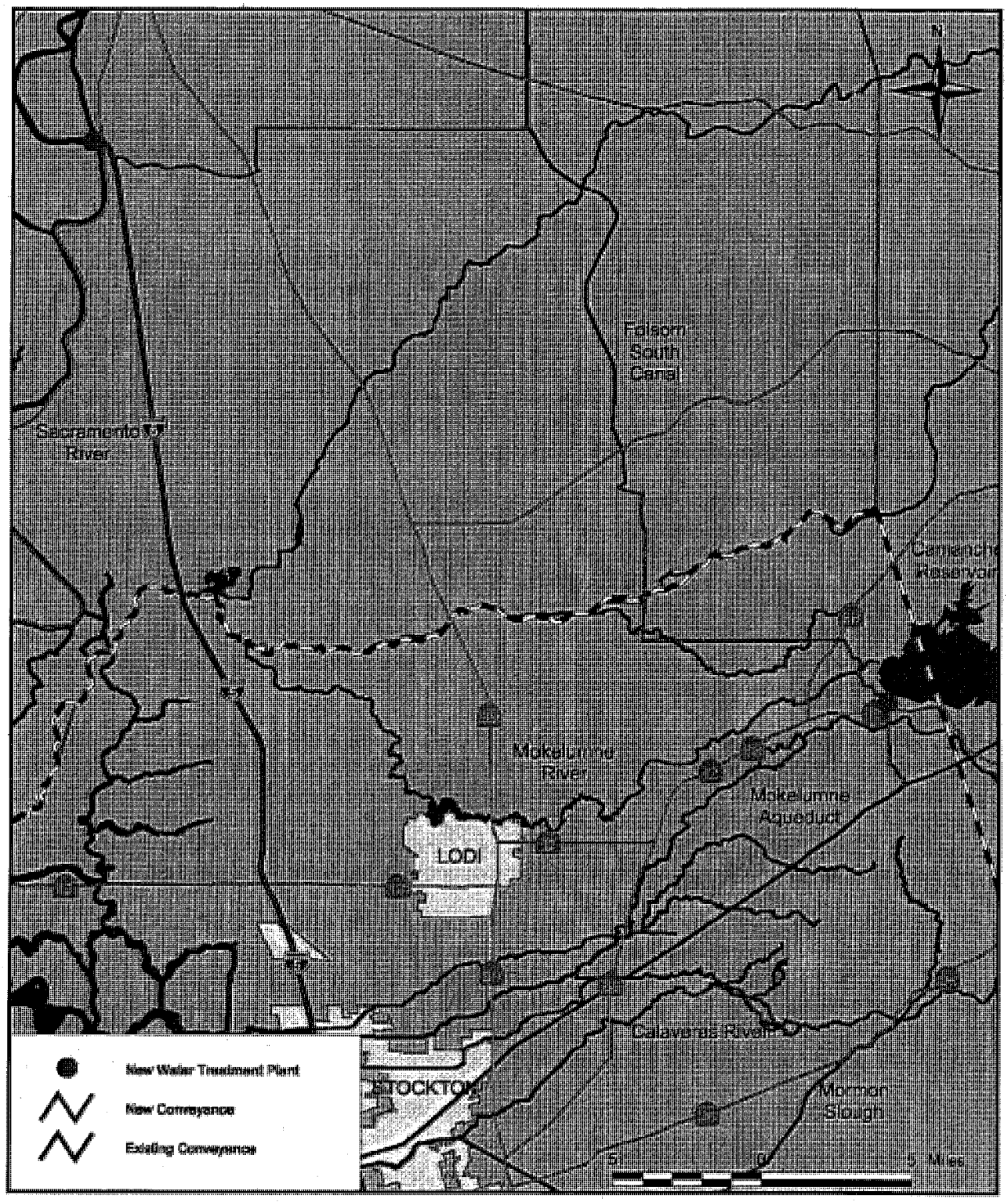


Figure 8-3 Freeport Regional Water Project
Source: Freeport Regional Water Authority at http://www.freeportproject.org

Assuming the Freeport Project is utilized by EBMUD in one-third of all years and the County is able to secure a wet-year water right on the American River, the maximum annual diversion amount would be approximately 65,000 af/yr at an average annual yield of 44,000 af/yr. The Water Availability Study suggests that in years when EBMUD is not utilizing the Freeport Project, the full amount will be available to the Authority under the County Water Right. Additional supplies obtained through third party groundwater banking and water transfers could also increase the yield to the Authority.

8.2.2 MORE WATER PROJECT

In 1990 the Mokelumne River Water and Power Authority (MRWPA) filed a water right application with the SWRCB for unappropriated wet year flows on the Mokelumne River. The application cited three alternatives for the capture of water at the proposed Middle Bar Reservoir, a new "On-stream" 40,000 to 434,000 af reservoir, the proposed Duck Creek Reservoir, a new "Off-stream" 100,000 to 150,000 af regulating reservoir, or through direct diversions off the Lower Mokelumne River between Camanche Reservoir and Interstate 5. The classic alternatives are collectively known as the Mokelumne River Regional Water Storage and Conjunctive Use Project (MORE WATER Project).

The MRWPA filed an additional water right application for power generation at the proposed Middle Bar Dam with an estimated power generation capacity of approximately 85 megawatts (MW) per year. The MRWPA also obtained 3 consecutive Preliminary Permits from the Federal Energy Regulatory Commission (FERC) for the proposed Middle Bar Dam alternative. The fourth consecutive Preliminary Permit, obtained for the proposed Duck Creek Reservoir alternative on January 22, 2004, is current for a period of three years through December 2006. The Preliminary Permit protects the MRWPA's priority to study the power generation potential of the proposed Duck Creek Reservoir (FERC, 2004).

In 2003 the MRWPA retained the services of HDR, Inc. in order to fully evaluate the engineering feasibility of the MORE WATER Project and devise and implement a strategy that would satisfy the requirements of CEQA, NEPA, the Water Right Applications, and all applicable permits. Funding for HDR services have come from contributions by the City of Stockton, the City of Lodi, and the MRWPA. The Authority is also looking to secure funding assistance through the Congressional appropriations process, State grants, and other interested agencies.

In May 2004, the MRWPA completed Phase I – Reconnaissance Study of the MORE WATER Project. Phase I evaluated all historic information available regarding the water right applications, the FERC filings, Mokelumne River hydrology, and any past studies done on the classic alternatives. From the information gained, the classic alternatives and other alternatives meeting the MORE WATER Project purpose and need were conceptualized and evaluated. The following alternatives were considered in Phase I:

- Pardee Dam and Reservoir Replacement/Enlargement
- Middle Bar Dam and Reservoir
- Mokelumne River Storage System Re-operation
- Devil's Nose Dam and Reservoir Construction
- Duck Creek Reservoir – Pardee Diversion
- Duck Creek Reservoir – Camanche Diversion

- South Gulch Dam and Reservoir with New Hogan Reservoir and Pardee Diversion
- Alliance Canal
- Lower Mokelumne River Diversions – Structural and Non-Structural

The list of alternatives was further reduced by eliminating projects too contentious to implement under the current regulatory and political climate. The historic Middle Bar Dam and Reservoir alternative was eliminated from the list due to numerous adverse impacts to whitewater rafting opportunities, riparian upland areas, oak savannah habitat, and wildlife. The Devil's Nose Dam was also eliminated from further consideration likewise due to the impacts on pristine up-county areas. The remaining alternatives were ranked based on a variety of factors weighing the benefits and likelihood of implementation. Table 8-3 shows the weighed screening criteria and evaluation results. The top five ranking alternatives will be carried forward and further explored in a detailed engineering feasibility analysis as part of the next phase of the MORE WATER Project and are described below.

Table 8-3 MORE WATER Project Alternatives Screening Results

Weight	0	3	3	1	2	1	5		
ALTERNATIVE	Cost per acre-foot	Regulatory Feasibility	Political Feasibility	Financial Feasibility	Environmental Feasibility	Water Quality	Benefits Achieved	Sum Product	Relative Ranking
Duck Creek Dam - Pardee Reservoir Diversion	H	M	M	H	M	H	H	37	1
Duck Creek Dam - Camanche Reservoir Diversion	H	M	M	H	M	H	H	37	2
Lower Mokelumne River Diversions-Non structural	L	H	H	H	H	H	L	35	3
Lower Mokelumne River Diversion-Structural	L	M	H	M	M	H	M	34	4
Mokelumne River Storage System Re-operation	L	H	M	M	H	H	L	31	5
New Hogan Reservoir Diversion with South Gulch Dam Reservoir Construction	H	L	M	M	M	H	M	29	6
Pardee Dam and Reservoir Replacement/Enlargement	M	L	L	M	L	H	H	28	7

Cost: Relative cost per acre-foot for each alternative. High = $$$ per af. Medium = $$ per af. Low = $ per af

Regulatory Feasibility: High: Good chance for regulatory support (i.e., regulatory agency concurrence). Medium: Moderate chance for legal support. Low: Low chance for support (i.e. regulatory agencies opposed).

Political Feasibility: High: Good chance for political support (i.e., elected officials/powerful interest groups support). Medium: Moderate chance for political support. Low: Low chance for support (i.e. elected officials/powerful interest groups opposed).

Financial Feasibility: High: High chance for financing partners outside of the Authority. Medium: Moderate chance for partners. Low: Low chance for partners outside of the Authority.

Environmental Feasibility: High: Limited environmental impacts that can be mitigated to level of insignificance. Medium: Adverse environmental impacts that can be mitigated. Low: Adverse environmental impacts that cannot be mitigated.

Water Quality: High: No effect to downstream or County users. Medium: Potential effect to downstream users that can be mitigated. Low: Adverse effect to downstream or County users.

Benefits Achieved: High: High Yield Medium: moderate yield. Low: low yield.

NOTE: Sum Product = high, medium, low ranking of 3,2, and 1 respectively, multiplied by weighted factor (ranging form 1 to 5) for each screening criterion.

Source: MORE WATER Project Phase I - Reconnaissance Study Summary Report, 2004

Mokelumne River Storage System Re-operation

This alternative includes re-operating Pardee Dam and Reservoir, Camanche Dam and Reservoir, and Project 137 systems to generate additional water supply. Working with the USACE, it may be possible to redefine the flood control operating guidelines for the Mokelumne River. The latest trends in weather forecasting and hydrologic modeling could be utilized to operate the flood control capabilities of the Mokelumne storage system less conservatively to allow for greater conservation storage capacity. Re-operation could also consist of allocating more flood control storage to PG&E Project 137 thus reducing the required flood control storage defined by the rule-curves of Pardee and Camanche Reservoirs. The yield of the re-operation alternative is on the order of 10,000 af.

Duck Creek Reservoir (Pardee or Camanche Diversions)

The proposed Duck Creek Reservoir is an off-stream reservoir located in Eastern San Joaquin County in the Duck Creek watershed which drains into the Calaveras River at divergence of the Calaveras River and Mormon Slough at Bellota. The Duck Creek dam system would consists of a 6000' earthen main dam at the south end and a series of smaller coffer dams to the west. The optimal size of the reservoir will be determined in the engineering feasibility study. Figure 8-4 is the elevation-area-capacity curve for the proposed Duck Creek Reservoir.

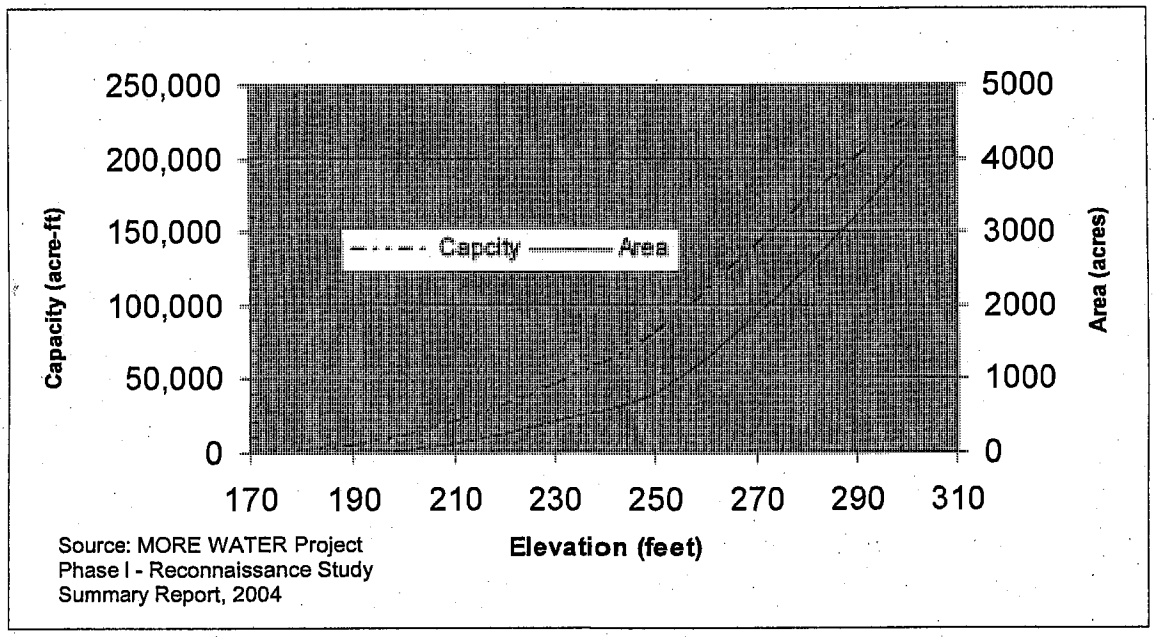


Figure 8-4 Duck Creek Reservoir Elevation-Area-Capacity Curve

Water would be diverted at either Pardee Reservoir or Camanche Reservoir for storage in Duck Creek Reservoir. A map and diagram of the Pardee Reservoir alternative are shown in Figure 8-5 and Figure 8-6, respectively. A diagram of the Camanche Reservoir alternative is shown in Figure 8-7, and a diagram of the proposed reservoir is shown in Figure 8-8. The water right application seeks to divert up to 1,000 cfs to storage and 620 cfs by direct diversion. The total maximum diversion capacity is 1,620 cfs from either Pardee or Camanche Reservoirs. Water diverted from Pardee Reservoir at a rate of 1,620 cfs would require a Regulated releases from

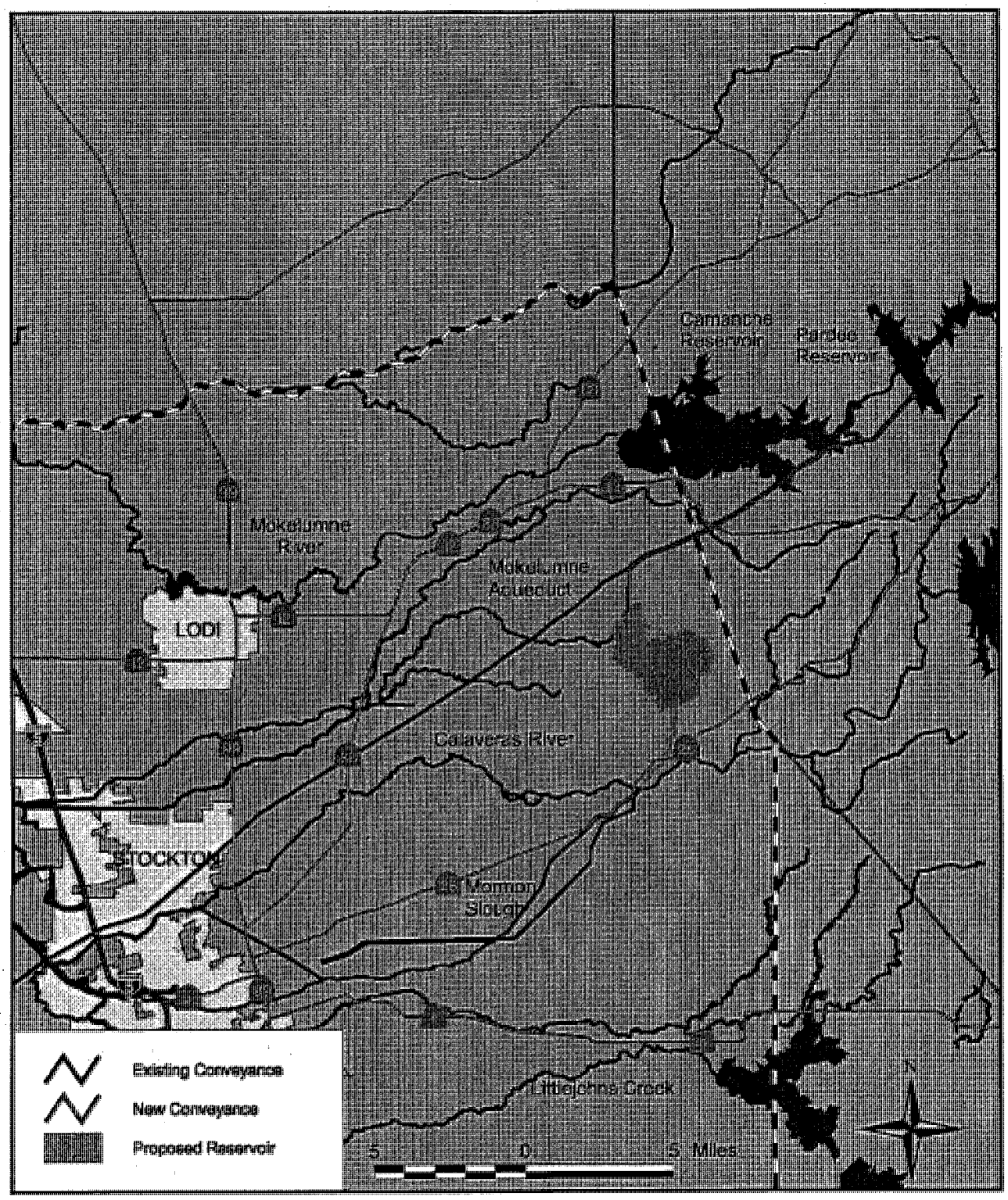


Figure 8-5 Duck Creek from Pardee Reservoir

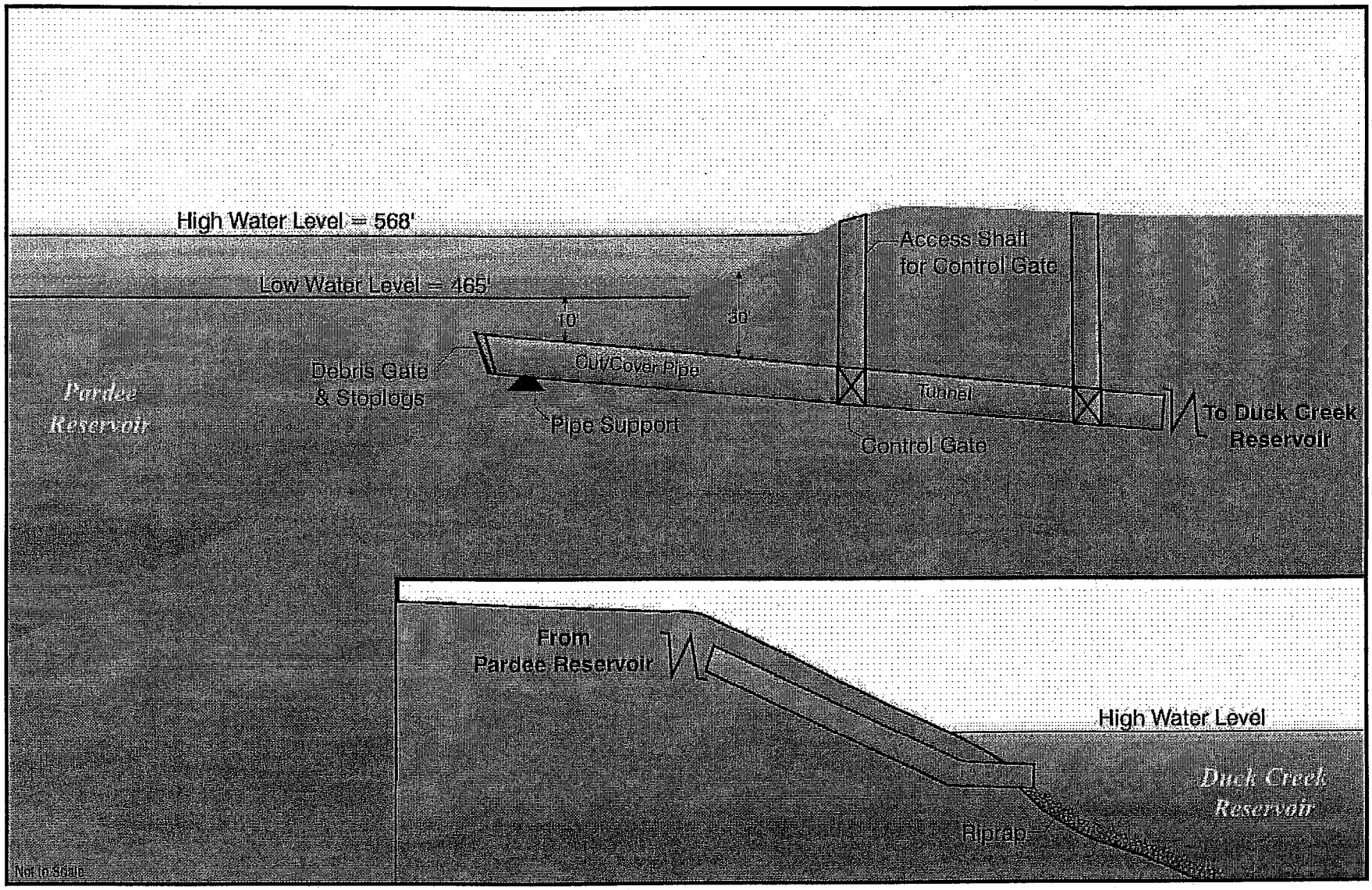


Figure 8-6 Duck Creek from Pardee Reservoir Inlet and Outlet Diagram
Source: HDR, Inc.

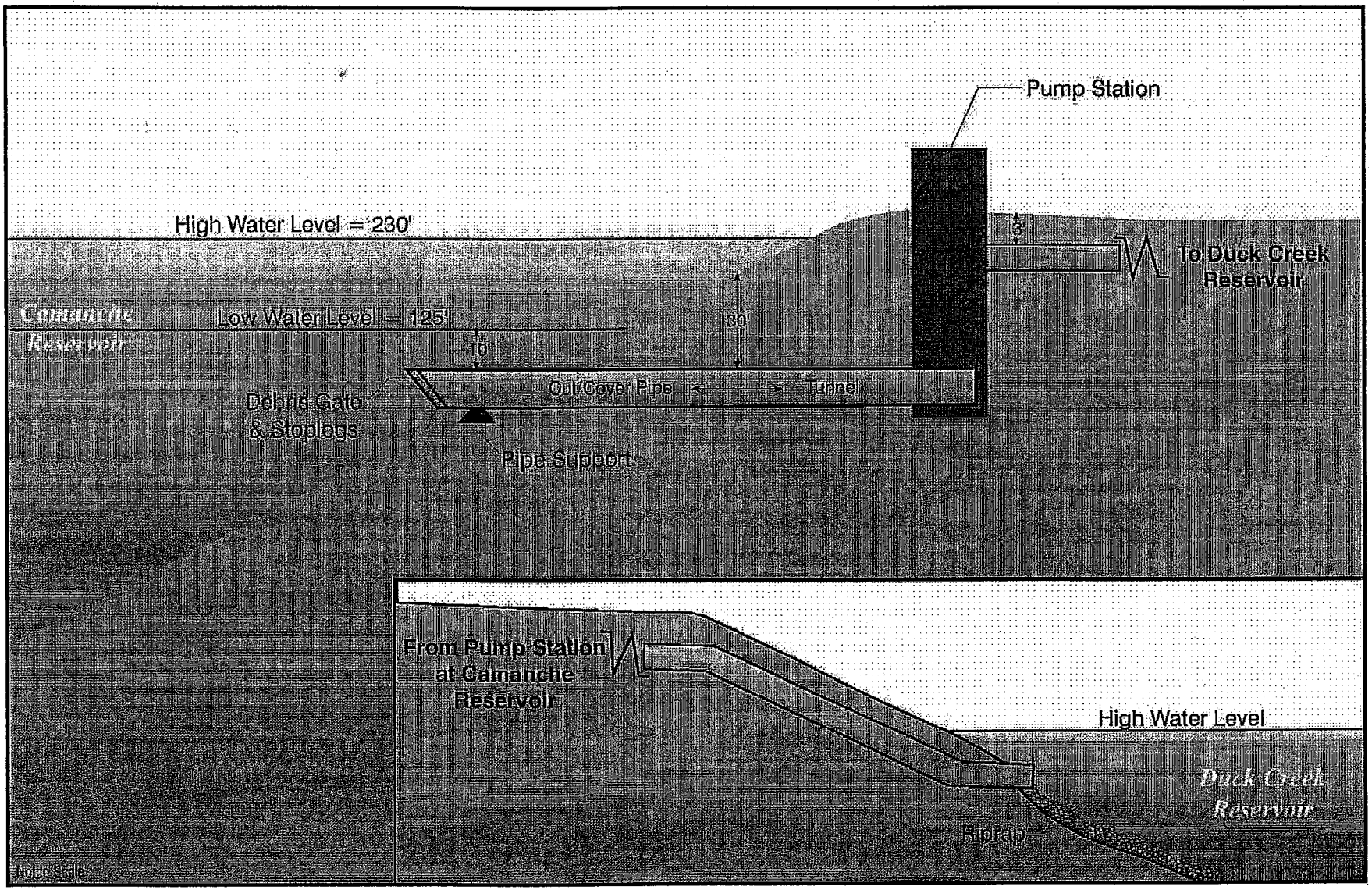


Figure 8-7 Duck Creek from Camanche Reservoir Inlet and Outlet Diagram
Source: HDR, Inc.

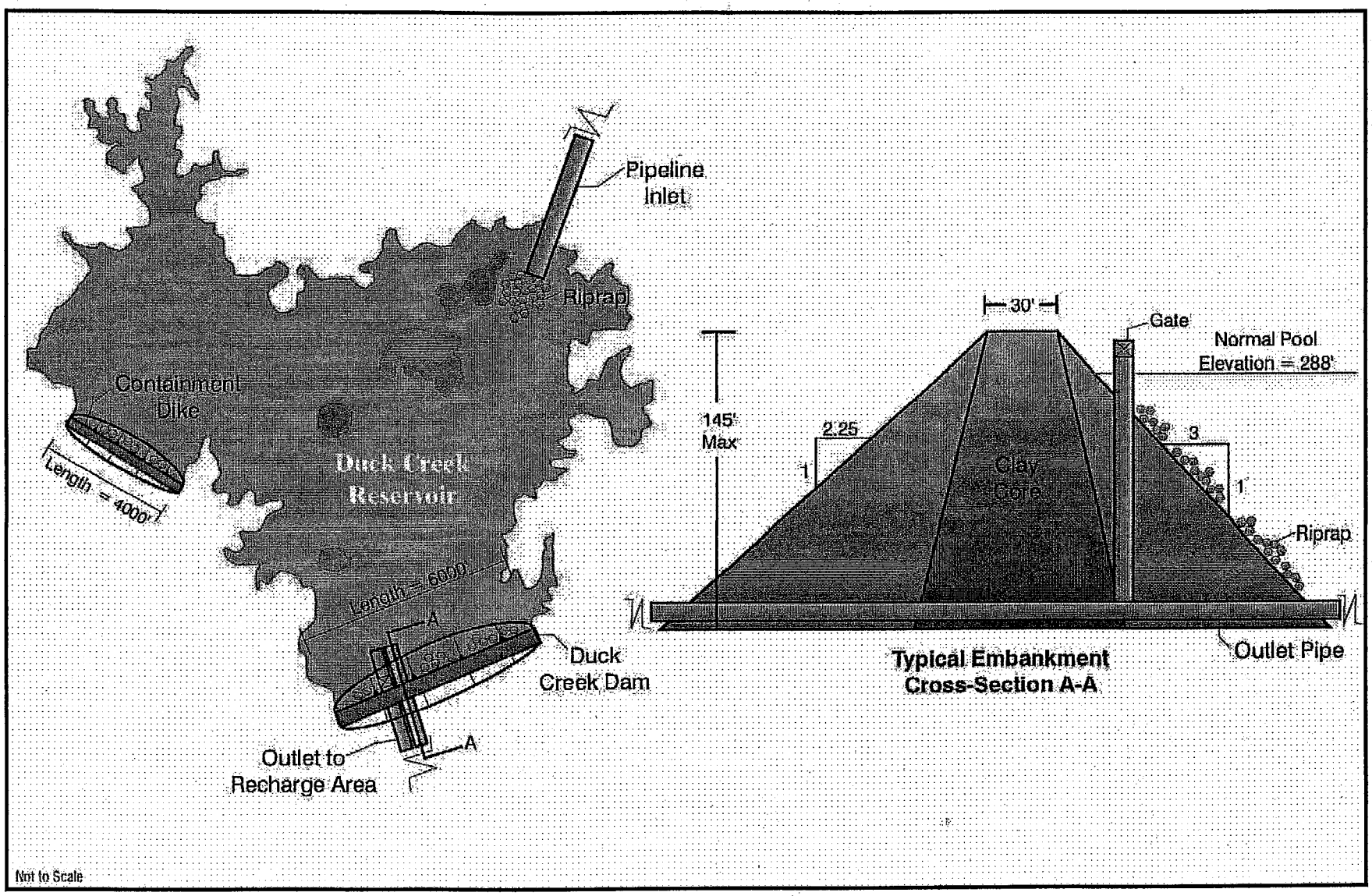


Figure 8-8 Proposed Duck Creek Reservoir Diagram
Source: HDR, Inc.

the Reservoir to Bellota would be re-diverted to the SEWD water Treatment Plant, Mormon Slough, Potter Creek, Mosher Slough, the Lower Calaveras River, and potentially the proposed Alliance Canal for beneficial use or direct groundwater recharge. Evaporation is potentially a major concern for shallow large surface area reservoirs; however, the operation of the proposed Duck Creek Reservoir would completely drain Duck Creek Reservoir to maximize use in anticipation for the next season's divertible flows. Evaporation rates for the duck creek area are shown in Figure 8-9.

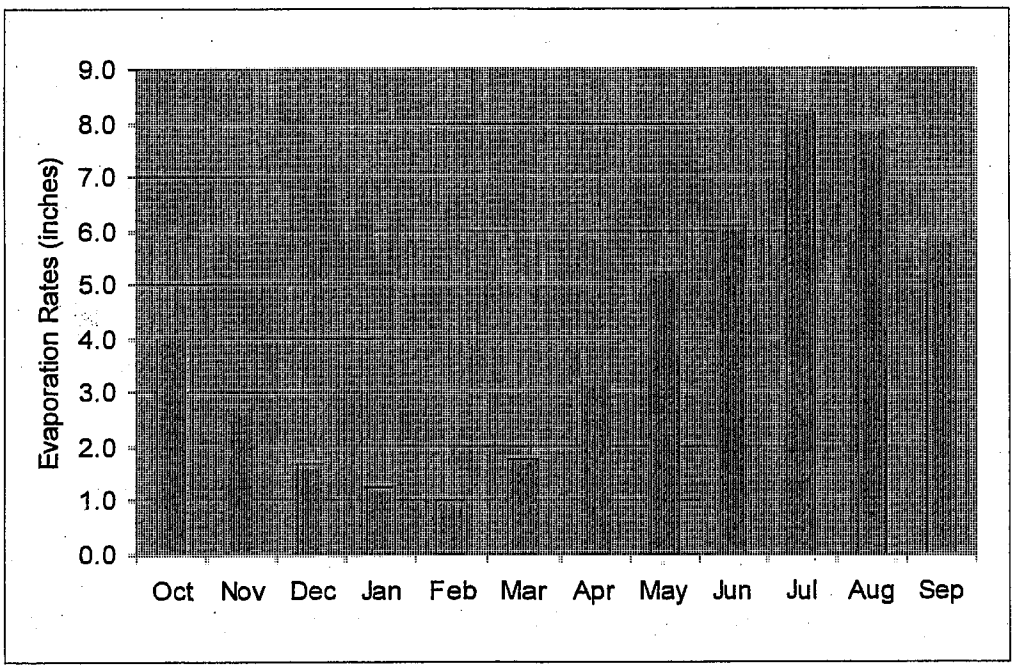


Figure 8-9 Duck Creek Reservoir Evaporation Rates

Lower River Diversions – Non-Structural and Structural

The water right application includes diversions along the lower Mokelumne River from below Camanche Reservoir to Interstate 5. Non-Structural implies the use of existing facilities with minor improvements. Under the non-structural alternative, NSJWCD existing diversion pumps and irrigation systems could be used to maximize recharge and in-lieu distribution. Additionally, the new Woodbridge Dam when completed will be able to supply the WID canal system year round, thus enabling groundwater recharge from Lodi to north Stockton. Structural alternatives consist of new diversion structures such as check dams, pump stations, and fish screens where flows would be diverted to supply direct recharge facilities or irrigation in-lieu deliveries. A diagram of the structural lower river diversion schematic can be seen in Figure 8-10.

During the course of Phase I, numerous agencies from the regulatory community warned that the MRWPA would be vulnerable to legal opposition because other less environmentally damaging alternatives to reversing the historic overdraft in Eastern San Joaquin County (i.e. agricultural and urban water conservation, water recycling, tiered water rate systems, etc.).

To evaluate the alternatives carried forward, the MRWPA developed the MORE Model of the Mokelumne River System based on the EBMUDSIM proprietary software package. Figure 8-11 is a schematic of the MORE Model. The MORE Model preliminary yield and cost estimates are presented in Table 8-4.

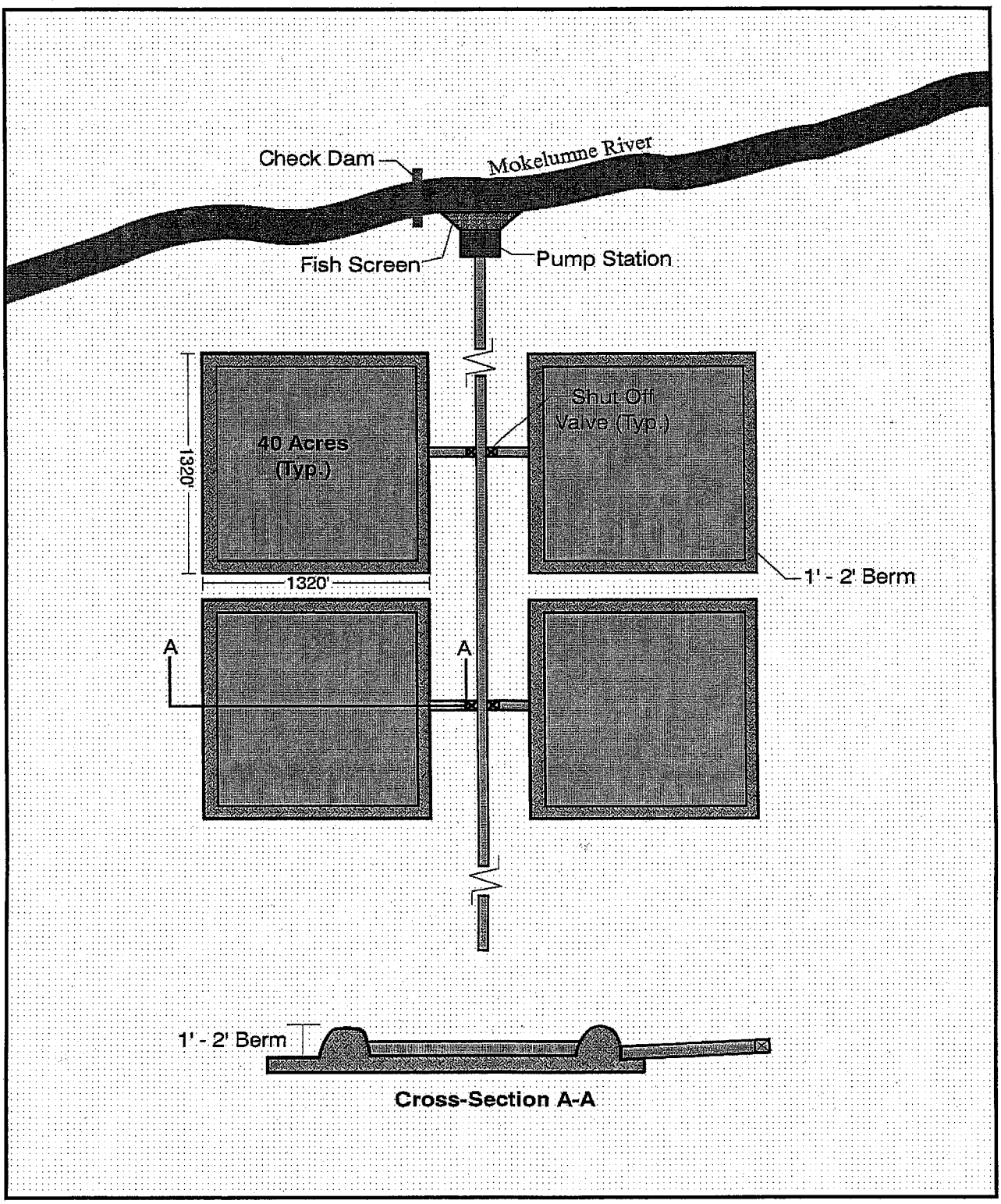


Figure 8-10 Structural Lower River Diversion Schematic
Source: HDR, Inc.

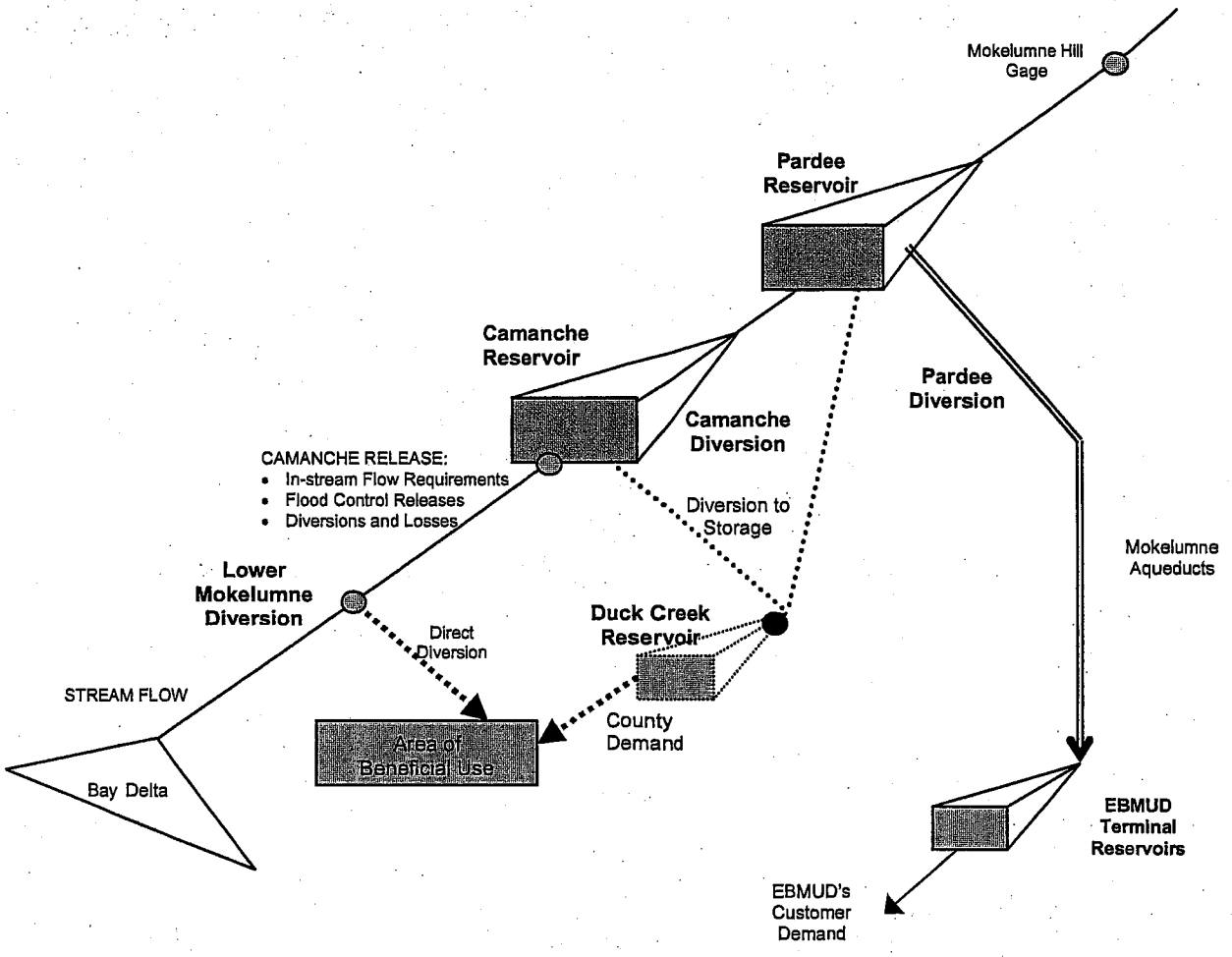


Figure 8-11 Schematic Diagram of the MORE Model

Table 8-4 MORE WATER Project Preliminary Average Annual Yield and Cost Analysis Results					
	Lower Mokelumne River Diversion - Structural	Duck Creek Dam and Reservoir Construction			
		Camanche Reservoir Diversion		Pardee Reservoir Diversion	
		No Hydropower Impacts	Hydropower Impacts	No Hydropower Impacts	Hydropower Impacts
Annual Project Yield (af)	49,200	82,300	90,300	82,300	90,300
Annual Cost ($ per af)	$150	$213	$196	$156	$147
Source: MORE WATER Project Phase I - Reconnaissance Study Summary Report, 2004					

8.2.3 New Melones Conveyance Project

The New Melones Conveyance Project was constructed in order to deliver contractual CVP entitlements to CSJWCD and SEWD from New Melones Reservoir on the Stanislaus River. Water is diverted through the Goodwin Tunnel and conveyed through the Upper Farmington Canal and a series of natural creeks to the Farmington Flood Control Reservoir. The Lower Farmington Canal conveys water from the Farmington Flood Control Reservoir to its terminus

near the community of Peters. The Lower Farmington Canal is connected to Mormon Slough by a 78-inch pipeline where water can be re-diverted for irrigation. The 78-inch pipeline also interconnects with the Bellota Pipeline enabling high-quality New Melones water to be conveyed to the SEWD Water Treatment Plant for delivery to customers in the City of Stockton. Figure 8-12 illustrates the New Melones Conveyance System.

The Goodwin Tunnel, completed in 1992, is approximately 3.3 miles long and 14 feet in diameter, with a design flow capacity of 850 cfs. It originates on the north bank of the Stanislaus River, just upstream from Goodwin Diversion Dam in Calaveras County. The Goodwin Tunnel connects with the Upper Farmington Canal, an open trapezoidal channel that extends approximately 7.9 miles to its current terminus near Shirley Creek. Water then flows through the natural creek system of Shirley, Hoods, and Rock Creeks where it finally enters the Farmington Flood Control Reservoir. The maximum capacity of the Natural Canal system is approximately 550 cfs. The Upper Farmington Canal was envisioned to extend northward to the proposed South Gulch Reservoir where excess water from the Stanislaus River could be stored and conveyed through the Calaveras River System (Farmington , 2000).

The Peters Pipeline is a proposed addition to the New Melones Conveyance System. The Peters Pipeline is a 6-mile, 60-inch diameter pipeline that will be located parallel to the existing 54-inch diameter Bellota Pipeline from the 78-in pipeline at Mormon Slough to the Water Treatment Plant. Figure 8-13 illustrates the proposed Peters Pipeline route. Water conveyed in Peters Pipeline will be used to increase the delivery capacity at the SEWD Water Treatment Plant. A series of turnouts and laterals from the Peters Pipeline will enable SEWD to serve surface water to areas traditionally reliant on groundwater through integration with the Farmington Program. The average annual increase in water delivery by the New Melones Conveyance System is approximately 7,500 af/yr. The total cost of the Peters Pipeline Project is $7,401,260. SEWD has been selected to receive a Proposition 13 grant for 50% of the project cost. Local cost share for the Peters Pipeline Project will come from available funds of the New Melones Conveyance Project.

8.2.4 South County Water Supply Program

The South County Water Supply Program (South County Program) is a cooperative effort between SSJID and the cities of Escalon, Manteca, Lathrop, and Tracy. The goals of the South County Water Supply Program are to:

1. Provide a safe and reliable supplemental water supply for South San Joaquin County;
2. Put to beneficial use conserved water from SSJID entitlements;
3. Keep conserved water within SSJID and San Joaquin County; and
4. Reduce the heavy reliance on groundwater for the urban areas of South San Joaquin County.

As previously noted, SSJID has pre-1914 rights to Stanislaus River water. Water served to the participating cities is made available from the implementation of conservation practices, more efficient means of irrigation by SSJID, and through the loss of irrigated agriculture to planned urban growth. The South County Program consists of an intake facility at Woodward Reservoir, a 44 MGD state-of-the-art membrane filtration water treatment plant just west Woodward Reservoir near Dodds Road, and over 40 miles of pipe ending in the City of Tracy. A map of the project can be seen in Figure 8-14. Phase I of the South County Program will serve up to

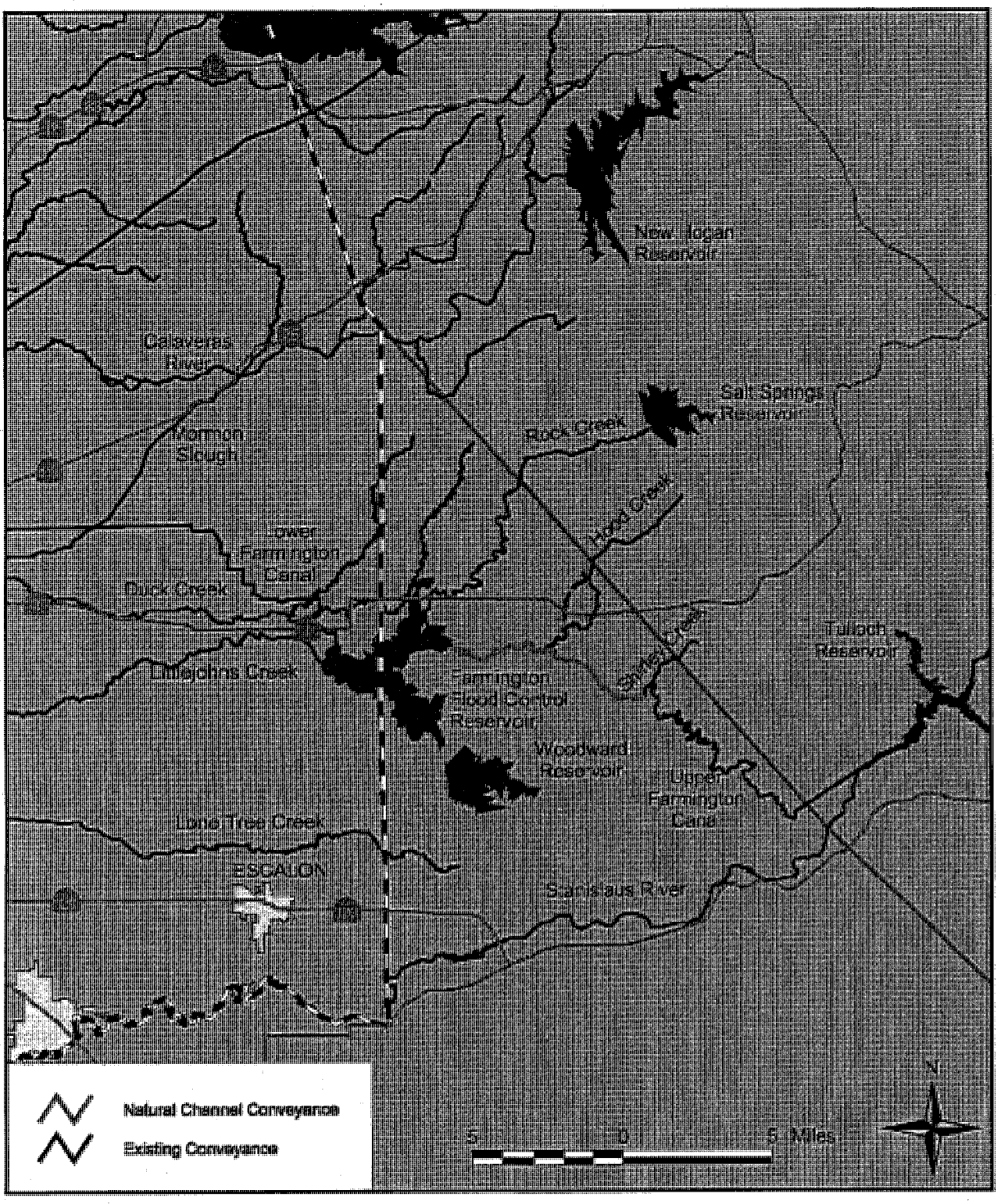


Figure 8-12 New Melones Conveyance System
Source: Farmington Groundwater Recharge/Seasonal Habitat Study, 2001

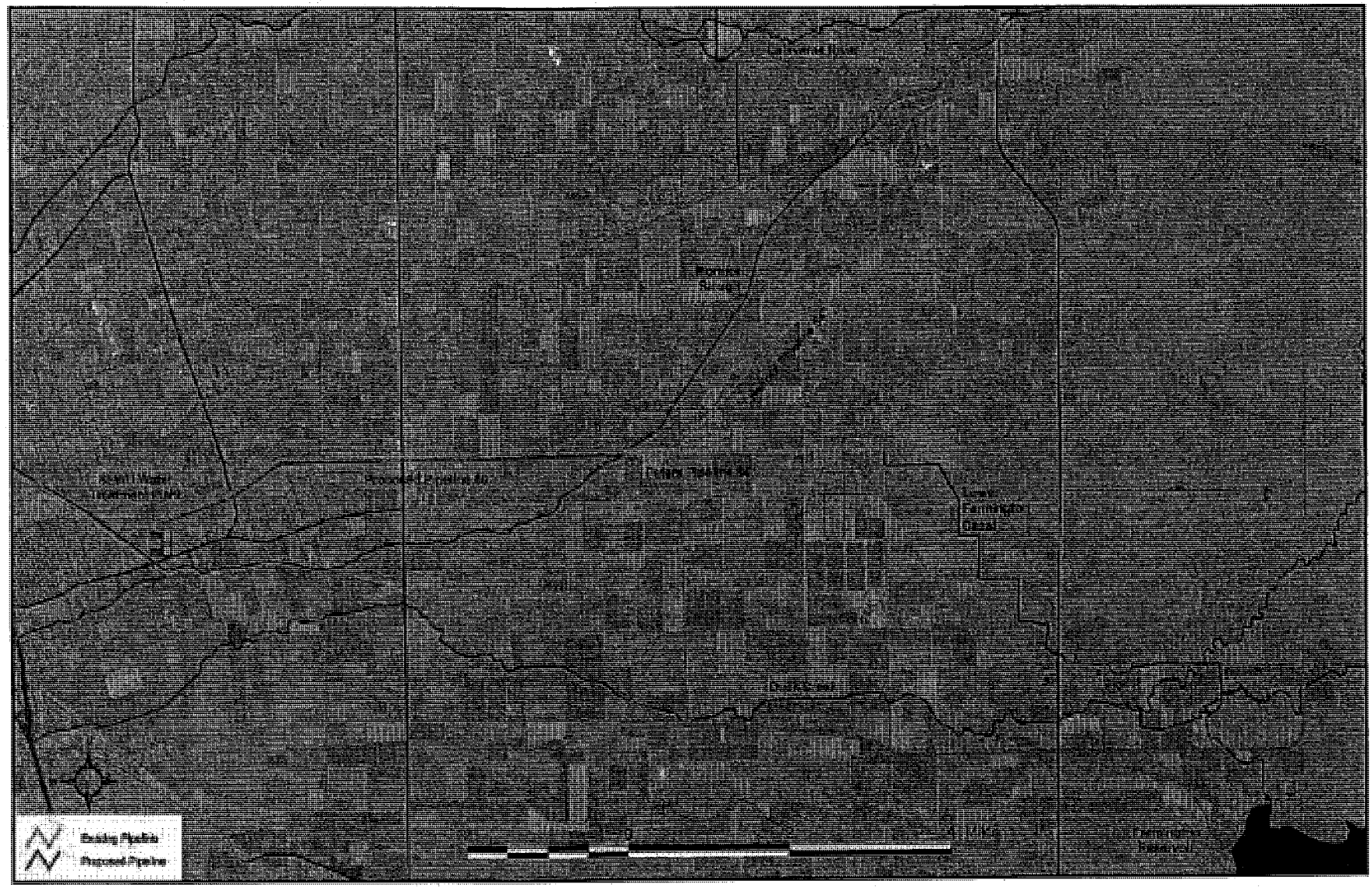


Figure 8-13 Proposed Peters Pipeline Alignment
Source: Farmington Groundwater Recharge/Seasonal Habitat Study, 2001

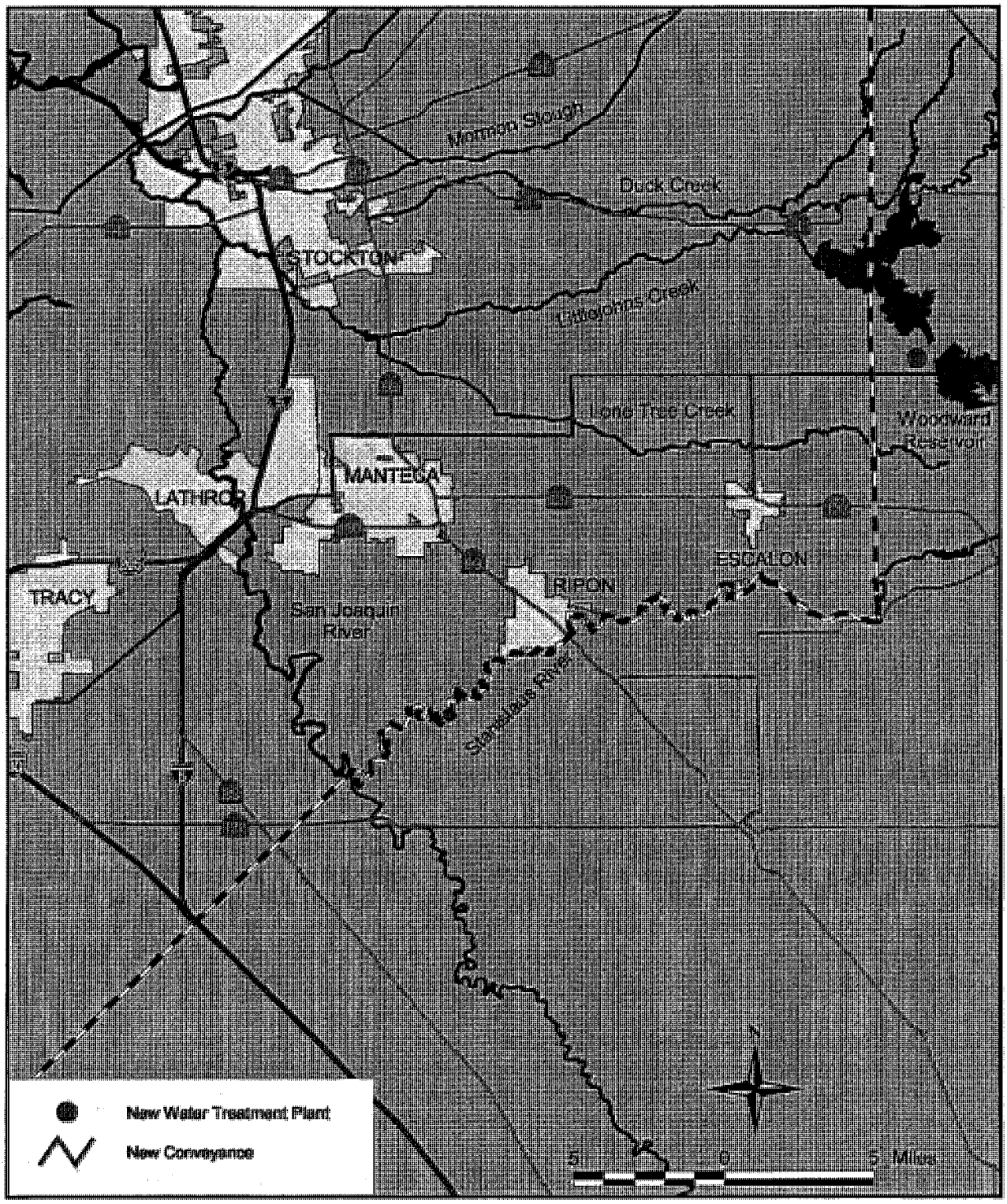


Figure 8-14 South County Water Supply Project
Source: SSJID, 2003

30,000 af per year though 2010. Phase II will increase deliveries to 44, 000 af annually and provide a net reduction of groundwater pumping from the underlying Basin of approximately 30,000 af annually. The total cost of the project is estimated at $126 million. (SSJID, 2001) The Cities of Escalon, Lathrop, and Manteca typically exceed the 1.0 af per acre safe yield of the Basin. The South County Program would allow those cities to pump groundwater within the safe yield (SSJID, 1994).

8.2.5 Woodbridge Dam Replacement and Canal System

The Woodbridge Diversion Dam (Woodbridge Dam) is a 12-foot tall removable flash board dam built in 1910. The Woodbridge Dam is operational from March to October at which time Lodi Lake is heavily used for recreation. The Woodbridge Dam feeds a 100-mile series of canals west of Lodi to Northeast Stockton. The location of the dam and canals is shown in Figure 8-15. The Woodbridge Dam itself is considered an impediment to anadromous fish and is recognized as a key area for the restoration of fall run Chinook Salmon by the National Marine Fishery Service (NMFS) and the California Department of Fish and Game (CDFG) (CDM, WMP, 2002).

In 2000 WID, in cooperation with the USBR, completed the Lower Mokelumne River Restoration Program Final EIR/EIS for new improved fish passage facilities. The preferred alternative consists of the construction of an adjustable weir dam upstream and the removal of the old flash board dam base. State of the art fish ladders and monitoring station for anadromous fish migrations will also be constructed. Additionally, a fish screen and new diversion pipeline extending form Lodi Lake to the canal system will prevent incidental takes of salmon smolts and juveniles without the loss of water deliveries to WID customers. The improvements would exceed the environmental restoration goals set on the Lower Mokelumne River while protecting the irrigated agriculture in Woodbridge. The new Woodbridge Dam will be able to operate year round and keep Lodi Lake full in all months. In addition, year round diversions into the canal system could facilitate year round groundwater recharge and interim deliveries to other in-basin partners including the City of Stockton and SEWD. (http://www.spk.usace.army.mil/pub/outgoing/co/reg/pn/199900057.pdf, 2002)

In 2003, the City of Lodi and WID reached an agreement by which the City of Lodi would purchase 6,000 af/yr at a cost of $200 /af for a term of 40-years. The annual payment of $1.2 million dollars per year is fixed even if the City of Lodi is ready to put its water to beneficial use; however, a three year banking clause allows the City of Lodi to gain credit for the undelivered water up to a total of 18,000 af. The City of Lodi is currently exploring various alternatives to put the water to beneficial use including drinking water treatment and distribution, groundwater recharge, or injection. (http://www.lodi.gov/city-council/html/body_2003-03-11s.htm, 2003)

8.2.6 Eastern Water Alliance Canal

The Eastern Water Alliance Canal is essentially a locally driven completion of the Folsom South Canal. In concept, the Alliance could construct an open canal along the 100-ft contour or pipeline equivalent in order to connect the FSC to the Mokelumne River, Calaveras River, and New Melones Conveyance System. The proposed alignment is shown in Figure 8-116. The Alliance Canal would facilitate water transfers and the diversion of wet year flow to the recharge basins and irrigated lands throughout Eastern San Joaquin County. The ultimate capacity of the Alliance Canal varies; however, the Alliance Canal would transport water both from north to south and vice versa. If left unlined, the canal could also double as a groundwater recharge facility. Preliminary discussions have suggested that a canal 300-feet wide would provide the equivalent recharge of over 1000 acres of recharge basins. Capital costs for the originally envisioned 85-ft wide, 8-ft deep, 2:1 side sloped, 6-mile long unlined canal constructed from the

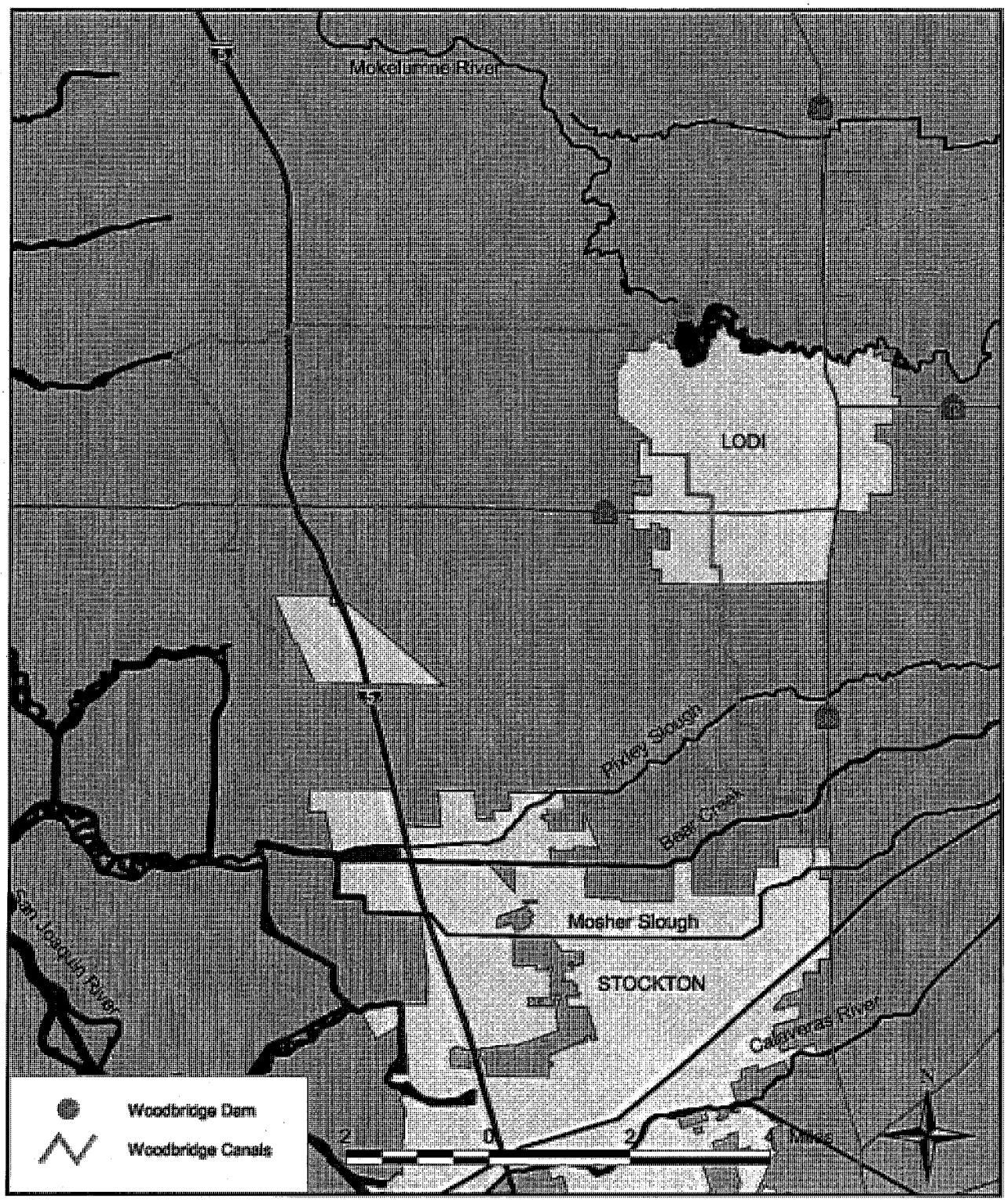


Figure 8-15 Woodbridge Irrigation District Diversion Dam and Canal System

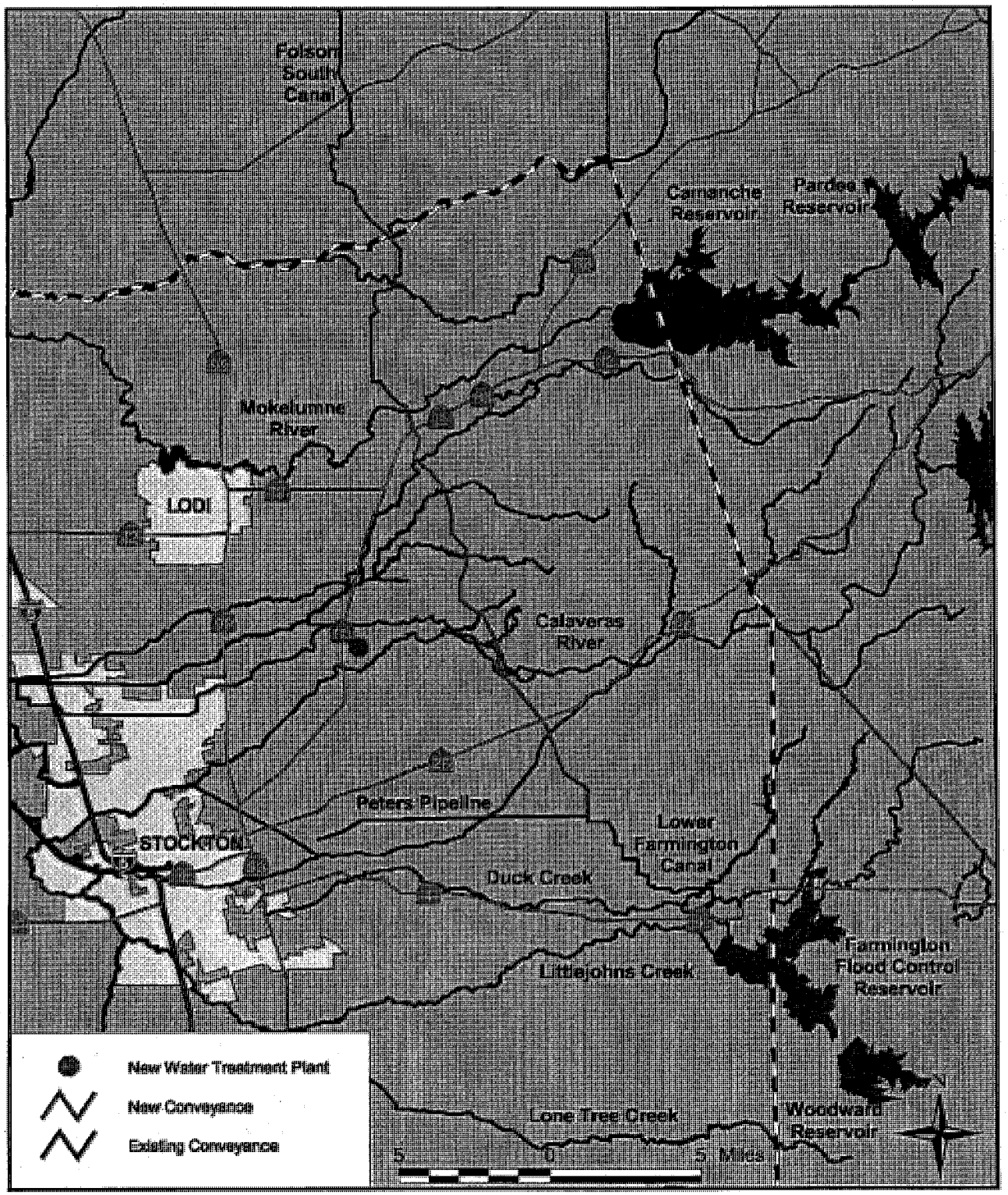


Figure 8-16 Alliance Canal Alignment

Mokelumne River to the Lower Farmington Canal would cost approximately $15 to $20 million (SEWD, 2000).

8.2.7 Gill Creek and Woodbridge Road Flood Control Improvements

The Gill Creek and Woodbridge Road watersheds are located approximately four miles north of the City of Lodi and cover about 14.4 square-miles of relatively flat terrain. The area has a history of drainage deficiencies resulting in long-duration shallow flooding including infill or disking of natural drainage ways, changes in land use, rural residential development, and undersized culvert crossings and pump stations. Historically, the proposed solution focused on increased channel capacities along Gill Creek; however, current regulations regarding down stream impacts, stormwater quality, and permitting present challenges to a diversion focused project. In 2004 the San Joaquin County Department of Public Works Stormwater Management Division completed the Gill Creek and Woodbridge Road Watersheds Reconnaissance Study (Gill Creek Study) to identify and recommend a project that would provide a 100-year level of protection to structures and a 25-year level of protection to agriculture in the study area.

The Gill Creek Study explored three alternatives with the following focuses: channel enlargement, detention, and diversion into the Lower Mokelumne River. The Gill Creek Study identified detention as the preferred alternative which includes minor channel improvements and the construction of up to 15 detention basins covering a total area of 65 acres spread throughout the watersheds. A map of the preferred alternative can be seen in Figure 8-17. The preferred alternative also has the potential to provide addition benefits as the channels and detention basins could be used to convey Mokelumne River Water for irrigation and direct recharge. The NSJWCD owns an existing 30 cfs irrigation system near Tretheway Road extending west along Acampo Road. Improvements to the NSJWCD North Irrigation System or an additional system could serve the conjunctive water management needs of the area. The preferred alternative is expected to cost approximately $25 million with an expected benefit of close to $30 million in prevented structural and agricultural damages. The next step is to perform a feasibility study where the conjunctive use and flood control operation can be explored further and the benefits quantified (San Joaquin County Department of Public Works, 2004).

8.2.8 South Gulch Reservoir

In 1984, SEWD completed the South Gulch Water Conservation Project Technical Reconnaissance Report to evaluate the feasibility of the proposed South Gulch Reservoir. South Gulch Reservoir is located approximately 22 miles east of Stockton, California, and approximately seven miles southwest of New Hogan Dam. The proposed dam location is six-tenths of a mile upstream from the South Gulch and Calaveras River confluence. The South Gulch Reservoir surface area is approximately 3,000 acres with a storage capacity of 130,000 af. In conjunction with the construction of the South Gulch Dam, the Upper Farmington Canal would be completed to supply excess water from the Stanislaus River. Additionally, a diversion structure on the Calaveras River just down stream of New Hogan Reservoir would convey excess water to the proposed South Gulch Reservoir in wet years. A map of the proposed reservoir can be seen in Figure 8-18. The project is one of the key proposed facilities of the Eastern Water Alliance. (Aqua Resources, Inc. *et al*, 1984)

8.2.9 Lyon's Dam

The Tuolumne Utilities District (TUD) obtains the majority of its water supply from the South Fork of the Stanislaus River. In 1983 TUD entered into an agreement with PG&E for the use of

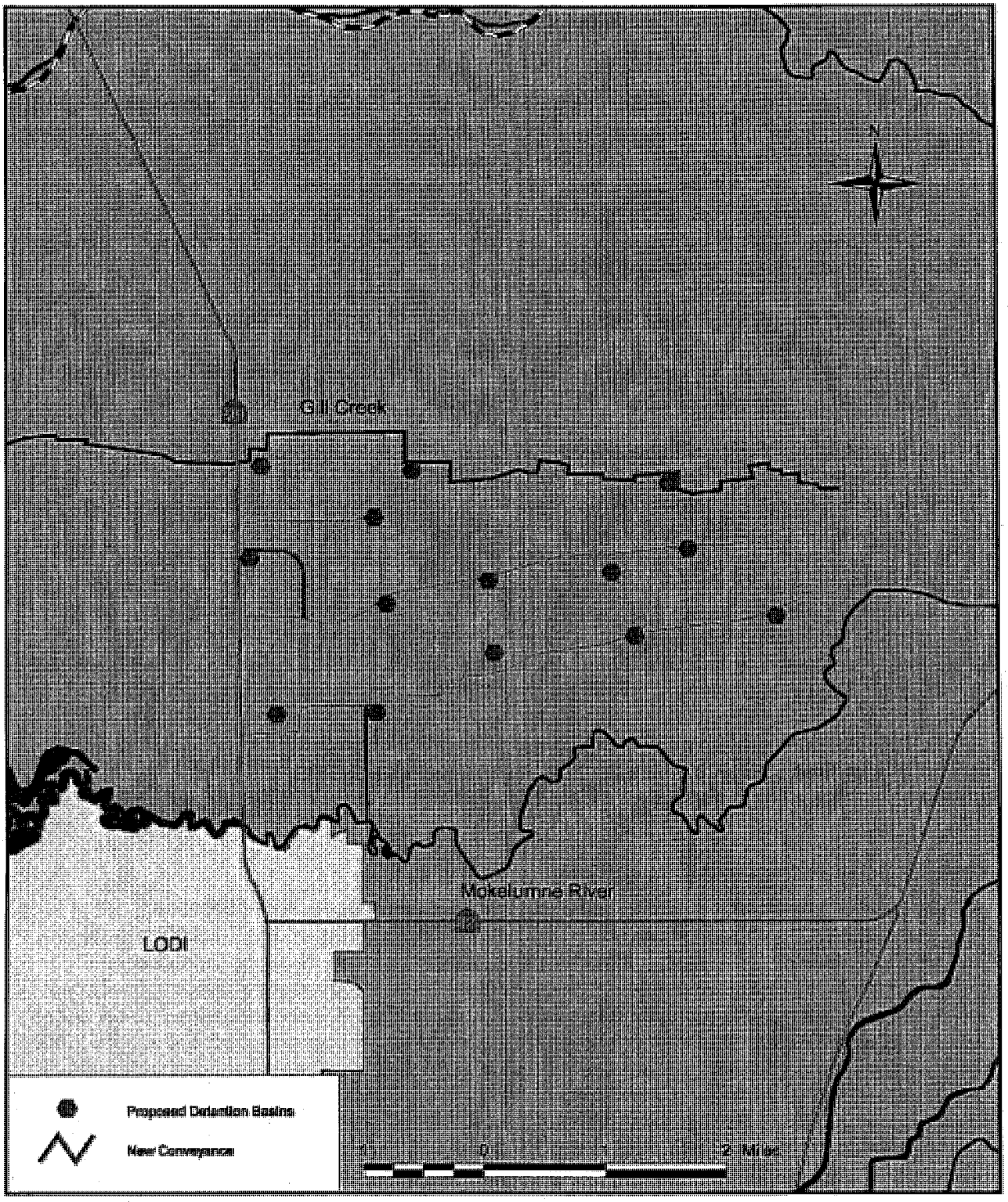


Figure 8-17 Gill Creek and Woodbridge Road Flood Control Improvements
Source: San Joaquin County Department of Public Works, 2004

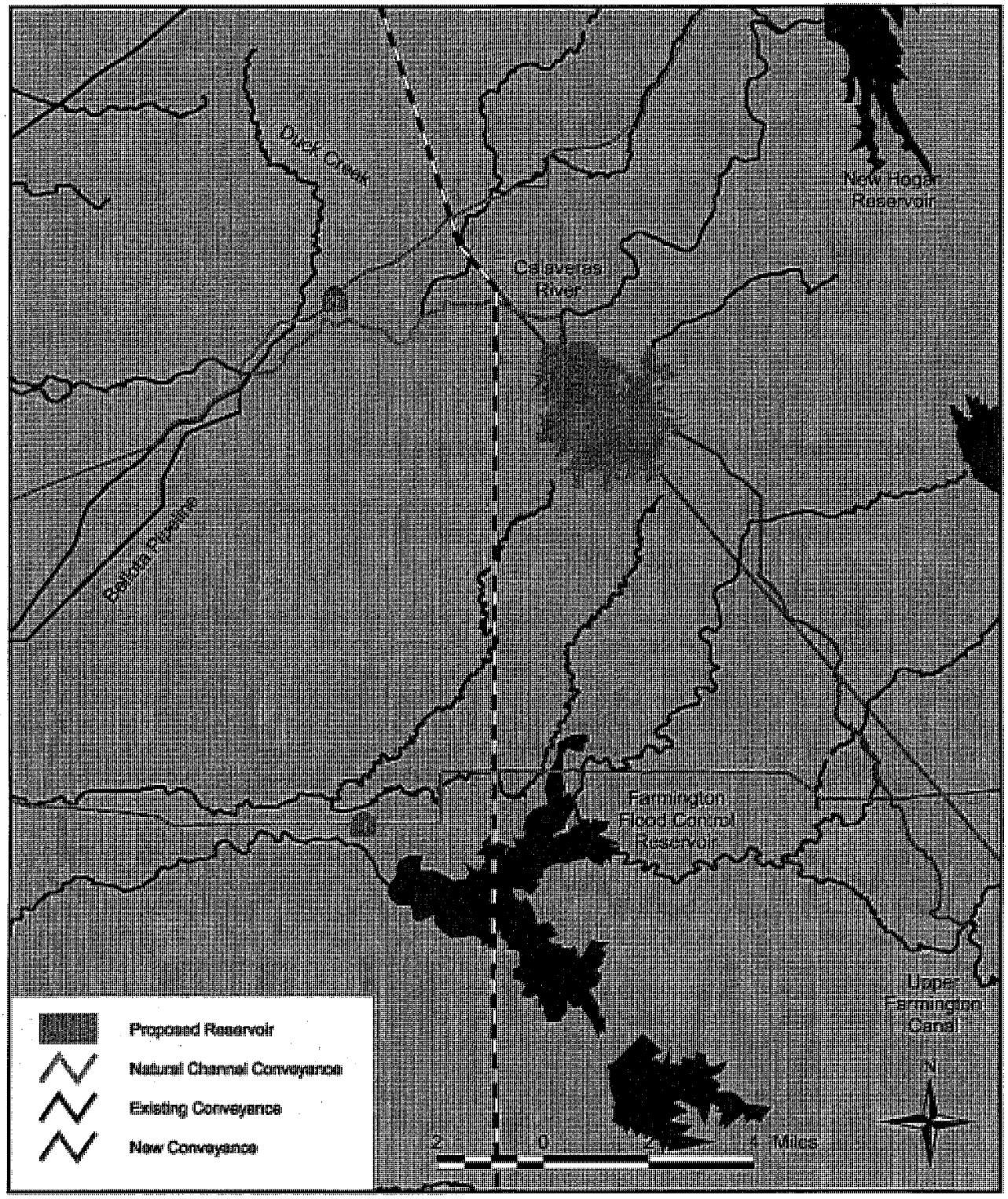


Figure 8-18 Proposed South Gulch Reservoir
Source: Aqua Resources, Inc. *et al*, 1984

all water diverted through Strawberry (Pinecrest) Reservoir and Lyons Reservoir in excess of the required in-stream flows. The amount of water available annually is dependent upon the natural flow of the South Fork of the Stanislaus River which has an average annual yield of approximately 100,000 af including 24,000 af combined storage in Strawberry and Lyons Reservoirs (http://www.tuolumneutilities.com/uwmp.pdf, 2000).

TUD is currently evaluating the possibility of replacing the existing Lyons Dam to create a larger reservoir to provide enough water for future development. The current capacity of Lyons Reservoir is 6,219 af, and the current spillway elevation is 4,214-ft. TUD has contemplated either a 25,000 af or 50,000 af reservoir with surface elevations of 4,285-ft and 4,328-ft respectively. Both options would be located 800-ft downstream of the current dam. The estimated cost of a new 50,000 af reservoir is $26 million. A map of the 50,000 af option is shown in Figure 8-19. SEWD has expressed interest in partnering with TUD for supplemental water supplies from the Lyons Reservoir enlargement (http://www.cserc.org/news/newsletter/2003winter/Lyons.html, 2003).

8.3 Groundwater Recharge Components

For planning purposes, the following descriptions represent the final use of water. The components include groundwater recharge infrastructure and improvements, drinking water treatment facilities, and agency conjunctive use programs.

8.3.1 Farmington Program

In 1997, the USACE completed the Farmington Dam and Reservoir Conjunctive Use Study, which evaluated potential structural and operational changes at Farmington Dam and Reservoir as part of a conjunctive use program. The study found that long-term storage at Farmington Reservoir is not cost-effective; however, operational modifications and the construction of groundwater recharge facilities are cost-effective. Consequently, the USACE, SEWD, and local water interests embarked on the development of a groundwater recharge program. In 1999 the U.S. Congress authorized up to $25 million for construction of groundwater recharge and conjunctive use projects in Eastern San Joaquin County.

In 2001, SEWD completed the Farmington Groundwater Recharge/Seasonal Habitat Study (Farmington Study) to evaluate the physical and financial feasibility of a groundwater recharge program in Eastern San Joaquin County. Through pilot testing, the study team found that the most effective area for groundwater recharge is the area bounded by Highway 99, Jack Tone Road, the City of Manteca, and the Mokelumne River. A map of the general area is shown in Figure 8-20. The Farmington Study also explored the feasibility of various recharge techniques and concluded that the most efficient method of groundwater recharge in Eastern San Joaquin County is the use of field flooding, recharge basins, and excavated pits. Each method varies in average water depth from a few inches to several feet. Figure 8-21 illustrates the various methods of recharge used in the Farmington Program. Existing structures and improvements such as flood detention basins, quarry excavations, canals, and clarifiers can also be easily modified and incorporated in to the project.

In November of 2003, the District received $1.3 million from the DWR for a Proposition 13 grant to complete the first pilot project facilities adjacent to the SEWD Treatment Plan. The pilot project is a permanent facility consisting of one 19-acre pond and three recharge basins totaling 35 acres. These facilities are expected to recharge 7,000 af/yr. In February of 2004, the pilot project was named the Water/Environment Project of the Year, 2003, by the American Society of Civil Engineers.

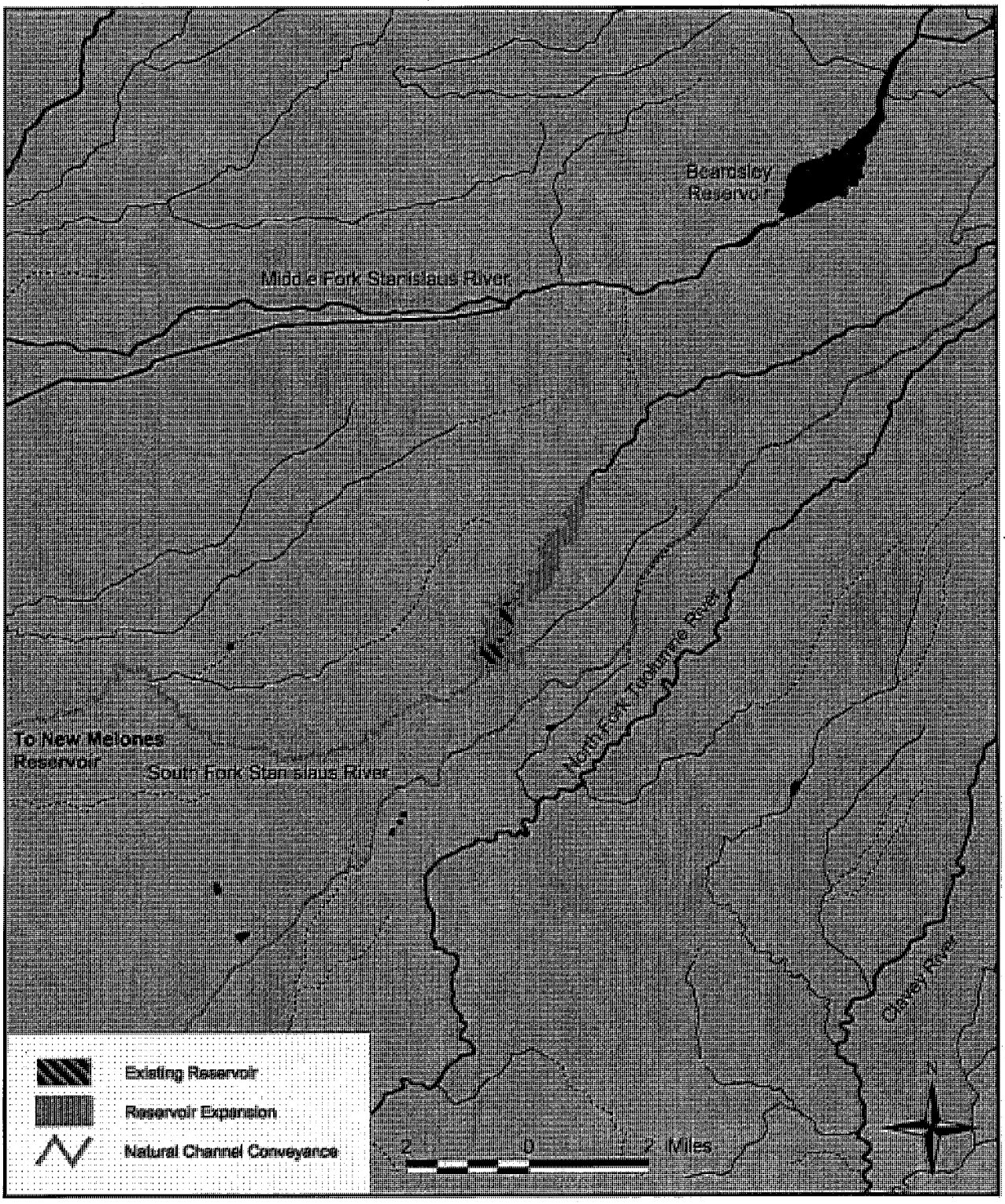


Figure 8-19 Lyons Reservoir Expansion
Source: http://www.tuolumneutilities.com/uwmp.pdf, 2000

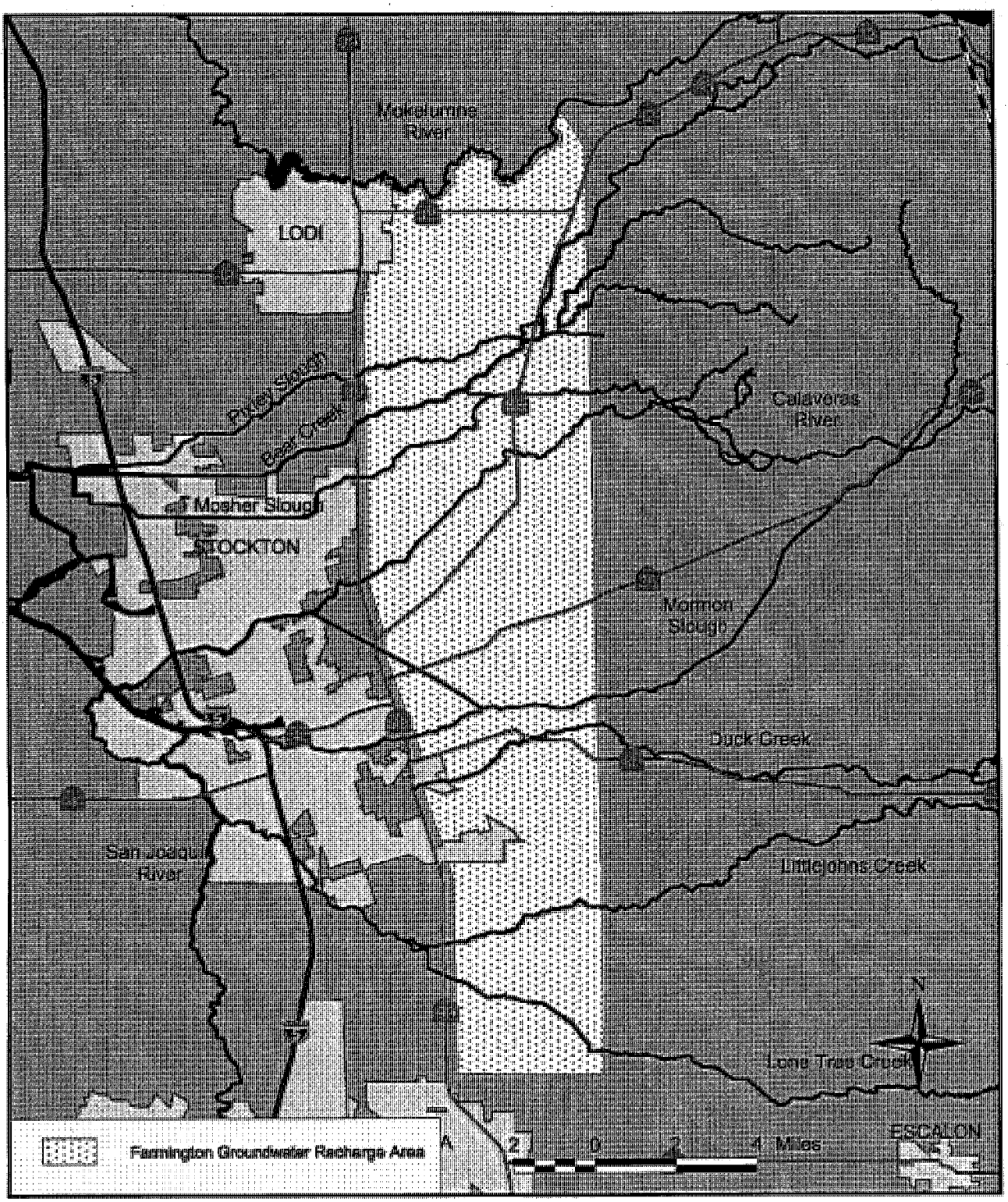


Figure 8-20 Farmington Groundwater Recharge Area
Source: Farmington Groundwater Recharge/Seasonal Habitat Study, 2001

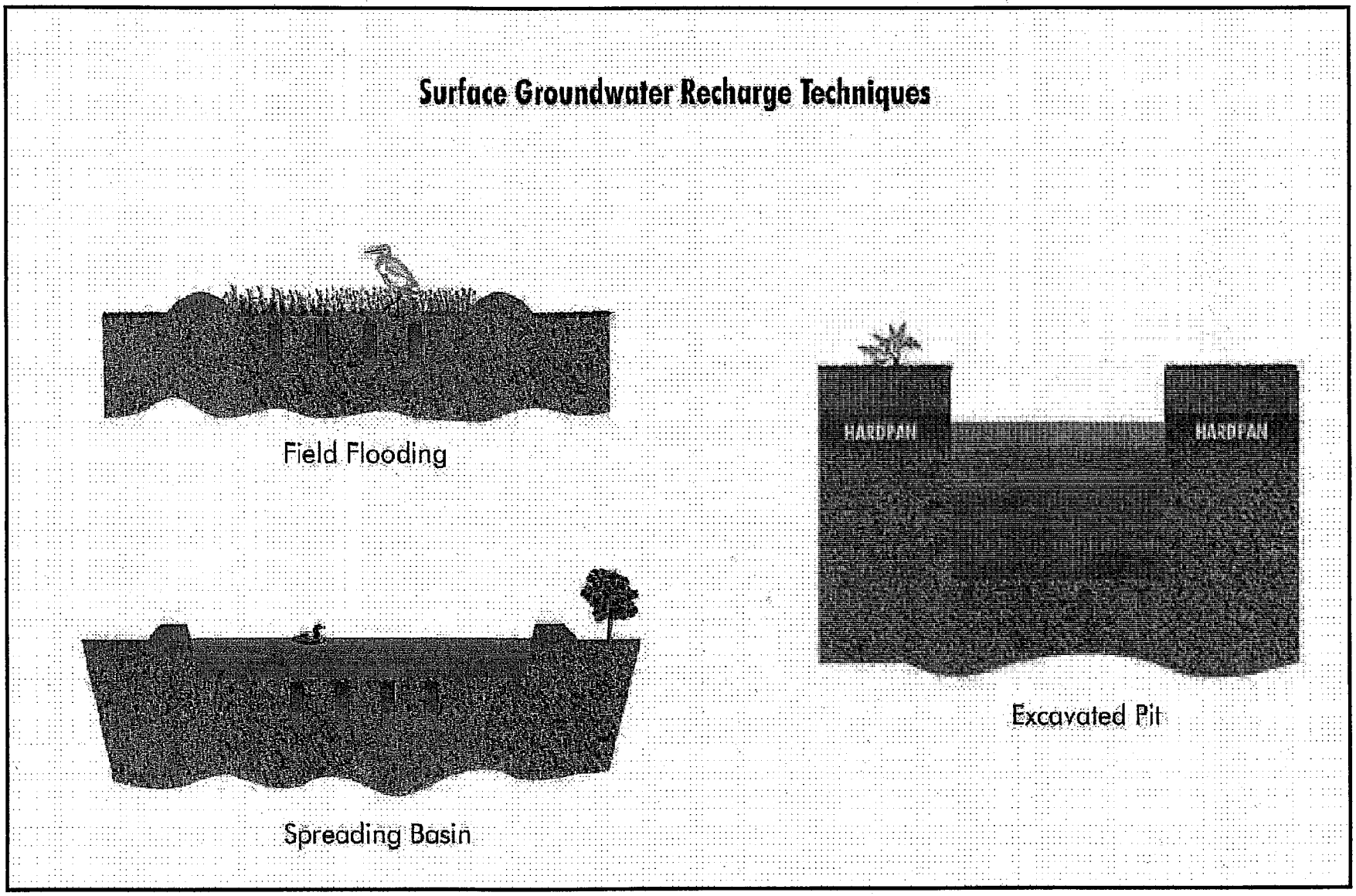


Figure 8-21 Surface Groundwater Recharge Techniques
Source: Farmington Groundwater Recharge/Seasonal Habitat Study, 2001

The Farmington Program Base Project (Farmington Program) objective is to recharge an average of 35,000 af of water annually by directly recharging surface water on 800 to 1,200 acres of land in the area described above. The Farmington Program is a flexible program by which willing landowners with 20 to 100 acre parcels may enter into short-term and long-term agreements and receive market-based compensation for the use of their land for groundwater recharge. In addition all improvements are paid for through the Farmington Program. The arrangement allows the rotation of groundwater recharge practices with traditional land use making water a cash crop for farmers in the program. The Farmington Groundwater Recharge Program is currently seeking out landowners who are willing to participate in the program by providing fields that can be flooded.

The planned capacity of the Farmington Program is approximately 35,000 af/yr. The following water sources are assumed available for the Farmington Program:

- 10,000 af/year from Stanislaus River
- 10,000 af/year from Littlejohns Creek
- 5,000 af/year from Calaveras River
- 10,000 af/year from Mokelumne River

8.3.2 City of Stockton Delta Water Supply Project

In 1996, the City of Stockton filed a water right application with the SWRCB seeking to appropriate initially 20,000 are-ft per year of water from the Delta, increasing to 125,900 af per year in 2050. The application specifies a place of use that coincides with the adopted 1990 City of Stockton General Plan boundary as shown in Figure 8-22. The city filed the water right application under two legal authorities: California Water Code Section 1485, the recapturing of treated wastewater discharge in the Delta, and California Water Code Sections 11460 and 12200 *et seq.*, area of origin provisions and the Delta Protection Act, respectively. The city currently discharges approximately 35,000 af per year of treated wastewater into the San Joaquin River. Diversions from the Delta are extremely contentious and therefore somewhat restrictive due to constraints under the State and the federal Endangered Species Act (ESA). The City of Stockton also expects to be limited by SWRCB Term 91 conditions, which limits diversion to when Delta outflow is higher than regulatory minimum requirements. (City of Stockton, 2003) In 2003 the City of Stockton completed the Delta Water Supply Project (DWSP) Feasibility Report.

The DWSP consists of a new diversion structure in the delta at the southwestern tip of Empire Tract on the San Joaquin River, a raw water conveyance pipeline, a new water treatment plant along Eight Mile Road, treated water transmission facilities, and groundwater injection and extraction wells, as shown in Figures 8-23 and 8-24. The estimated capital costs of the facilities are:

- River Intake and Pumps: $18 million
- Raw Water Conveyance: $35 million
- Water Treatment Plant (30 MGD): $59 million
- Treated Water Pipelines: $9 million

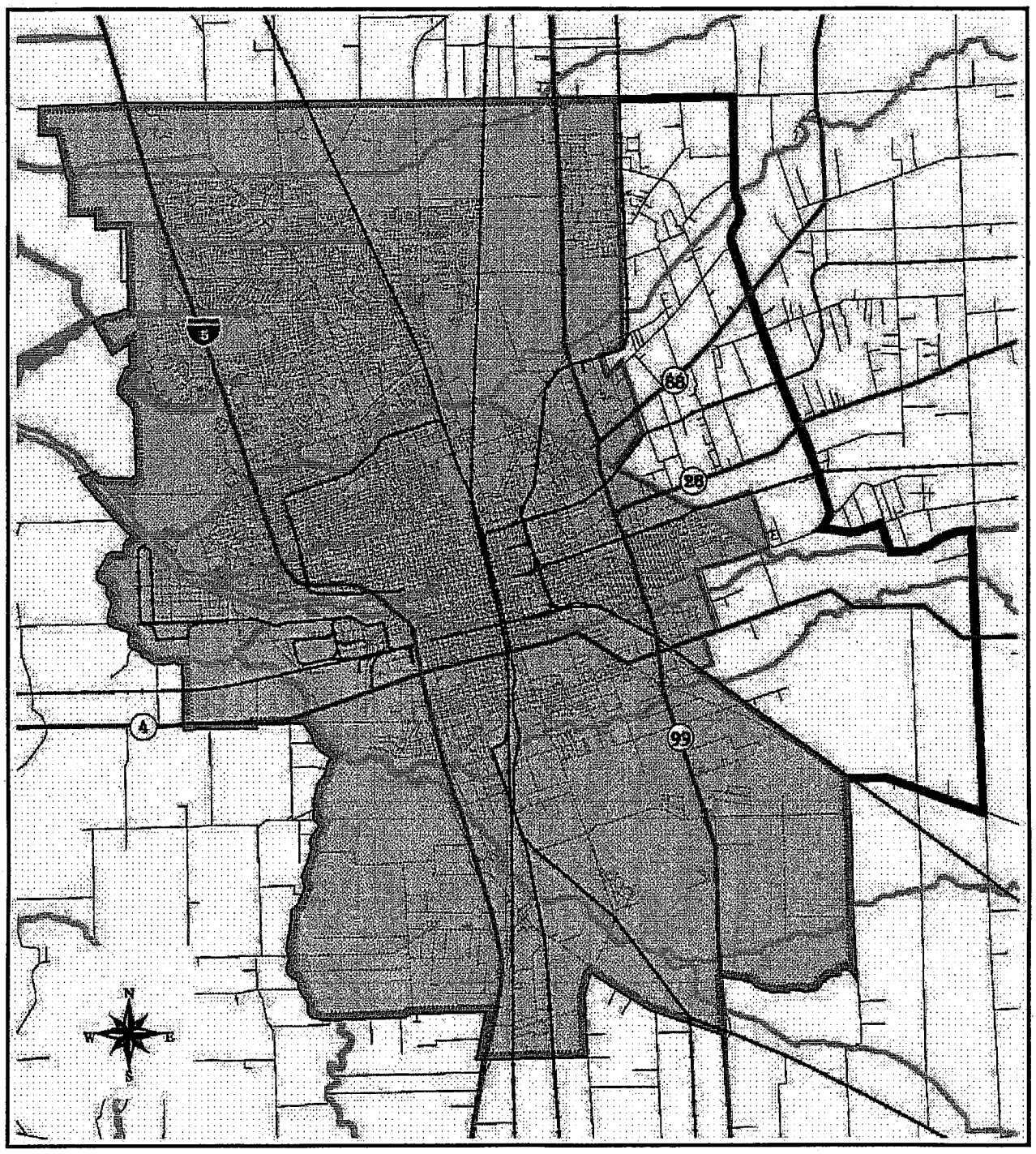


Figure 8-22 City of Stockton General Plan Boundary
Source: City of Stockton Delta Water Supply Project Engineering Feasibility Study, 2003

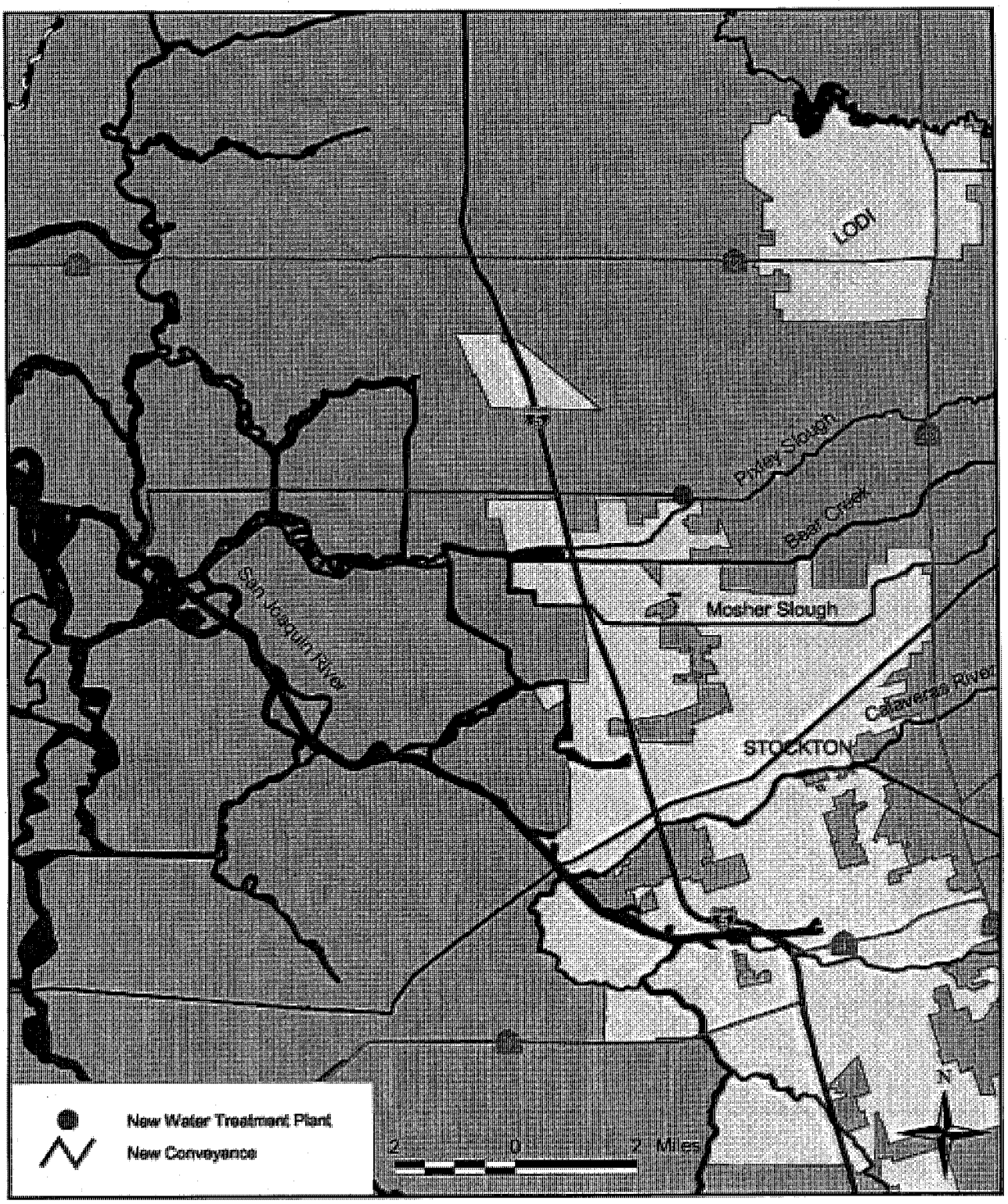


Figure 8-23 Delta Water Supply Project Intake and Treatment Plant
Source: City of Stockton Delta Water Supply Project Engineering Feasibility Study, 2003

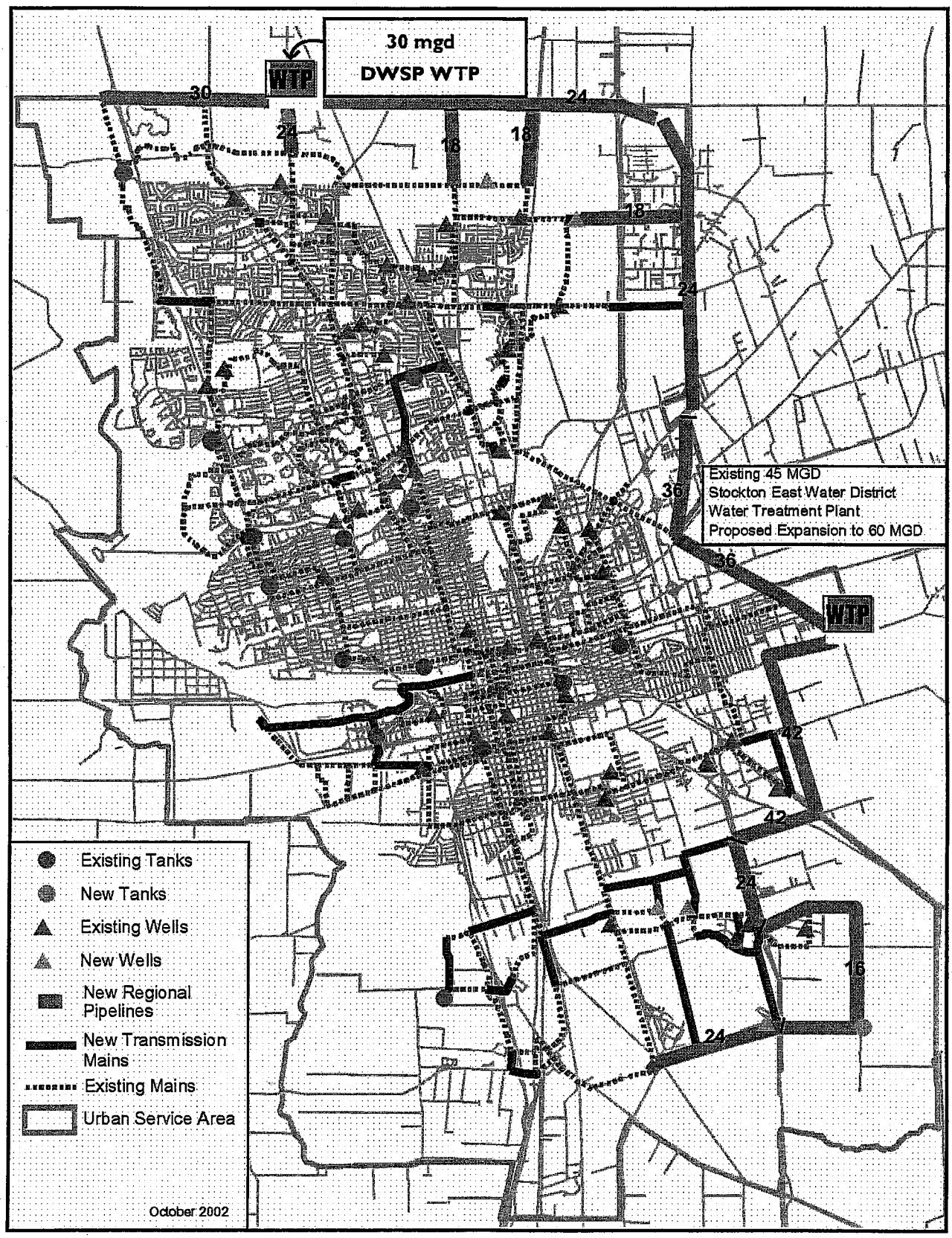


Figure 8-24 Delta Water Supply Project Distribution System
Source: City of Stockton Delta Water Supply Project Engineering Feasibility Study, 2003

Operations and Maintenance costs are expected to steadily increase to $5.75 million by 2015. The cost of the groundwater injection and extraction facilities is unknown at this time. The estimated cost of raw water delivery is approximately $200 per af, and the cost of delivery of fully treated water is expected to be about $350 per af.

Past groundwater studies in the region show that the maximum, sustainable, long-term yield from the aquifer is 0.75 to 1 acre-foot per acre per year. The City of Stockton selected 0.6 af per acre per year as the target groundwater extraction rate which corresponds to an extraction amount of 40,000 af per year to combat historic overdraft conditions and the intrusion of saline groundwater into the underlying Basin. The DWSP will also include an aquifer storage and recovery (ASR) program to better meet long-term needs of the City of Stockton.

The City of Stockton is currently preparing a project level EIR/EIS with an anticipated groundbreaking date of 2008 and water delivery scheduled for 2010. The aggressive schedule is indicative of the uncertainty in final revised State Maximum Contaminant Level (MCL) for arsenic. At present the City of Stockton meets or exceeds the Federal MCL for arsenic; however, more conservative State regulations may force numerous well closures forcing the City of Stockton to rely more heavily on the DWSP and alternative sources.

Subsequent phases include a 10 MGD pilot ASR program to bank treated surface water in the underlying aquifer. The pilot ASR program involves retrofitting up to 10 existing wells for injection and extraction at an estimated cost of $200,000. After the completion of the pilot program, costs will be determined for an expanded program to serve as a groundwater bank. In the Feasibility Study, three potential banking sites were identified: Site A, north of Alpine Road and west of Highway 99, site B, south of Alpine Road and west of Highway 99, and site C, located along the Southern Pacific Railroad - Figure 8-25 (City of Stockton, 2003).

8.3.3 SEWD Water Treatment Plant Expansion

The current capacity of the Dr. Joe Waidhofer Water Treatment Plant (SEWD Treatment Plant) is 45 MGD, and the capacity of the planned expanded facility is 60 to 65 MGD. Currently turbidity occasionally limits production to 30 MGD resulting in an average yearly production of approximately 41,000 af. An expanded SEWD Treatment Plant is expected to supply up to 62,000 af per year. Currently, raw water sent to the SEWD Treatment Plant originates from either New Hogan Reservoir on the Calaveras River or New Melones Reservoir on the Stanislaus River. The combination of available water from these sources totals 90,099 af per year. The additional 28,000 af could be used for groundwater recharge and extracted during dry years. The estimated cost for the expansion is $26.9 to $33.4 million (SEWD, 2003).

8.3.4 CSJWCD Surface Water Delivery Program

CSJWCD holds CVP contract entitlements for water from New Melones Reservoir with the USBR. The total amount available to CSJWCD under the contract is 80,000 af/yr, 49,000 of which is said to be a firm supply. Because of current USBR operations of the New Melones Reservoir, in water year 2003, an above normal year for precipitation in the Stanislaus River watershed, the contract amount received was 10,000 af. CSJWCD delivered this amount in its irrigation system while SEWD did not receive any allocation in water year 2003. The CSJWCD irrigation system currently has the infrastructure capabilities to deliver approximately 35,000 af/yr for direct irrigation through a series of ditches and natural creeks, including Littlejohns, Temple, Lone Tree and Duck Creeks. The current system can be expanded to deliver up to 50,000 af/yr should water become available. Figure 8-26 depicts the CSJWCD irrigation system.

Figure 8-25 Delta Water Supply Project Potential Banking Sites
Source: Delta Water Supply Project Engineering Feasibility Study, 2003

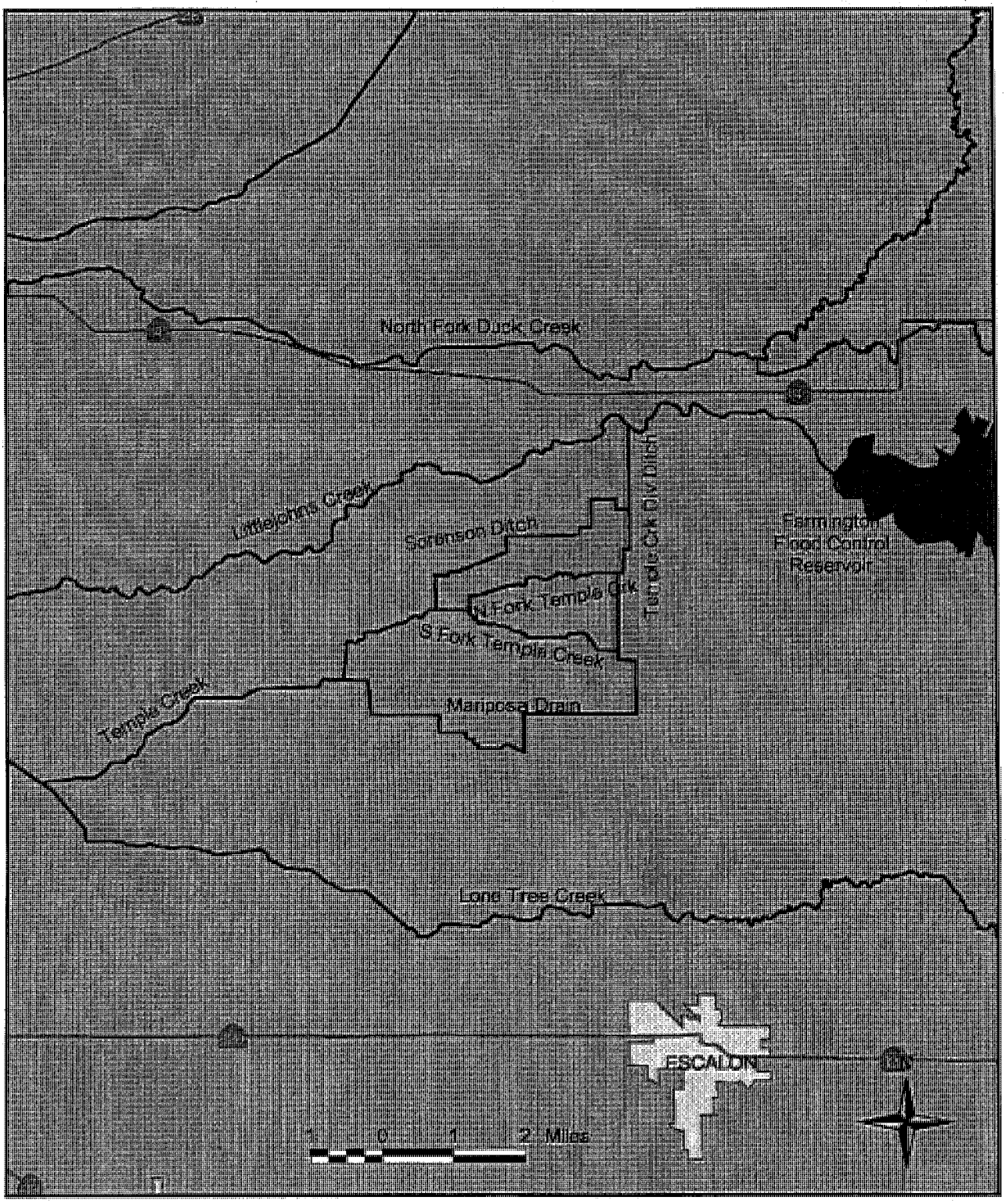


Figure 8-26 CSJWCD Irrigation System

Since the completion of the New Melones Conveyance System, surface water deliveries have elevated groundwater levels by as much as 15-ft in some areas within the CSJWCD.

8.3.5 NSJWCD Conjunctive Use Program

NSJWCD owns and operates two surface water irrigation systems on the Lower Mokelumne River. NSJWCD holds interim water rights and relies on EBMUD to store its divertible allotment at Camanche for use during the irrigation season. The interim nature of the water requires farmers to maintain two irrigation systems thus reducing the demand for surface water to less than 3,000 af/yr. NSJWCD has rights to divert up to 20,000 af/yr when available at an average annual yield of approximately 11,000 af/yr.

The north system consists of a 30 cfs pipeline and intake pump near Trethway Road where it veers east along Acampo Road. The north system pipeline is in disrepair and requires extensive improvements. Repair and expansion of the north system is highly compatible with the Gill Creek and Woodbridge Road Flood Control Improvements Project. The system is much larger and consists of pump station and a series of laterals that discharge into both Bear Creek and Pixley Slough. Growers along either the natural drainages or the pipeline are able to divert for irrigation. Both systems can be easily integrated into the MORE WATER Project direct diversion alternative should permanent or long-term groundwater recharge facilities be constructed. A map of NSJWCD's distribution system is shown in Figure 8-27.

In 2000, NSJWCD was selected to receive $462,500 from a CALFED grant to study groundwater recharge in the Mokelumne River watershed. The project includes a five-year pilot study involving the spreading of wet-year water on two four-acre ponds. Up to 50 percent of the recharged water, minus losses, would be available for extraction by wells for discharge into the Delta during dry and critically dry years. The impact of dibromo-chloro-propane (DBCP) on groundwater quality and its implications for larger-scale conjunctive use projects would also be evaluated.

In 2003, land owners in NSJWCD approved an acreage assessment dedicated to groundwater recharge. Beginning in 2003, land owners would be assessed $1 per acre up to a maximum of $5 per acre. Revenues generated in 2003 and 2004, estimated at $50,000, were used to construct a series of two pilot recharge ponds; one north of the Mokelumne River and one to the south. NSJWCD is also a local participant in the Farmington Program and a member of the Eastern Water Alliance.

8.4 Groundwater Banking Partnerships

Groundwater banking partnerships in Eastern San Joaquin County have the potential to benefit locally, regionally, and Statewide. The unique situation in Eastern San Joaquin County, with over 1 million af of groundwater storage potential and the development of an integrated conjunctive use program, is a logical match for regional and Statewide interests to look to the Authority for groundwater banking opportunities. In the past, entities have been known to purchase raw water from groundwater banks at rates upwards of $420/af. Numerous banking partnership concepts exist; however, it is of utmost importance that control over extraction rates and quantities remain in the hands of locals and out of the hands of politicians and the courts.

The San Joaquin Groundwater Export Ordinance (Export Ordinance) is notoriously stringent in order to protect local groundwater users from groundwater exports. The San Joaquin County Board of Supervisors has continually stated that they are willing to amend the Export Ordinance

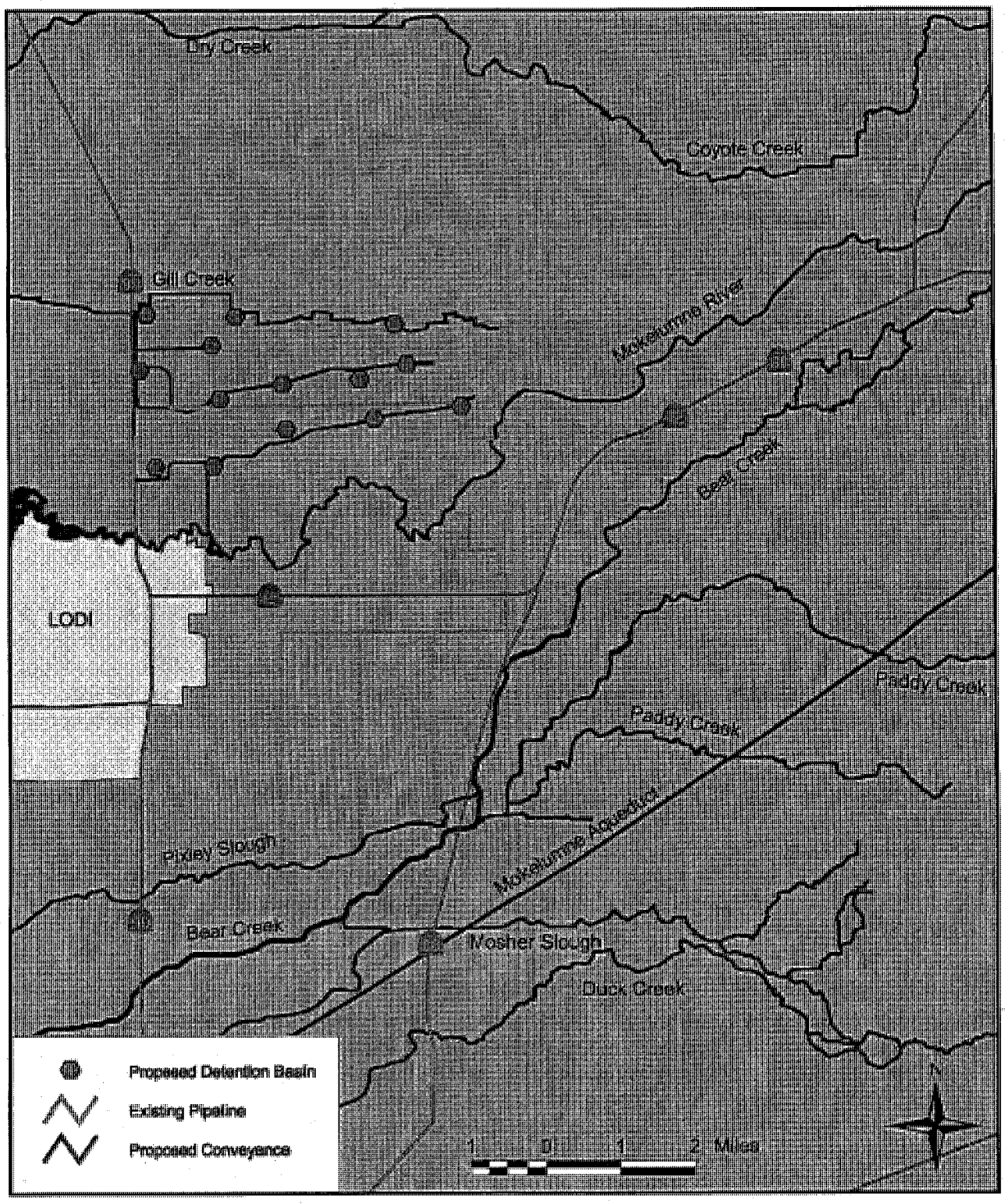


Figure 8-27 NSJWCD Distribution System

should a project be proposed that can demonstrate local benefits with minimal risk to losing local control of the Basin.

Banking partnerships could provide the Authority with capital to fund portions of Integrated Conjunctive Use Program envisioned above, water storage agreements, groundwater substitution, and a 'two for one' storage/extraction concept. Potential partners that have shown interest are EBMUD, Metropolitan Water District of Southern California, DWR, CALFED Environmental Water Account, and the City of Tracy.

9 Plan Implementation

The Authority is committed to adopting a Plan implementation strategy that is adaptive and incentive driven. This Plan is the first step in the development of a regional document that details how the groundwater basin will be managed and initiates the process that will ultimately define the guidelines and conditions that water districts and others will follow to achieve basin management objectives. Following the adoption of this Plan, the Authority and its members will work to implement the management objectives. The objectives coupled with regular groundwater monitoring and the development of basin operations criteria will establish a framework and the foundational information for future groundwater banking and recharge project operations in the Basin.

9.1 Plan Implementation Reports

To encourage the continued implementation of the Plan, the Authority will complete a periodic assessment of the progress, direction and recommendations regarding Plan objectives. Basin hydrogeologic conditions are currently measured by groundwater level and quality monitoring on a semi-annual basis. This assessment activity will be coupled with the annual review of Plan implementation activities and project development in the basin.

To ensure that the Authority is constantly striving to better manage groundwater resources, the following actions will be undertaken:

4. Produce an annual report by March 1st of each year that outlines the accomplishments of the previous year's groundwater management efforts and report the current state of the Basin;

5. Review changes in political, institutional, social, or economic factors affecting groundwater management; and

6. Based on the information gained in the above actions, provide recommendations for any required amendments to the Plan.

9.2 Future Activities

The adoption of the Plan is merely the beginning of a series of actions the Authority will undertake to help meet future basin demands. As such, many of the identified actions will likely evolve as the Authority takes a more active approach to manage the basin and meet the outlined objectives. Many additional actions will also be identified in the annual summary report described above. The Plan is therefore intended to be an iterative document, and it will be important to evaluate all of the actions and objectives over time to determine how well they are meeting the overall goal of the plan. The Authority plans to evaluate this entire plan within five years of adoption.

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ATTACHMENT L

District Map of Groundwater Facilities

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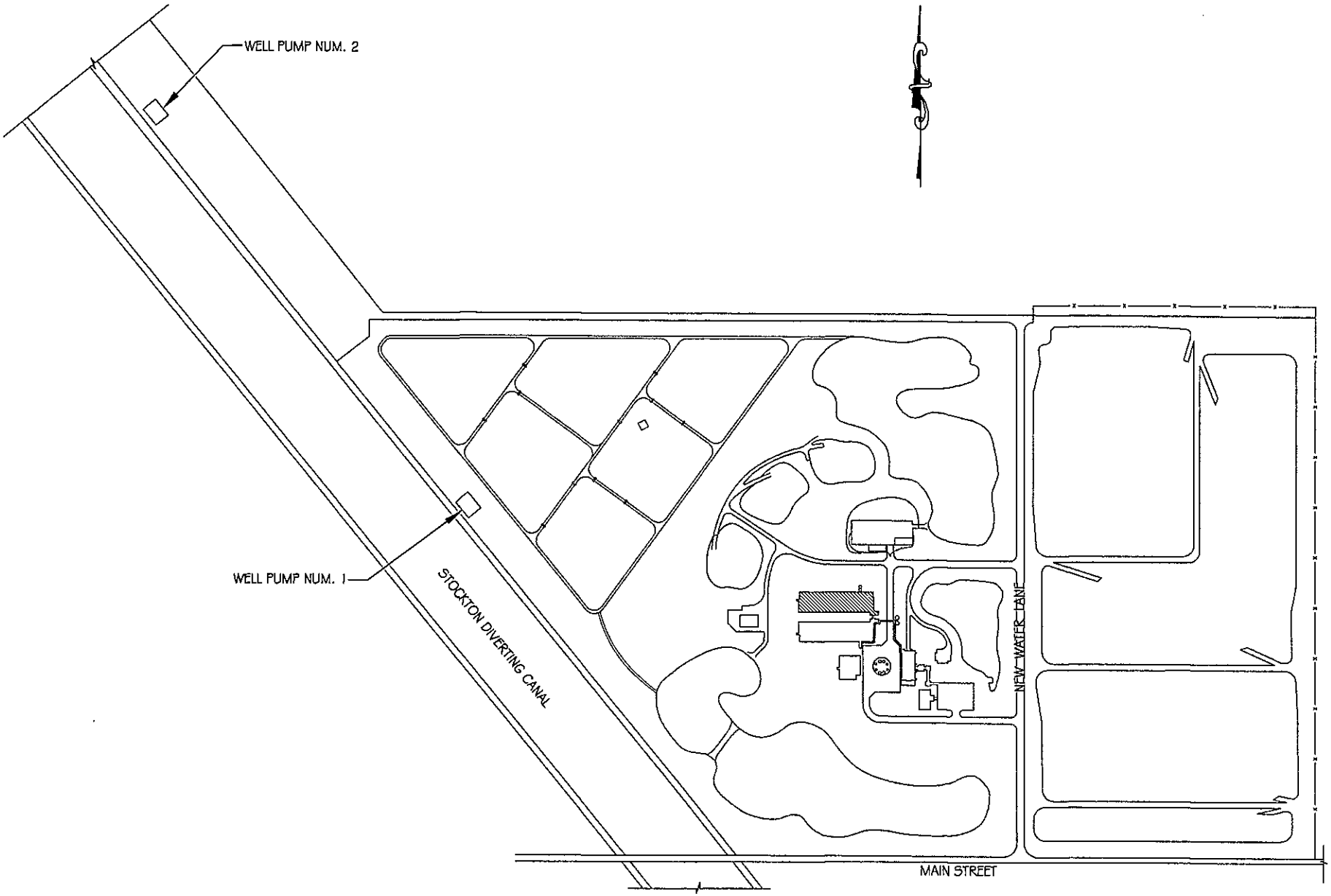
WELL PUMP NUM. 2
WELL PUMP NUM. 1
STOCKTON DIVERTING CANAL
NEW WATER LANE
MAIN STREET

STOCKTON EAST
WATER DISTRICT
6767 EAST MAIN ST.
STOCKTON CA

Stockton East Water District
Farmington Recharge Project
Well Locations

DRAWN BY: C. Roberto
DESIGNED BY:
APPROVED BY:
SCALE: 1"=1,500'
DWG. CURRENT AS OF: 8/28/08
PROJECT NO. 2004-015

SHEET 1 OF 1

ATTACHMENT M

Farmington Groundwater Recharge Program

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Farmington
Groundwater Recharge Program

Summer 2007 Newsletter

Program Awaits Federal Funding Support

Launched in 2003, the **Farmington Groundwater Recharge & Seasonal Habitat Program** (Program) is a 10-year, $33.5 million effort to begin restoration of the Eastern San Joaquin Groundwater Basin (Basin), a Central California water resource in a state of critical overdraft and threatened by saline intrusion from under the Delta.

The Program is led by Stockton East Water District (SEWD), in partnership with other local water interests, and the Sacramento District of the U.S. Army Corps of Engineers. An award-winning effort, the Program works by partnering with local water interests and landowners to implement conjunctive management strategies for the utilization of available water resources.

When surface water supplies are abundant, the Program's objective is to recharge the Basin through in-lieu irrigation and partnerships with growers who rotate direct recharge activities with other land-uses via short- and long-term agreements.

Since its inception, the Program has evaluated and/or tested more than a dozen candidate recharge sites within the service boundaries of SEWD, North San Joaquin Water Conservation District and Central San Joaquin Water Conservation District.

Direct recharge facilities developed through the Program, and its preceding studies, now contribute more than 11,000 acre-feet per year towards the Program's original recharge goal of 35,000 acre-feet annually.

To date, the Program has been maintained through approximately $1.75 million in allocated Federal funds and more than $10 million in local and State funds. A schedule of continued Federal funding through 2013 was submitted to Congress in February, 2007.

With additional Federal appropriations, Program partners plan to advance selected candidate sites to demonstration facilities; begin evaluation of additional candidate sites; and resume active recruitment and outreach of Program participants.

In This Issue

Farmington Groundwater Recharge & Seasonal Habitat Program *(cover story)*

About the Farmington Program *(page 2)*

Recharge Facilities *(page 4)*

Recharge Site Profiles *(page 4)*

Stakeholder Outreach: Tapping Into Established Awareness *(page 8)*

STOCKTON EAST WATER DISTRICT

US Army Corps of Engineers

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www.farmingtonprogram.org

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About the Farmington Program

Faced with limited surface water availability in Eastern San Joaquin County, growers, cities, rural neighborhoods and industries have relied heavily on mining water from underground aquifers. Groundwater use now exceeds nature's ability to self-replenish the aquifer by approximately 150,000 acre-feet per year. The cumulative effects:

- Groundwater is now up to 80 feet below mean sea level
- Intrusion of saline-tainted water from the west
- Municipal and rural wells have closed or failed
- Continually higher groundwater pumping costs
- Accumulated overdraft of more than two million acre-feet

To address this trend, Stockton East Water District (SEWD), with other local water interests, took a lead role in 1996 to work with the U.S. Army Corps of Engineers (Corps) to develop a conjunctive management strategy for Eastern San Joaquin County. The result is the Farmington Groundwater Recharge & Seasonal Habitat Program (Program).

The Program's goal is to provide average annual recharge of 35,000 acre-feet of water through spreading of water on agricultural fields and other recharge facilities, and increasing surface water deliveries in-lieu of groundwater pumping. Each tactic seeks to reduce overdraft and reduce the potential for further saline water intrusion.

For direct groundwater recharge activities, the Program seeks to enroll 25 to 30 parcels totaling up to 1,200 acres in short- and long-term agreements with landowners. Each would be compensated at

Eastern San Joaquin County and the Farmington Groundwater

	1985	1995	1996	1997	1998	2000	2001
Report / Action	Eastern San Joaquin County Groundwater Study	American River Water Resources Investigation	Mokelumne Aquifer Recharge and Storage Project	Stockton Metropolitan Area, California Reconnaissance Report	Conjunctive Use Study	Congressional Action	Farmington Groundwater and Seasonal Habitat Study
Report Conclusion	Concluded that the groundwater basin is overdrafted, saline water intrusion is a problem, and additional surface water supplies are needed	Considered extending the Folsom South Canal to deliver American River water in eastern San Joaquin County and reduce groundwater overdraft	Considered recharge and recovery of Mokelumne River water supplies to support Bay Area needs and reduce groundwater overdraft	Recommended study of Farmington Dam for conjunctive use purpose	Concluded that groundwater recharge is the most cost-effective approach to reducing overdraft	Congress authorized Program and Farmington Groundwater Recharge	Described Program components and general implementation approach

market rates for the use of their land.

The recharge method of choice is field-flooding, a practice where a small perimeter levee is built around fallow farmland to allow winter flooding to a depth of up to 18 inches. In addition to groundwater recharge, this method often provides varying water depths that are ideal for a wide range of migratory waterfowl.

Lands can be cycled in and out of the Program with other traditional land uses, thereby making water a cash crop for enrolled landowners.

For in-lieu recharge, the Program seeks to expand surface water deliveries to the urban area, farms and other major groundwater users via existing and future transmission and distribution systems.

The Program is also investigating the feasibility of conducting direct groundwater recharge via flooding of vineyards when the plant is dormant. Early indications are that this type of field-flooding is an effective pest control for root-damaging nematodes, and has the potential of over 20,000 acre-feet per year of recharge in the region.

FOUR GROUNDWATER RECHARGE METHODS ARE FEATURED IN THE FARMINGTON GROUNDWATER RECHARGE PROGRAM:

Flooded Field

Often the lowest cost to design, engineer, and construct, a flooded field recharge involves pushing up two- to four-foot-tall berms and flooding to a depth of one to three feet. Such facilities can provide temporary habitat for migrating water fowl.

Spreading Basin

Longer lasting and developed to a higher level of design, engineering, and construction, the spreading basin method features a two- to six-foot-deep excavation to a field and berms up to 15 feet high. Water depths range from three to nine feet. To enhance percolation rates and minimize maintenance, SEWD is experimenting with a combination of ridges and furrows graded into the basin bottoms.

Pit Facility

This recharge methods features excavations with minimal to no side slope in the basin. This method is often employed in order to bypass a confining, hardpan or low-permeability soil layer.

In-Lieu

Rather than construct a recharge facility, in-lieu recharge features replacement of groundwater pumping with the delivery of surface water. Such practices reduce pumping stress on the basin and allow groundwater levels to rise through natural replenishment.

Recharge Program Milestones:

2002

Program Cost Sharing

Stockton East Water District

US Army Corps of Engineers

Project Cooperation Agreement sets Federal cost shares at 75 percent. $800,000 in Federal funding.

2003

Recharge Facility Constructed

Farmington Groundwater Recharge Program initiated. 7,000 AF direct recharge facility built at SEWD. $1 million in Federal funding.

2004

Candidate Sites Identified

12 candidate sites identified for evaluation, $1 million in Federal funding.

2005

Demonstration Testing

Demonstration-level testing at six candidate sites. $500,000 in Federal funding.

2006

Peters Pipeline Completed

Peters Pipeline Project complete, 1,488 acres of farmland gain access to surface water (in-lieu recharge of approx. 4,000 AF).

2007

Farmington Groundwater Recharge Program

Farmington Program's Federal actions on-hold pending further funding

Recharge Facilities

	SITE	ACRES	POTENTIAL		STATUS
			Observations	Recharge Volume [1] (acre-feet per year)	
1	Detention Basin No. 2 (Morada Lane)	15	Extensive hardpan and clay soils not suitable for groundwater recharge.	NA	Eliminated from consideration.
2	Pettit	20	Ideal for excavated pit recharge basin facility, with integrate wetlands and aquatic habitat.	4,800	Pending additional study for water supply and site studies.
3	Togninali		Low permeability of soils and remote location away from surface water source.	NA	Eliminated from consideration.
4	Filipelli	15	Limited size and existing land use limits groundwater recharge opportunities.	NA	Eliminated from consideration.
5	Hansen	50	Undulating topography and location well to the east of primary recharge target area.	NA	Eliminated from continued consideration due to site location.
6	Rajkavich		Low permeable soils suggest that groundwater recharge would not be favorable.		Eliminated from consideration.
7	BNSF	60	Deepening of three stormwater retention ponds could enhance recharge potential.	3,600	On-hold pending further dialog with BNSF officers.
8	Mariposa Lakes (Creek Partners LP)	Approx. 200	Soils data provided by candidate indicate some areas suitable for various recharge techniques.	12,000	On-hold pending site evaluation, water supply, and other studies.
9	Hammer	17	Medium to high capacity surface soils, with good percolation rates.	2,000	Site has been pursued by North San Joaquin Water Conservation District.
10	Kautz	25	Medium to high capacity surface soil encountered with good percolation rates.	2,100	Pending - Potential future in-lieu site.
11	Micke Grove Park/ Golf Course	160	In-lieu recharge via supplemental supplies of surface water for irrigation.	610	Pending approval for construction, planning and facility design.
12	Micke Grove Trust	200	Field flooding of vineyards during dormancy for groundwater recharge and pest control.	12,000	Pending further dialog with landowner.
13	SEWD Spreading Basin Facility	60	Three spreading basins filled with Calaveras and/or Stanislaus River water supplies.	7,000 [2]	Completed in 2002.
14	SEWD Northwest	30	Soils suitable for flooded field and spreading basin techniques.	3,000 [2]	Construction pending.
	Peters Pipeline	1,488	Surface water conveyance for agricultural and municipal use.	4,100 [3]	Completed in 2006, with turnouts to 1,488 acres of farmland for in-lieu use.
Total Potential Recharge Volume (acre-feet per year)				52,210 [4]	

[1] Unless noted otherwise, potential recharge volumes based on test data or professional judgement.
[2] Figures represent recharge capacity based on water supplies available four of every seven years through Bellota and Peters Pipelines.
[3] Assumes surface waters available five of every seven years.
[4] Of this potential yearly recharge volume, approximately 11,000 acre-feet per year can be recharged via facilities at SEWD and agricultural lands supplied by Peters Pipeline.

1 Detention Basin No. 2 Site

Highway 99, east of Mosher Dr. Morada, Calif.

Parcel size: 15 acres
Zone: Stockton East Water District
Water: Mosher Creek
Tests (results): Flooded Field (.07 to .1 feet/day)
Findings: Significant layer of hardpan and extensive clay layers contributed to poor infiltration for flooded fields.
Recommendation: Soils at site are not conducive for groundwater recharge.
Status: Eliminated from continued consideration.

2 Petitt Site

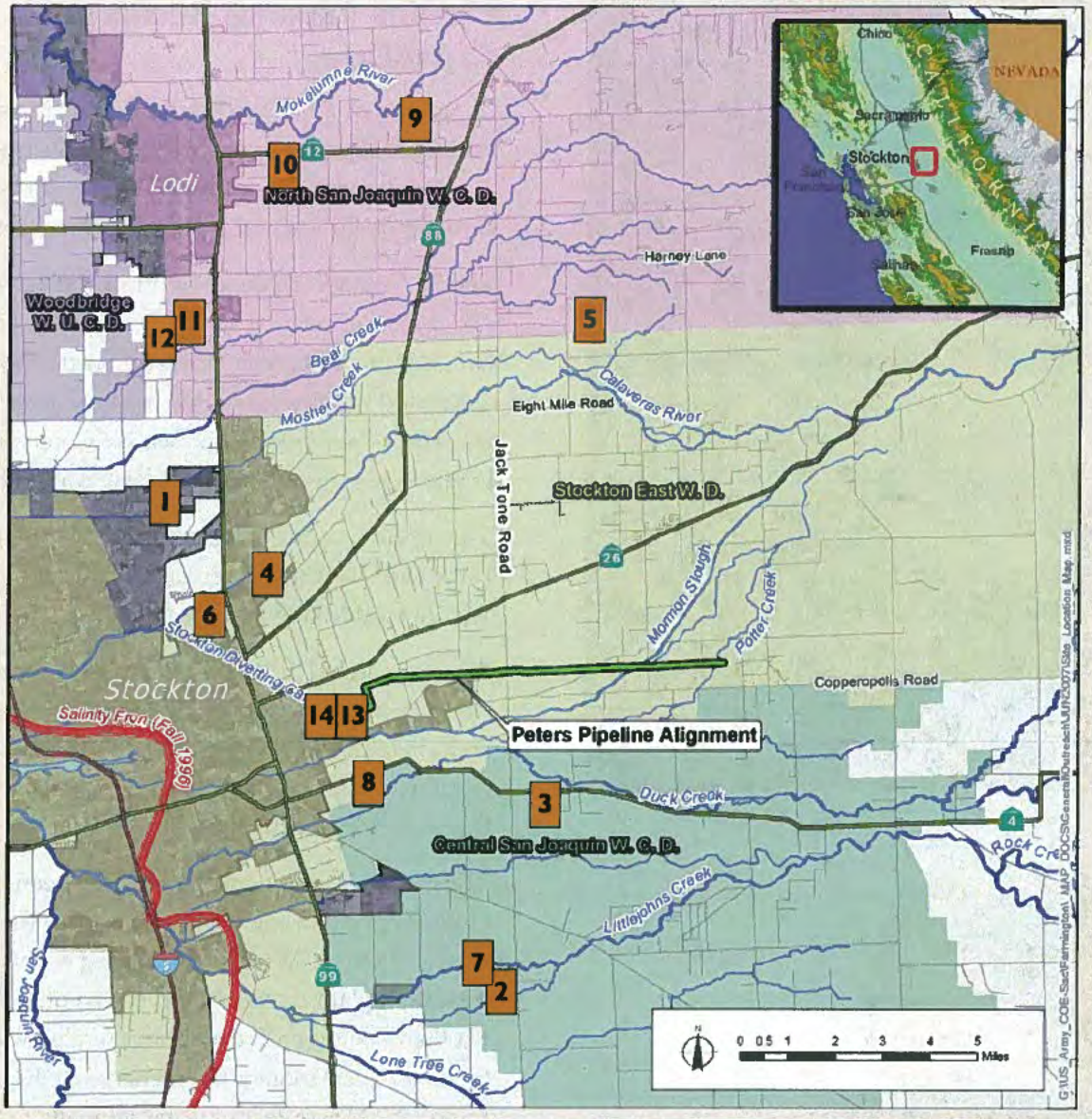
East of South Kaiser Road and north of the South Fork of Littlejohns Creek, San Joaquin County, Calif.

Parcel size: 20 acres
Zone: Central San Joaquin Water Conservation District
Water: South Fork Littlejohns Creek
Tests (results): Flooded Field (.1 to .5 feet/day) and Excavated Pit (10 to 19.2 feet/day)
Findings: Significant layer of hardpan and clay contributed to poor infiltration for flooded fields; however, recharge rates exceeded 10 feet/day when this layer was excavated.
Recommendation: Full-scale, excavated recharge basin facility; opportunity to integrate wetlands and aquatic habitat.
Status: Pending additional study for water supply, site acquisition, and construction cost issues.

10 Kautz Site

Southeas Highway Tree Rd. Lodi, Ca

Parcel size: 25 acres
Zone: North San Joaquin Water Cons
Water: Mokelumne River
Tests (results): Flooded Field (.2 to 7 average)
Findings: Medium quality to high pe site; comparable performance to oth
Recommendation: Advance to Demo Testing
Status: Pending - Potentia e i



t Corner of
12 and Locust

lif.

ervation District

.4 feet/day; .7 feet/day

rforming surface for this
er sites in the area.
nstration-Scale Recharge

te.

11 Mickey Grove Park and Golf Course

11793 N Micke Grove Rd.
Lodi, Calif.

Parcel size: 160 acres
Zone: North San Joaquin Water Conservation District
Water: Mokelumne River via Pixley Slough, with backup supply from Woodbridge Irrigation District and/or City of Lodi
Tests (results): In-lieu recharge through construction of a dual groundwater-surface-water system featuring a three-acre park pond.
Findings: Up to 610 acre-feet/year recharge and $23,180/year in energy savings through avoidance of groundwater pumping.
Recommendation: Construct project, including planning, facility design and implementation.
Status: Pending approval

14 SEWD Northwest Site

East Main Street, two miles east of Hwy 99,
Stockton, Calif.

Parcel size: 30 acres
Zone: Stockton East Water District
Water: Calaveras River or Stanislaus River
Tests (results): Flooded Field (.36 feet/day average); Spreading basin (.62 feet/day average)
Findings: Recharge rates for both methods are good. Flooded field the most feasible on a cost per unit basis.
Recommendation: Advance to Demonstration-Scale Recharge Testing for flooded field
Status: Construction pending. A component of an adjacent 60-acre facility named the Water/Environment Project of the Year, 2003, by the American Society of Civil Engineers, Sacramento Section.

Pipeline Expands Recharge Capabilities

Completed in 2006, the Peters Pipeline is a six-mile long, 60-inch diameter pipeline constructed as a direct and in-lieu recharge facility of the Farmington Groundwater Recharge Program.

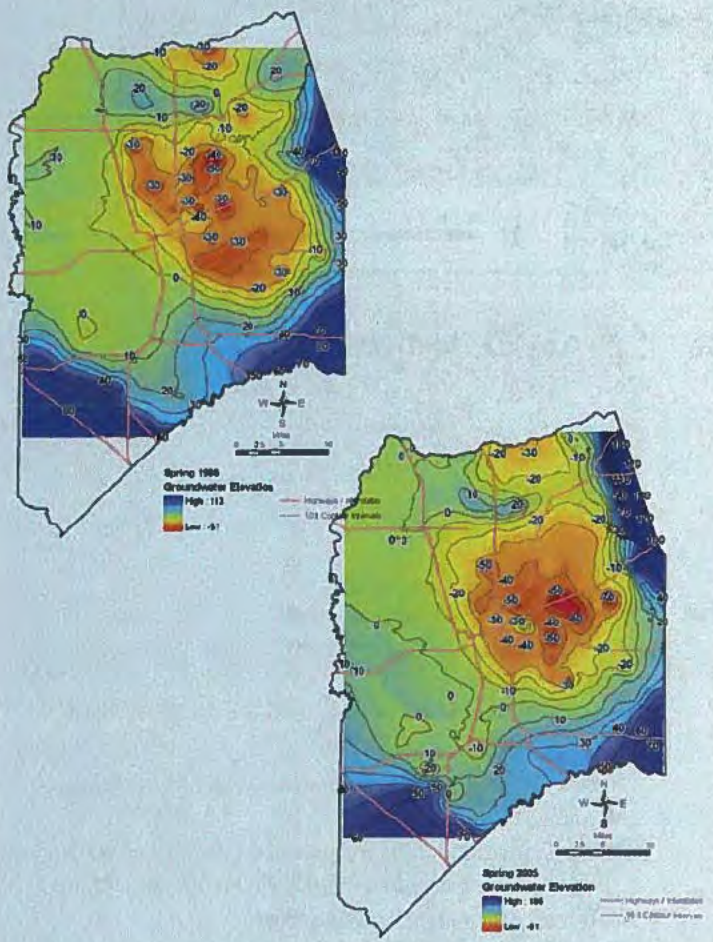
The $7.5 million pipeline was funded through a $3.7 million award from the Proposition 13 Groundwater Recharge Storage Construction Grant and bond funds shared by the City of Stockton, California Water Service Company, San Joaquin County and Stockton East Water District.

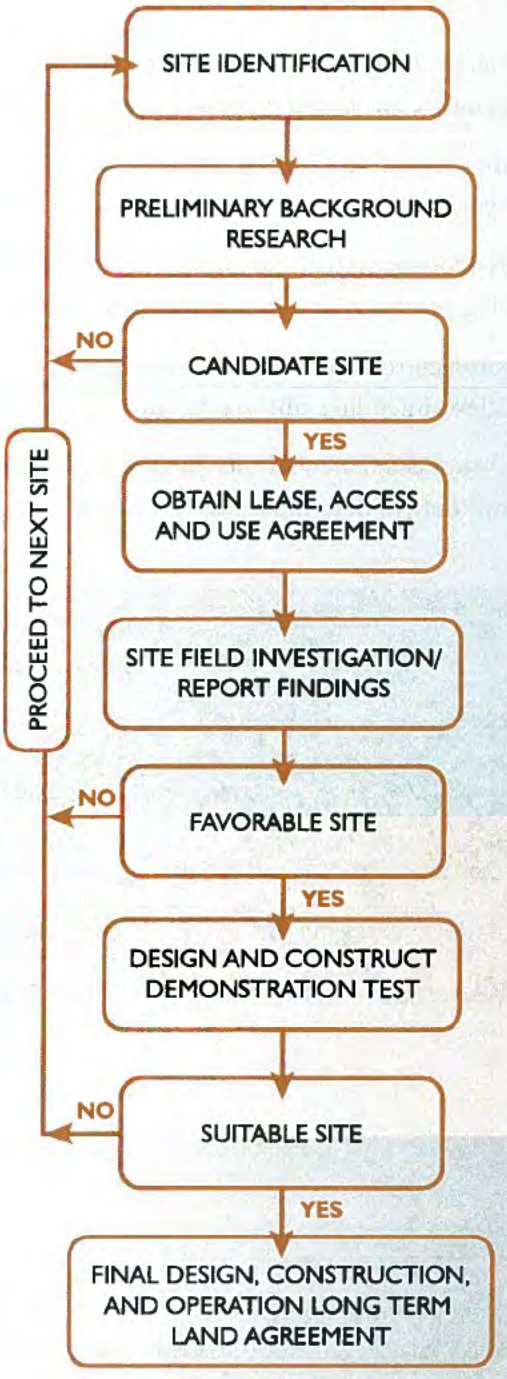
The pipeline carries water from the Stanislaus River and Calaveras River to the District's Dr. Joe Waidhofer drinking water treatment plant.

Approximately 1,500 acres of farmland receive wet year surface water supplies from the pipeline, an in-lieu recharge benefit of 4,000 acre-feet. Another 8,500 acres of farmland are eligible for this surface water supply.

The pipeline further enables a 60-acre complex of recharge ponds and fields adjacent to the District's Dr. Joe Waidhofer drinking water treatment plant to operate un-interrupted. Built via the Farmington Program, but funded with State and local money, the recharge facility returns up to 10,000 acre-feet of water annually to the groundwater tables. This stored water can be drawn and delivered to municipal and industrial customers during dry years.

The spreading basins component was awarded the American Society of Civil Engineers Water/ Environmental Project of the Year in 2003, Sacramento Chapter, and the San Joaquin Council of Government Regional Excellence award in 2004.





STAGE 1:
SITE SCREENING

- Is location appropriate for program objectives?
- Are soils appropriate for recharge?
- Are land uses compatible?
- Are water supplies available?
- Is property available?
- Are environmental impact mitigable?

STAGE 2:
FIELD INVESTIGATION

- Geology and soils data collection
- Land use/water conveyance - field confirmation
- Habitat issues - field inspection
- Aerial photo interpretation
- Groundwater conditions
- Confirm site history
- Confirm site suitability for recharge

STAGE 3:
SITE TESTING

- Monitoring well drilling and construction
- Baseline soil and water quality testing
- Site preparation
- Groundwater level monitoring
- Groundwater quality monitoring
- Conveyance water quality monitoring

STAGE 4:
LONG-TERM OPERATION & MAINTENANCE

- Continued management of recharge basins to maximize percolation

Stakeholder Outreach: Tapping Into Established Awareness

For many rural and family farmers in Eastern San Joaquin County, a reminder that groundwater levels continue to inch lower and lower arrives from PG&E.

Contained within the monthly electric bill, customers can track a well's energy consumption. If groundwater pumping hasn't changed, but the bill went up, then the water level must have dropped.

Tapping into this pocket-book reality has been a component of a proactive stakeholder outreach and involvement program conducted by the Program partners.

The main focus of outreach is to support communication among landowners to the issue of overdraft and rising pumping costs, and offer the Program as a viable solution. A particular focus has been to involve respected landowners in outreach activities.

Elements supporting this grassroots-oriented effort include:

- A comprehensive Program website (www.farmingtonprogram.org), including current and historical information, testimonials, and news articles.
- Informational materials distributed by mail, on-line and public counters.
- Program information kit tailored to participants, legislators, media and other interested parties.
- Comprehensive database of lands 20 acres and larger.
- An information booth at the Stockton Ag Expo, public meetings, and an active speakers bureau.
- Outreach to consumer and trade media outlets, including editorial board briefings.
- A water cost calculator for landowners (www.sewd.net) to determine the cost savings

November 2003 ribbon cutting ceremony for SEWD Recharge Basins

Farmington
Groundwater Recharge Program

A Program of

United States Army Core of Engineers

Stockton East Water District

Program Supporters

California Water Service Company
Central and South Delta Water Agencies
Central San Joaquin Water Conservation District
City of Lodi
City of Stockton
Ducks Unlimited
Natural Heritage Institute
North San Joaquin Water Conservation District
San Joaquin County
San Joaquin County Flood Control and Water Conservation District
San Joaquin Farm Bureau Federation
Woodbridge Irrigation District

ATTACHMENT N

2010 Irrigation Water Quality Results

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STOCKTON EAST WATER DISTRICT

2010 IRRIGATION WATER QUALITY RESULTS

Test Description	**Results mg/l and Sample ID**								
Cations	*CR-1	CR-5	MS-1	MS-2	CR-6	PC-1	M-1	PP-1	SG-1
Total Hardness	74	74	74	80	71	66	39	23	23
Calcium	18	18	18	19	17	15	9	6	6
Magnesium	7	7	7	8	7	7	4	2	2
Potassium	2	2	2	2	2	2	2	<1	<1
Sodium	5	6	6	7	6	5	4	2	2
Anions									
Alkalinity	70	70	70	80	70	70	40	30	30
Carbonate	<10	<10	<10	<10	<10	<10	<10	<10	<10
Bicarbonate	80	80	80	90	80	80	50	40	30
Sulfate	11	12	12	11	12	7	5	<2	<2
Chloride	5	5	5	5	5	4	3	<1	<1
Nitrate	1.1	<0.4	<0.4	0.5	<0.4	<0.4	<0.4	<0.4	<0.4
Fluoride	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Minor Elements									
Boron	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	<0.05	0.080	0.070	0.57	0.17	0.27	0.30	0.17	<0.05
Manganese	0.05	0.020	<0.01	0.020	<0.01	0.010	0.010	<0.01	<0.01
Zinc	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Other									
pH (units)	7.2	8.1	7.7	7.6	7.7	7.3	7.8	7.9	7.4
SAR	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2
E.C. umhos/cm	179	181	182	198	177	162	105	54	56
Gypsum Requirment	0.0	0.02	0.02	0.03	0.02	0.03	0.03	0.03	0.01

Ag water quality testing was conducted for key points throughout the irrigation distribution system in August. Irrigation water quality remains good throughout the system.

Test Locations

CR-1: New Hogan Reservior
CR-5: Calaveras River at Bellota
MS-1: Beginning of Mosher Slough
MS-2: Mosher Slough after last irrigator
CR-6: Calaveras River after last irrigator
PC-1: Potter Creek after last irrigator
M-1 : Mormon Slough after last irrigator
PP-1: Peters Pipe at Potter Creek siphon
SG-1: Shirley Gulh at end of UFC

ATTACHMENT O

Efficient Water Management Practices (EWMPs) Report

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Efficient Water Management Practices (EWMPs) Report

As part of the preparation of the USBR Water Management Plan and the DWR Agricultural Water Management Plan, SEWD has improved two significant water management practices. In 2012, SEWD investigated seven customer delivery points that had previously been determined to be unmeasurable due to physical limitations of the turnouts. This recent field investigation determined that all of these delivery points can be metered, and two meters have already been installed. It was also determined that the PG&E hour meters used for 18 customers have an accuracy above +/- 6 percent. SEWD has begun replacing these meters, and plans to replace all of them by 2015. See Table E-1 in DWR Attachment E for the implementation schedule for meter installation, replacement, and testing.

Table 1 below lists the non-implemented EWMP, Supplier Spill and Tailwater Systems. This EWMP is not locally cost effective, as documented in the cost-benefit analysis provided in Table 2. The assumptions used in the cost-benefit analysis are provided in Table 3.

Table 1. (DWR Table VII.B) Non-Implemented EWMP Documentation

EWMP #	Description	Technically Infeasible	Non Locally Cost-Effective	Justification/Documentation
7	Supplier Spill and Tailwater Systems		X	See Table 2

Table 2. Economic Analysis Worksheet
Stockton East Water District
EWMP 7: Supplier Spill and Tailwater Systems

Calendar Year	Annual Water Savings (ac-ft/yr)	Avoided Costs	Total Undiscounted Benefits	Total Discounted Benefits	Costs ($)				Net Present Value ($)
					Capital Costs	Operating Expenses	Total Undiscounted Costs	Total Discounted Costs	
2011	3000	1,200,000	1,200,000	1,153,846	26,030,308	749,375	26,779,684	25,749,696	-24,595,850
2012	3000	1,200,000	1,200,000	1,109,467		749,375	749,375	692,840	416,628
2013	3000	1,200,000	1,200,000	1,066,796		749,375	749,375	666,192	400,604
2014	3000	1,200,000	1,200,000	1,025,765		749,375	749,375	640,569	385,196
2015	3000	1,200,000	1,200,000	986,313		749,375	749,375	615,932	370,381
2016	3000	1,200,000	1,200,000	948,377		749,375	749,375	592,242	356,135
2017	3000	1,200,000	1,200,000	911,901		749,375	749,375	569,464	342,438
2018	3000	1,200,000	1,200,000	876,828		749,375	749,375	547,561	329,267
2019	3000	1,200,000	1,200,000	843,104		749,375	749,375	526,501	316,603
2020	3000	1,200,000	1,200,000	810,677		749,375	749,375	506,251	304,426
2021	3000	1,200,000	1,200,000	779,497		749,375	749,375	486,780	292,717
2022	3000	1,200,000	1,200,000	749,516		749,375	749,375	468,058	281,459
2023	3000	1,200,000	1,200,000	720,689		749,375	749,375	450,055	270,633
2024	3000	1,200,000	1,200,000	692,970		749,375	749,375	432,746	260,224
2025	3000	1,200,000	1,200,000	666,317		749,375	749,375	416,102	250,216
2026	3000	1,200,000	1,200,000	640,690		749,375	749,375	400,098	240,592
2027	3000	1,200,000	1,200,000	616,048		749,375	749,375	384,709	231,339
2028	3000	1,200,000	1,200,000	592,354		749,375	749,375	369,913	222,441
2029	3000	1,200,000	1,200,000	569,571		749,375	749,375	355,685	213,886
2030	3000	1,200,000	1,200,000	547,664		749,375	749,375	342,005	205,659
Totals:	60000	24,000,000	24,000,000	16,308,392	26,030,308	14,987,509	41,017,817	35,213,399	-18,905,008

Assumptions	
Value of conserved water ($/AF) =	400
Discount rate (real) =	4.00%

Cost Effectiveness Summary	
Total Costs	$35,213,399
Total Benefits	$16,308,392
B/C ratio	0.5
Cost of Saved Water ($ per AF)	$684
Water Savings (AFY)	3,000

Table 3. Economic Analysis Assumptions
Stockton East Water District
EWMP 7: Spill Supplier Spill and Tailwater Systems

Assumptions			
Annual volume of pump back	3,000	ac-ft	
Pumping duration	6	months	
Change in elevation (pump station to head of system)	135	feet	
Pipeline length (pump station to head of system)	137,280	feet	
Pumping efficiency	70	%	
Electricty Cost	0.20	$/kWh	
New pipeline cost	10	$/in-dia/ft	
New pump station cost	350	$/gpm	
O&M labor rate	80	$/hour	
Annual interest rate	4	%	
System life	20	years	
Conversions			
Average flow rate	3,771	gpm	(3,000 ac-ft pumped over 6 months)
Annual operaton time	4,320	hours	
Calculations			
Pipeline size	18	inches	4-feet headloss/1000-feet of pipeline
Pipeline headloss	496	feet	Hazen-williams (C=140)
Total dynamic head (TDH)	631	feet	Headloss + elevation change
Required pump Hp	858	hp	(gpm*TDH)/(3960*efficiency)
Annual Energy usage	3,708,477	kWh	(746 W/Hp * hours of operation)
Capital Costs			
Pipeline	$24,710,400		
Pump station	$1,319,908		
Total	**$26,030,308**		
O&M Costs			
Electricity	$741,695		
Labor	$7,680	16 hours/month for 6-months	
Total	**$749,375**		

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ATTACHMENT P

Irrigation Training & Research Center Draft Technical Memorandum: Crop Water Use for SEWD

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ITRC
moving water in new directions
IRRIGATION TRAINING & RESEARCH CENTER
California Polytechnic State University
San Luis Obispo, CA 93407-0730
Phone: (805) 756-2434 FAX: (805) 756-2433 www.itrc.org

DRAFT - TECHNICAL MEMORANDUM

Date: July 17, 2013

To: Jeanette Thomas - Stockton East Water District
Ed Morley - Stockton East Water District

From: Dr. Stuart Styles, P.E, D.WRE., ITRC Director
Darren Roan, ITRC Irrigation Technician

Subject: Crop Water Use for SWED

The Irrigation Training & Research Center (ITRC), working under a technical services agreement with the United States Bureau of Reclamation (USBR) Mid-Pacific Region, has undertaken this review of the procedure and materials used to create estimates for Irrigation Allowance Index evaluations and Crop Water Requirements for the growers in Stockton East Water District (SEWD). These values will be used to create ***a real-time irrigation scheduling tool*** for the growers as well as a simple evaluation of total water use at the end of the irrigation season.

Disclaimer

The ET and Crop Water Requirement values are best estimates based on specific information such as published ETc and ETo values, planting and harvesting dates, and precipitation. These values are not exact and are dependent on Distribution Uniformity, plant vigor, growing season and irrigation method. Canopy cover and cover crop health are important factors in ET, which is then reflected in Crop Water Requirements.

Persons involved in irrigation scheduling should use a variety of reality checks. In particular, weather-based ET estimates should always be accompanied by in-field soil moisture verifications.

Irrigation Allowance Index

The Irrigation Allowance Index (IAI) is calculated by comparing two values:

1. The estimated amount of water that should be applied to a certain crop (called the "Irrigation Allowance"), which is based on:
    a. Crop Evapotranspiration (ETc)
    b. Effective Precipitation for a typical precipitation year
    c. An assumed Distribution Uniformity (DU) of 0.80
2. How much water was actually applied

Table 1 contains a list of Irrigation Allowance values for crops in the SEWD region in AF/A for a typical year.

Table 1. Irrigation Allowance values for SEWD Crops

Irrigation Allowance Index		Typical year
ID #'s	SEWD Crop Category	Total AF/A
1	Walnuts	4.1
2	Walnuts w/ cover crop	5.1
3	Apple, Pear, Cherry, Plum, Prune, Olives	3.8
4	Apples, Plums, Cherries, etc. w/cover crop	5.4
5	Vineyards and Grapes	2.6
6	Vineyards and Grapes w/ cover crop	3.7
7	Vineyards and Grapes (Immature)	1.6
8	Tomatoes and Peppers	2.2
9	Chestnuts, Orchard, Pecans, Persimmons	3.6
10	Chestnuts, Orchard, etc. w/ cover crop	5.3
11	Barley, Grain, Hay, Oats, Wheat	1.5
12	Corn	2.7
13	Peach, Nectarine and Apricots	3.6
14	Peach, Nectarine, etc. w/ cover crop	5.2
15	Peach, Nectarine and Apricots (Immature)	2.1
16	Beans	2.3
17	Alfalfa	4.4
18	Melons, Squash, and Cucumbers	1.3
19	Lilac	3.6
20	Asparagus	1.4
21	Pumpkin, Eggplant, Carrots, Row or Field Crops	2.3
22	Onions	1.6
23	Almonds	3.9
24	Almonds w/cover crop	4.9
25	Immature Almonds	2.3
26	Strawberries, Blueberries, Berries	2.3
27	Pistachio	3.4
28	Pistachio w/ cover crop	4.7
29	Immature Pistachio	2.0
30	Citrus (no ground cover)	3.4
31	Immature Citrus	2.0
32	Potatoes, Sugar Beets, Turnip, etc.	3.2
33	Cotton	3.0
34	Avocado	3.6
35	Misc. Subtropical	3.6

These index values are compared to actual water use for each field, and a decimal value is calculated to determine the Irrigation Allowance Index (IAI) for that field. The IAI value for each field is then compared to 1.0, which is the critical point. If the IAI is greater than 1.0 then the grower is most likely over-irrigating. If the IAI is less than 1.0 then the grower is either under-irrigating or using deficit irrigation practices. Note: The index does *not* account for special exceptions to the allowance values such as water quality issues, frost control and/or the extra water necessary to overcome a Distribution Uniformity less than the assumed 0.80.

A sample Irrigation Allowance Index form that would be filled out by growers in order to determine their fields' IAI value is included in *Appendix A*.

Crop Evapotranspiration Information for SEWD

A list of crops and Crop Evapotranspiration (ETc) values was complied specifically for Stockton East Water District in order to provide SEWD growers with a resource for irrigation management. ETc data was taken from published data available from the Irrigation Training and Research Center (ITRC) of California Polytechnic State University, San Luis Obispo, California. The data is available on the ITRC website (www.itrc.org/etdata/etmain.htm). ETc data is available for specific climate "Zones" throughout California and for different precipitation years (typical, wet, and dry years), as well as for different irrigation methods (surface, sprinkler, drip/micro irrigation). The ETc data for Stockton East Water District was compiled for a typical precipitation year in Zone 12, using a list of crops grown in the Stockton East Water District. This table is included in *Appendix B*.

To determine a typical precipitation year for Stockton East Water District, a ten-year average was taken from data collected at CIMIS Station #70, Manteca. The average precipitation per year was found to be 12 inches per year. A wet year was determined to be a year with more than 15 inches of precipitation, and a dry year was a year with less than 9 inches of precipitation.

Determining the Crop Coefficient, Kc (Typical Year)

A table was created with monthly and annual Crop Coefficients (Kc). These Kc values are used to create current year ETc values. The Kc values for the listed crops were computed by using the equation below.

$$ET_C = ET_O \times Kc$$

Where, ETc is the Crop Evapotranspiration
ETo is the Grass Reference Crop Evapotranspiration
Kc is the Crop Coefficient

The ETo and ETc are provided in the published ITRC Evapotranspiration data mentioned above. A table with the Kc values for a typical year for Stockton East Water District is attached in *Appendix B*.

Crop Water Requirement (Typical Year)

The Crop Water Requirement is an estimate of how much water the crop needs to provide full yield. This estimate takes into account the ETc, the Effective Precipitation and the extra water needed to be applied to overcome Distribution Uniformity (for SEWD the DU was assumed to be 0.8).

The Effective Precipitation is the amount of precipitation that contributes to the ETc; all precipitation that is not "effective" (used by plants) is considered lost to deep percolation. For example, there may be 3 inches of total precipitation in a month, but the crop only uses 1 inch of water for ETc (Note: the ETc includes the water used by the plant for Transpiration plus the water that is lost to Evaporation). Therefore, the effective precipitation for that month would be 1 inch, while 2 inches of precipitation is lost to

deep percolation. As another example, if there is only 0.5 inches of precipitation in a month but the crop uses 3 inches for ETc, then none of the precipitation is lost, and all of the precipitation (0.5 inches) is considered "effective".

The Distribution Uniformity was assumed to be 0.8, but this could be either high or low depending on the management of the fields and the current irrigation system in place.

To determine the Crop Water Requirement, the Effective Precipitation is subtracted from the ETc and then is divided by the Distribution Uniformity. This is the amount of water that would need to be provided by the grower for the crop to produce full yield. The equation is:

$$Crop\ Water\ Requirement = \frac{ETc - Effective\ Precipitation}{Distribution\ Uniformity\ (DU)}$$

Once the Crop Water Requirement *per month* was determined, the total Crop Water Requirement for the *year* (acre-in) was calculated and then converted to acre-ft by dividing by 12 inches per foot. A table with the Crop Water Requirements for SEWD is included in *Appendix B*.

Weighted Average Crop Water Requirement

To provide an idea of how much water should be applied per acre for the Stockton East Water District, the weighted average was taken of the Crop Water Requirement and the total acres per crop in the Stockton East Water District. This factor came out to be 4.6 acre-ft of water per acre. This factor is affected heavily by the amount of walnuts with cover crops that are grown in the district, as walnuts with cover crops are almost half of the total crop acreage and use about 5.1 acre-ft of water in a typical year.

ETo (Current Year)

The ETo data for the current year is available using a new method provided by CIMIS called spatial data. Spatial data provides daily representative ETo and solar radiation values within 2 km of any position chosen in California. To check the accuracy of the spatial data, two years' worth of ETo data was compared against the two closest CIMIS stations to Stockton East Water District: Station 70 (Manteca), and Station 166 (Lodi West). The spatial data was found to be within 5% of the ETo data calculated at the stations. The data and results are listed in Table 2.

In order to provide CIMIS spatial data representative of the entire District, a central location in Stockton East Water District was chosen to use as the point for the CIMIS spatial data. The coordinates for the location chosen are 38.01°N, 121.17°W. This location is shown along with the district boundaries in Figure 1.

Table 2. CIMIS Station ETo Data vs. CIMIS Spatial ETo Data (2011-2012)

		Manteca Station		*Lodi West Station*	
Year	Month	CIMIS 70	Spatial	CIMIS 166	Spatial
2011	Jan	0.82	0.89	0.80	0.91
	Feb	2.08	1.98	2.03	2.02
	Mar	2.80	2.77	2.45	2.64
	Apr	4.69	4.59	4.69	4.62
	May	5.72	5.82	5.75	5.67
	Jun	6.66	6.75	6.53	6.58
	Jul	7.54	7.4	7.43	7.33
	Aug	6.81	6.8	6.61	6.81
	Sep	5.24	5.57	5.23	5.53
	Oct	3.29	3.24	3.18	3.19
	Nov	1.75	1.66	1.58	1.62
	Dec	1.50	1.43	1.43	1.51
Total (in)		48.9	48.9	47.7	48.4
Percent Difference		Standard	0%	Standard	2%
2012	Jan	1.61	1.47	1.48	1.48
	Feb	2.47	2.38	2.21	2.34
	Mar	2.94	2.84	2.80	2.80
	Apr	4.67	4.49	4.65	4.44
	May	7.15	7.09	7.11	6.98
	Jun	7.79	7.75	7.66	7.70
	Jul	7.71	7.76	7.53	7.78
	Aug	7.02	7.21	6.96	7.29
	Sep	5.30	5.57	5.31	5.52
	Oct	3.29	3.44	3.22	3.37
	Nov	1.91	1.57	0.67	1.51
	Dec	1.09	1.03	0.00	1.01
Total (in)		53.0	52.6	49.6	52.2
Percent Difference		Standard	-1%	Standard	5%

NOTE: The Penman-Monteith equation, which is recommended by ITRC, was used to calculate the CIMIS station data instead of the reference CIMIS equation.
Percent Difference (%) = 100% * ((Spatial - CIMIS Station)/(CIMIS Station))

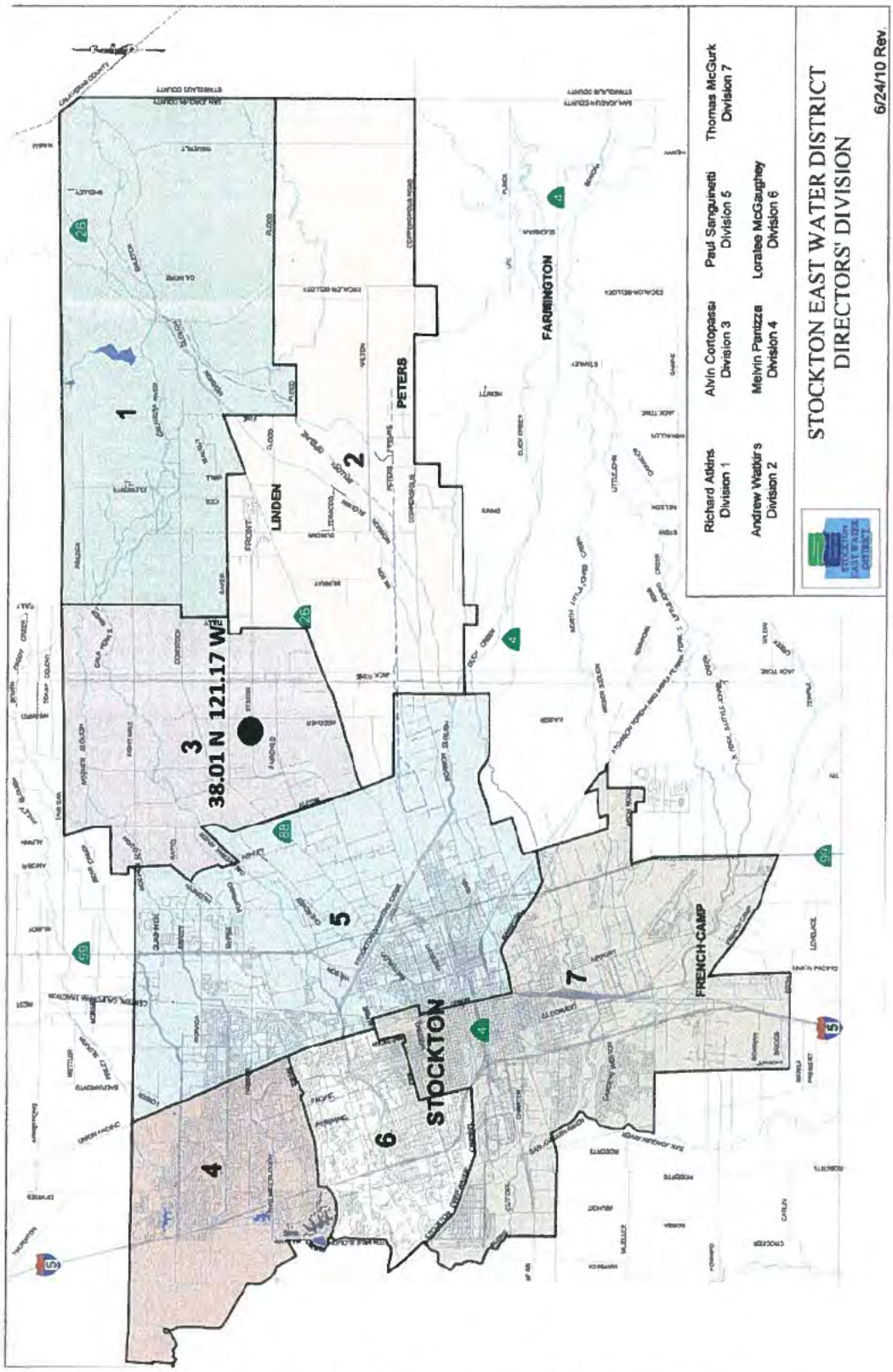

Figure 1. Central position in Stockton East Water District
38.01° N, 121.17° W

Accessing CIMIS Spatial ETo Data

1. Go to the CIMIS website (wwwcimis.water.ca.gov/cimis/myCimis.jsp) and log on. If you do not have a CIMIS account, register for an account. A username and password is required to login; it is free to create an account.
2. Select the "Spatial CIMIS" tab in the main navigational menu at the top of the window.
3. In the left-hand navigational menu, select "Map Reports".
4. Find the location on the map in either of three ways:
    a. Enter the address of the field under "Map" and click "Address Search".
    b. Enter the latitude and longitude of the field (in decimal degrees) and click "Address Search".
    c. Navigate the map using the arrows and zoom slider; place the first pin by clicking on the field.
5. Multiple coordinate points can be requested, allowing the user to request information for multiple fields.
6. Scroll down the page and select English units.
7. Set the date range that is needed.
8. Under "Reporting Method," select "CSV with Headers" if you wish to use Microsoft Excel to view and input the data or select "Web Report" to view the information in a web browser.
9. Click "Submit". Depending on the reporting method you selected, the file will either downloaded to your computer where you can view or save it, or the report will be displayed in your web browser.

Once the ETo data is collected, the monthly ETo can be calculated by adding up the total amount of ETo in each month. These monthly ETo values can be used to create monthly ETc values.

Calculating ETc (Current Year)

To determine the monthly ETc for the current year, multiply the ETo per month by the Crop Coefficient (Kc) using the equation below.

$$ETc = Kc \times ETo$$

The ETo can be taken from the typical year values or other precipitation years depending on which precipitation year the Crop Coefficient is needed for.

Accessing *Monthly* CIMIS Station Data

1. Return to the CIMIS website and log on (wwwcimis.water.ca.gov/cimis/myCimis.jsp).
2. Select the "CIMIS Data" tab.
3. Scroll down the main page until you find a list of options for sensor data reports listed in blue (e.g., Hourly, Daily, Daily ETo Variance, Monthly, etc.). Click on the blue "Monthly" link.
4. From the Station List select the station that is closest to the field, which should be either:

70 – Manteca
166 – Lodi West

5. Scroll down the page and select English units
6. Select the date range to be from January 1, of the current year to the last day of the previous month.
7. Select the appropriate reporting method, and click "Submit".

This station report will provide various data for each month such as average maximum temperature and average low temperature, but the only information needed for the Crop Water Requirement is the total precipitation, which is listed as a monthly value.

A table containing the ETo and ETc for the current year (2013) is located in *Appendix C*.

Calculated Crop Water Requirement (Current Year)

Using the ETc for the current year, the Crop Water Requirement for the current year is calculated by subtracting the Effective Precipitation from the ETc and then dividing by the Distribution Uniformity. Again, the formula is:

$$Crop\ Water\ Requirement = \frac{ETc - Effective\ Precipitation}{Distribution\ Uniformity\ (DU)}$$

This current year's Crop Water Requirement can be compared to the amount of water applied to the field to date, to gauge if the field is being over- or under-irrigated. A table with the current year's (2013) Crop Water Requirements for Stockton East Water District is located in *Appendix C*.

Real-Time Scheduling Tool

In order to provide the SEWD growers with a *real-time irrigation scheduling tool*, the Projected Weekly ETc and Crop Water Requirements are estimated and listed in the current year's tables located in *Appendix C*. With this information the SEWD growers can schedule their irrigations to meet the Projected Crop Water Requirement.

Projected Weekly ETo and Effective Precipitation

The previous calculations for ETc and Crop Water Requirements were monthly values. To properly calculate the Projected Weekly ETc and Crop Water Requirement, the Projected Weekly ETo and Effective Precipitation need to be calculated. This is achieved by summing the daily values from the previous year, for each week to be projected. The same process described above that is used to access CIMIS spatial data can be used since the CIMIS spatial data retrieved is a daily value. The process to access *Daily* Effective Precipitation values from a local CIMIS Station is listed below:

Accessing *Daily* CIMIS Station Data

1. Return to the CIMIS website and log on (wwwcimis.water.ca.gov/cimis/myCimis.jsp).
2. Select the "CIMIS Data" tab.

3. Scroll down the main page until you find a list of options for sensor data reports listed in blue (e.g., Hourly, Daily, Daily ETo Variance, Monthly, etc.). Click on the blue "Daily" link.
4. From the Station List select the station that is closest to the field, which should be either:
   70 – Manteca
   166 – Lodi West
5. Scroll down the page and select English units
6. Set the date range to the days to be projected from the previous year.
7. Select the appropriate reporting method, and click "Submit".

Projected Weekly ETc

The Projected Weekly ETc is then calculated by multiplying the Projected Weekly ETo, by the Kc factor using the equation below:

$$Projected\ Weekly\ ET_C = Projected\ Weekly\ ET_O * K_C$$

The Kc value for this calculation is the Kc value for the month that is being projected, found on the Typical Year – Kc tab of the spreadsheet.

Projected Weekly Crop Water Requirements

Using the Projected Weekly ETc the Projected Weekly Crop Water Requirement is calculated by subtracting the Projected Weekly Effective Precipitation from the Projected Weekly ETc and then dividing by the Distribution Uniformity. The equation is:

$$Projected\ Weekly\ Crop\ Water\ Requirement = \frac{Projected\ Weekly\ Etc - Projected\ Weekly\ Precipitation}{Distribution\ Uniformity}$$

Note that the Projected Weekly ETc and Crop Water Requirements are only an estimate and should be used with current weather data, along with crop and soil monitoring practices to provide accurate irrigation scheduling information.

Appendix A:
Irrigation Allowance Index Evaluation Form

Stockton East Water District
Irrigation Allowance Index

Name

Please fill out the white cells in the tables below to compute your Irrigation Allowance Index value.

WATER SOURCES

GROUNDWATER

	Groundwater Wells *(List ALL State Well #'s)*	Extractions (in Acre-feet) January - June		July - December		Yearly Total
1		0	+	0	=	0
2		0	+	0	=	0
3		0	+	0	=	0
4		0	+	0	=	0
5		0	+	0	=	0
				Total Volume for Wells	=	0

SEWD DELIVERIES

Deliveries from SEWD (in Acre-feet) January - June		July - December		Yearly Total
0	+	0	=	0
		Total Volume from SEWD	=	0

OTHER SOURCES (Neighbor's well, etc.)

	Source	Volume (in Acre-feet) January - June		July - December		Yearly Total
1		0	+	0	=	0
2		0	+	0	=	0
				Total Volume from Other Sources	=	0

Total Volume for All Sources = 0

CROP WATER USE

Please see Page 2 for a list of Irrigation Allowance values by crop type.

	ID# and Crop Category *(from list)*		# of Acres		Irrigation Allowance *per crop type*
1	Please choose a crop category	×	0	=	0
2	Please choose a crop category	×	0	=	0
3	Please choose a crop category	×	0	=	0
4	Please choose a crop category	×	0	=	0
			Total Irrigation Allowance	=	0

$$\text{Irrigation Allowance Index} = \frac{\text{Total Volume from All Sources}}{\text{Total Irrigation Allowance}} = \frac{0}{0} =$$

Clear Form

Calculate!

Irrigation Allowance Index		Typical year
ID #'s	SEWD Crop Category	Total AF/A
1	Walnuts	4.1
2	Walnuts w/ cover crop	5.1
3	Apple, Pear, Cherry, Plum, Prune, Olives	3.8
4	Apples, Plums, Cherries, etc. w/cover crop	5.4
5	Vineyards and Grapes	2.6
6	Vineyards and Grapes w/ cover crop	3.7
7	Vineyards and Grapes (Immature)	1.6
8	Tomatoes and Peppers	2.2
9	Chestnuts, Orchard, Pecans, Persimmons	3.6
10	Chestnuts, Orchard, etc. w/ cover crop	5.3
11	Barley, Grain, Hay, Oats, Wheat	1.5
12	Corn	2.7
13	Peach, Nectarine and Apricots	3.6
14	Peach, Nectarine, etc. w/ cover crop	5.2
15	Peach, Nectarine and Apricots (Immature)	2.1
16	Beans	2.3
17	Alfalfa	4.4
18	Melons, Squash, and Cucumbers	1.3
19	Lilac	3.6
20	Asparagus	1.4
21	Pumpkin, Eggplant, Carrots, Row or Field Crops	2.3
22	Onions	1.6
23	Almonds	3.9
24	Almonds w/cover crop	4.9
25	Immature Almonds	2.3
26	Strawberries, Blueberries, Berries	2.3
27	Pistachio	3.4
28	Pistachio w/ cover crop	4.7
29	Immature Pistachio	2.0
30	Citrus (no ground cover)	3.4
31	Immature Citrus	2.0
32	Potatoes, Sugar Beets, Turnip, etc.	3.2
33	Cotton	3.0
34	Avocado	3.6
35	Misc. Subtropical	3.6

Appendix B:
ETc, Kc and Crop Water Requirement Tables for Typical Year

ETc Table for Irrigation Scheduling and Design

ETo Zone 12 Monthly Evapotranspiration

Typical Year

IRRIGATION TRAINING AND RESEARCH CENTER, California Polytechnic State University, San Luis Obispo (PUBLISHED DATA)

Table does not include adjustments for bare spots and reduced vigor

Total Crop Evapotranspiration for SEWD

			Typical Year Jan inch	Feb inch	Mar inch	Apr inch	May inch	Jun inch	Jul inch	Aug inch	Sep inch	Oct inch	Nov inch	Dec inch	Annual inches	
Precipitation			6.8	0.3	1.3	0.2	0.2	0.2	0.1	0.3	0.1	0.6	4.2	2.1	16.5	
Effective Precipitation			0.7	0.3	1.3	0.2	0.2	0.2	0.1	0.3	0.1	0.6	1.1	1.0	6.2	
Grass Reference ETo			**0.7**	**2.1**	**4.0**	**5.6**	**7.3**	**7.6**	**8.0**	**6.8**	**5.4**	**3.5**	**1.1**	**1.0**	**53.0**	
ITRC Crops	SEWD Crops	Acreage														Annual (AF)
Walnuts	**Walnuts**	**0.0**	**0.8**	**0.9**	**1.7**	**1.8**	**5.8**	**8.3**	**8.7**	**7.4**	**5.2**	**2.6**	**0.5**	**1.0**	**44.7**	**3.7**
Walnuts w/ cover crop	Walnuts w/ cover crop	22,743.4	0.8	2.1	3.4	3.7	6.9	9.4	9.8	8.4	6.0	2.7	1.0	1.2	55.5	4.6
Apple, Pear, Cherry, Plum and Prune	**Apple, Pear, Cherry, Plum, Prune, Olives**	**0.0**	**0.8**	**0.9**	**1.6**	**2.3**	**6.5**	**7.3**	**7.6**	**6.5**	**4.9**	**2.3**	**0.5**	**1.0**	**42.1**	**3.5**
Apples, Plums, Cherries etc w/cover crop	Apples, Plums, Cherries etc w/cover crop	11,937.0	0.8	2.4	4.1	4.9	7.9	9.0	9.5	8.0	6.1	3.5	0.9	1.2	58.2	4.8
Grape Vines with 80% canopy	**Vineyards and Grapes**	**0.0**	**0.8**	**0.9**	**1.3**	**1.1**	**3.5**	**6.0**	**6.4**	**5.1**	**2.8**	**0.6**	**0.5**	**1.0**	**30.0**	**2.5**
Grape Vines with cover crop (80% canopy)	Vineyards and Grapes w/ cover crop	4,242.6	0.9	2.0	3.2	3.1	5.2	6.8	7.2	5.8	3.4	2.1	0.7	1.2	41.5	3.5
Immature Grapes Vines with 50% canopy	**Vineyards and Grapes (Immature)**	**0.0**	**0.9**	**0.9**	**1.2**	**0.8**	**2.3**	**3.7**	**3.9**	**3.2**	**1.7**	**0.6**	**0.5**	**1.0**	**20.7**	**1.7**
Tomatoes and Peppers	Tomatoes and Peppers	2,270.0	0.9	0.9	1.7	0.8	3.7	8.0	7.3	1.2	0.1	0.6	0.5	1.0	26.4	2.2
Misc. Deciduous	**Chestnuts, Orchard, Pecans, Persimmons**	**0.0**	**0.8**	**0.9**	**1.6**	**2.3**	**6.2**	**6.8**	**7.2**	**6.3**	**4.7**	**2.2**	**0.5**	**1.0**	**40.4**	**3.4**
Misc. Deciduous w/ cover crop	Chestnuts, Orchard, etc. w/ cover crop	1,494.0	0.8	2.4	4.1	4.8	7.6	8.6	9.1	7.8	6.0	3.3	0.9	1.2	56.5	4.7
Grain and Grain Hay*	**Barley, Grain, Hay, Oats, Wheat**	**1,253.3**	**0.9**	**2.3**	**4.4**	**6.1**	**3.9**	**0.2**	**0.2**	**0.3**	**0.1**	**0.6**	**0.5**	**1.0**	**20.5**	**1.7**
Corn and Grain Sorghum*	Corn	921.8	0.9	0.9	2.2	1.4	2.6	7.0	8.1	5.5	0.5	0.6	0.5	1.0	31.0	2.6
Peach, Nectarine and Apricots	**Peach, Nectarine and Apricots**	**0.0**	**0.8**	**0.9**	**1.6**	**2.2**	**6.0**	**6.8**	**7.2**	**6.2**	**4.6**	**2.2**	**0.5**	**1.0**	**40.1**	**3.3**
Peach, Nectarine, etc. w/ cover crop	Peach, Nectarine, etc. w/ cover crop	784.2	0.8	2.4	4.1	4.7	7.4	8.6	9.1	7.8	5.9	3.3	0.9	1.2	56.1	4.7
Immature Peaches, Nectarines, etc	**Peach, Nectarine and Apricots (Immature)**	**0.0**	**0.8**	**0.9**	**1.3**	**1.2**	**3.5**	**4.0**	**4.2**	**3.7**	**2.6**	**1.6**	**0.5**	**1.0**	**25.3**	**2.1**
Beans **	Beans	767.5	0.9	0.9	2.2	1.2	2.6	7.1	7.7	3.0	0.1	0.6	0.5	1.0	27.7	2.3
Alfalfa Hay and Clover*	**Alfalfa**	**619.2**	**0.9**	**2.3**	**4.2**	**5.2**	**6.7**	**7.0**	**7.2**	**6.0**	**4.9**	**2.2**	**0.9**	**1.2**	**48.5**	**4.0**
Melons, Squash, and Cucumbers	Melons, Squash, and Cucumbers	550.4	0.9	0.9	1.1	0.2	1.0	1.0	4.2	4.9	1.5	0.6	0.5	1.0	17.8	1.5
Flowers, Nursery and Christmas Tree	**Lilac**	**373.0**	**0.8**	**0.9**	**1.6**	**2.3**	**6.2**	**6.8**	**7.2**	**6.3**	**4.7**	**2.2**	**0.5**	**1.0**	**40.4**	**3.4**
Small Vegetables	Asparagus	345.7	0.9	1.5	3.6	5.5	1.6	0.2	0.2	1.4	1.3	1.3	0.8	1.2	19.5	1.6
Misc. field crops	**Pumpkin, Eggplant, Carrots, Row or Field crops**	**332.1**	**0.9**	**0.9**	**2.2**	**1.4**	**2.6**	**7.1**	**7.7**	**3.1**	**0.1**	**0.6**	**0.5**	**1.0**	**28.0**	**2.3**
Onions and Garlic	Onions	234.8	0.9	2.1	3.7	4.8	5.2	1.3	0.2	0.3	0.1	0.6	1.0	1.0	21.2	1.8
Almonds	**Almonds**	**0.0**	**0.8**	**1.0**	**1.8**	**3.0**	**6.5**	**7.0**	**7.3**	**6.2**	**4.7**	**3.1**	**0.5**	**1.0**	**42.7**	**3.6**
Almonds w/cover crop	Almonds w/cover crop	197.3	0.8	2.1	3.5	4.9	7.6	8.1	8.4	7.3	5.5	3.2	0.9	1.2	53.5	4.5
Immature Almonds	**Immature Almonds**	**0.0**	**0.8**	**1.0**	**1.6**	**2.0**	**4.0**	**4.2**	**4.3**	**3.9**	**2.8**	**2.0**	**0.5**	**1.0**	**27.9**	**2.3**
Strawberries	Strawberries, Blueberries, Berries	71.2	0.9	0.9	2.2	1.4	2.6	7.1	7.7	3.1	0.1	0.6	0.5	1.0	28.0	2.3
Pistachio	**Pistachio**	**0.0**	**0.8**	**0.9**	**1.1**	**1.1**	**2.7**	**6.0**	**8.5**	**7.4**	**5.4**	**2.8**	**0.5**	**1.0**	**38.2**	**3.2**
Pistachio w/ cover crop	Pistachio w/ cover crop	17.0	0.8	2.1	3.4	3.7	5.3	7.3	9.0	7.7	5.9	3.6	0.9	1.2	50.8	4.2
Immature Pistachio	**Immature Pistachio**	**0.0**	**0.8**	**0.9**	**1.1**	**0.7**	**1.5**	**3.7**	**5.1**	**4.6**	**3.3**	**1.8**	**0.5**	**1.0**	**25.0**	**2.1**
Citrus (no ground cover)	Citrus (no ground cover)	0.0	0.8	2.2	3.5	3.9	4.8	5.1	5.2	4.6	3.5	2.8	0.9	1.2	38.4	3.2
Immature Citrus	**Immature Citrus**	**0.0**	**0.9**	**1.6**	**2.5**	**2.2**	**3.0**	**3.1**	**3.2**	**2.9**	**2.1**	**1.9**	**0.7**	**1.1**	**25.1**	**2.1**
Potatoes, Sugar beets, Turnip etc..	Potatoes, Sugar beets, Turnip etc..	0.0	0.9	1.2	2.6	5.6	7.8	8.1	7.2	0.4	0.1	0.6	0.5	1.0	35.9	3.0
Cotton	**Cotton**	**0.0**	**0.9**	**0.9**	**1.1**	**1.0**	**1.7**	**4.7**	**8.4**	**7.4**	**5.0**	**1.4**	**0.5**	**1.0**	**33.9**	**2.8**
Avocado	Avocado	0.0	0.8	0.9	1.6	2.3	6.2	6.8	7.2	6.3	4.7	2.2	0.5	1.0	40.4	3.4
Misc Subtropical	**Misc Subtropical**	**0.0**	**0.8**	**0.9**	**1.6**	**2.3**	**6.2**	**6.8**	**7.2**	**6.3**	**4.7**	**2.2**	**0.5**	**1.0**	**40.4**	**3.4**
	Total Acreage	49,154.3								Weighted Average ETc per acre					50.6	4.2

* ETc data from Surface Irrigation Calculation

** ETc data from Sprinkler Irrigation Calculation

kc Table for Irrigation Scheduling and Design
Zone 12 Monthly Evapotranspiration
Typical Year
IRRIGATION TRAINING AND RESEARCH CENTER, California Polytechnic State University, San Luis Obispo (PUBLISHED DATA)
Table does not include adjustments for bare spots and reduced vigor

Kc- Crop Coefficient for SEWD

			Typical Year Jan inch	Feb inch	Mar inch	Apr inch	May inch	Jun inch	Jul inch	Aug inch	Sep inch	Oct inch	Nov inch	Dec inch	Annual inches
Precipitation			6.8	0.3	1.3	0.2	0.2	0.2	0.1	0.3	0.1	0.6	4.2	2.1	16.5
Effective Precipitation			0.7	0.3	1.3	0.2	0.2	0.2	0.1	0.3	0.1	0.6	1.1	1.0	6.2
Grass Reference ETo			**0.7**	**2.1**	**4.0**	**5.6**	**7.3**	**7.6**	**8.0**	**6.8**	**5.4**	**3.5**	**1.1**	**1.0**	**53.0**
ITRC Crops	SEWD Crops	Acreage													
Walnuts	**Walnuts**	0.0	1.1	0.4	0.4	0.3	0.8	1.1	1.1	1.1	1.0	0.8	0.5	1.0	0.8
Walnuts w/ cover crop	Walnuts w/ cover crop	22,743.4	1.1	1.0	0.9	0.7	0.9	1.2	1.2	1.2	1.1	0.8	0.9	1.2	1.0
Apple, Pear, Cherry, Plum and Prune	**Apple, Pear, Cherry, Plum, Prune, Olives**	0.0	1.2	0.4	0.4	0.4	0.9	1.0	1.0	1.0	0.9	0.7	0.4	1.0	0.8
Apples, Plums, Cherries etc w/cover crop	Apples, Plums, Cherries etc w/cover crop	11,937.0	1.2	1.1	1.0	0.9	1.1	1.2	1.2	1.2	1.1	1.0	0.8	1.2	1.1
Grape Vines with 80% canopy	**Vineyards and Grapes**	0.0	1.2	0.4	0.3	0.2	0.5	0.8	0.8	0.8	0.5	0.2	0.4	1.0	0.6
Grape Vines with cover crop (80% canopy)	Vineyards and Grapes w/ cover crop	4,242.6	1.2	0.9	0.8	0.6	0.7	0.9	0.9	0.9	0.6	0.6	0.6	1.2	0.8
Immature Grapes Vines with 50% canopy	**Vineyards and Grapes (Immature)**	0.0	1.2	0.4	0.3	0.1	0.3	0.5	0.5	0.5	0.3	0.2	0.4	1.0	0.4
Tomatoes and Peppers	Tomatoes and Peppers	2,270.0	1.2	0.4	0.4	0.1	0.5	1.1	0.9	0.2	0.0	0.2	0.5	1.0	0.5
Misc. Deciduous	**Chestnuts, Orchard, Pecans, Persimmons**	0.0	1.2	0.4	0.4	0.4	0.9	0.9	0.9	0.9	0.9	0.6	0.4	1.0	0.8
Misc. Deciduous w/ cover crop	Chestnuts, Orchard, etc. w/ cover crop	1,494.0	1.2	1.1	1.0	0.9	1.0	1.1	1.1	1.2	1.1	1.0	0.8	1.2	1.1
Grain and Grain Hay*	**Barley, Grain, Hay, Oats, Wheat**	1,253.3	1.2	1.1	1.1	1.1	0.5	0.0	0.0	0.1	0.0	0.2	0.5	1.0	0.4
Corn and Grain Sorghum*	Corn	921.8	1.2	0.4	0.5	0.3	0.4	0.9	1.0	0.8	0.1	0.2	0.5	1.0	0.6
Peach, Nectarine and Apricots	**Peach, Nectarine and Apricots**	0.0	1.2	0.4	0.4	0.4	0.8	0.9	0.9	0.9	0.9	0.6	0.4	1.0	0.8
Peach, Nectarine, etc. w/ cover crop	Peach, Nectarine, etc. w/ cover crop	784.2	1.2	1.1	1.0	0.8	1.0	1.1	1.1	1.1	1.1	1.0	0.8	1.2	1.1
Immature Peaches, Nectarines, etc	**Peach, Nectarine and Apricots (Immature)**	0.0	1.2	0.4	0.3	0.2	0.5	0.5	0.5	0.5	0.5	0.5	0.4	1.0	0.5
Beans **	Beans	767.5	1.2	0.4	0.5	0.2	0.4	0.9	1.0	0.4	0.0	0.2	0.5	1.0	0.5
Alfalfa Hay and Clover*	**Alfalfa**	619.2	1.2	1.1	1.1	0.9	0.9	0.9	0.9	0.9	0.9	0.6	0.8	1.2	0.9
Melons, Squash, and Cucumbers	Melons, Squash, and Cucumbers	550.4	1.2	0.4	0.3	0.0	0.1	0.1	0.5	0.7	0.3	0.2	0.5	1.0	0.3
Flowers, Nursery and Christmas Tree	**Lilac**	373.0	1.2	0.4	0.4	0.4	0.9	0.9	0.9	0.9	0.9	0.6	0.4	1.0	0.8
Small Vegetables	Asparagus	345.7	1.2	0.7	0.9	1.0	0.2	0.0	0.0	0.2	0.2	0.4	0.7	1.2	0.4
Misc. field crops	**Pumpkin, Eggplant, Carrots, Row or Field crops**	332.1	1.2	0.4	0.5	0.2	0.4	0.9	1.0	0.5	0.0	0.2	0.5	1.0	0.5
Onions and Garlic	Onions	234.8	1.2	1.0	0.9	0.9	0.7	0.2	0.0	0.1	0.0	0.2	1.0	1.0	0.4
Almonds	**Almonds**	0.0	1.2	0.5	0.5	0.5	0.9	0.9	0.9	0.9	0.9	0.9	0.5	1.0	0.8
Almonds w/cover crop	Almonds w/cover crop	197.3	1.2	1.0	0.9	0.9	1.0	1.1	1.1	1.1	1.0	0.9	0.9	1.2	1.0
Immature Almonds	**Immature Almonds**	0.0	1.2	0.5	0.4	0.4	0.5	0.5	0.5	0.6	0.5	0.6	0.5	1.0	0.5
Strawberries	Strawberries, Blueberries, Berries	71.2	1.2	0.4	0.5	0.2	0.4	0.9	1.0	0.5	0.0	0.2	0.5	1.0	0.5
Pistachio	**Pistachio**	0.0	1.2	0.4	0.3	0.2	0.4	0.8	1.1	1.1	1.0	0.8	0.5	1.0	0.7
Pistachio w/ cover crop	Pistachio w/ cover crop	17.0	1.2	1.0	0.8	0.7	0.7	1.0	1.1	1.1	1.1	1.0	0.8	1.2	1.0
Immature Pistachio	**Immature Pistachio**	0.0	1.2	0.4	0.3	0.1	0.2	0.5	0.6	0.7	0.6	0.5	0.5	1.0	0.5
Citrus (no ground cover)	Citrus (no ground cover)	0.0	1.2	1.0	0.9	0.7	0.7	0.7	0.6	0.7	0.6	0.8	0.8	1.2	0.7
Immature Citrus	**Immature Citrus**	0.0	1.2	0.7	0.6	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.7	1.1	0.5
Potatoes, Sugar beets, Turnip etc..	Potatoes, Sugar beets, Turnip etc..	0.0	1.2	0.6	0.6	1.0	1.1	1.1	0.9	0.1	0.0	0.2	0.5	1.0	0.7
Cotton	**Cotton**	0.0	1.2	0.4	0.3	0.2	0.2	0.6	1.1	1.1	0.9	0.4	0.5	1.0	0.6
Avocado	Avocado	0.0	1.2	0.4	0.4	0.4	0.9	0.9	0.9	0.9	0.9	0.6	0.4	1.0	0.8
Misc Subtropical	**Misc Subtropical**	0.0	1.2	0.4	0.4	0.4	0.9	0.9	0.9	0.9	0.9	0.6	0.4	1.0	0.8
	Total Acreage	49,154.3													

* ETc data from Surface Irrigation Calculation
** ETc data from Sprinkler Irrigation Calculation

Formula: Kc = ETc/ETo

Estimated Applied Water Table for Irrigation Scheduling and Design
ETo Zone 12 Monthly Evapotranspiration
Typical Year

Estimated Total Crop Water Requirement for SEWD (for Typical year)

IRRIGATION TRAINING AND RESEARCH CENTER, California Polytechnic State University, San Luis Obispo (PUBLISHED DATA)
Table does not include adjustments for bare spots and reduced vigor

			Typical Year Jan inch	Feb inch	Mar inch	Apr inch	May inch	Jun inch	Jul inch	Aug inch	Sep inch	Oct inch	Nov inch	Dec inch	Annual Inches	
Precipitation			6.8	0.3	1.3	0.2	0.2	0.2	0.1	0.3	0.1	0.6	4.2	2.1	16.5	
Effective Precipitation			0.7	0.3	1.3	0.2	0.2	0.2	0.1	0.3	0.1	0.6	1.1	1.0	6.2	
Grass Reference ETo			0.7	2.1	4.0	5.6	7.3	7.6	8.0	6.8	5.4	3.5	1.1	1.0	53.0	
ITRC Crops	SEWD Crops	Acreage														Annual (AF)
Walnuts	Walnuts	0.0	0.1	0.8	0.5	2.0	7.0	10.1	10.7	8.8	6.4	2.5	0.0	0.0	48.8	4.1
Walnuts w/ cover crop	Walnuts w/ cover crop	22,743.4	0.1	2.3	2.6	4.3	8.4	11.6	12.1	10.1	7.4	2.6	0.0	0.2	61.7	5.1
Apple, Pear, Cherry, Plum and Prune	Apple, Pear, Cherry, Plum, Prune, Olives	0.0	0.1	0.8	0.3	2.7	7.9	8.8	9.4	7.7	6.0	2.1	0.0	0.0	45.7	3.8
Apples, Plums, Cherries etc w/cover crop	Apples, Plums, Cherries etc w/cover crop	11,937.0	0.1	2.6	3.4	5.8	9.6	11.0	11.7	9.6	7.6	3.5	0.0	0.3	65.2	5.4
Grape Vines with 80% canopy	Vineyards and Grapes	0.0	0.1	0.8	0.0	1.2	4.1	7.3	7.8	5.9	3.4	0.0	0.0	0.0	30.7	2.6
Grape Vines with cover crop (80% canopy)	Vineyards and Grapes w/ cover crop	4,242.6	0.2	2.1	2.3	3.6	6.3	8.3	8.8	6.9	4.2	1.8	0.0	0.2	44.6	3.7
Immature Grapes Vines with 50% canopy	Vineyards and Grapes (immature)	0.0	0.2	0.8	0.0	0.8	2.6	4.4	4.8	3.6	2.0	0.0	0.0	0.0	19.1	1.6
Tomatoes and Peppers	Tomatoes and Peppers	2,270.0	0.2	0.8	0.4	0.7	4.4	9.7	8.9	1.0	0.0	0.0	0.0	0.0	26.0	2.2
Misc. Deciduous	Chestnuts, Orchard, Pecans, Persimmons	0.0	0.1	0.8	0.3	2.6	7.5	8.3	8.9	7.4	5.8	2.0	0.0	0.0	43.6	3.6
Misc. Deciduous w/ cover crop	Chestnuts, Orchard, etc. w/ cover crop	1,494.0	0.1	2.6	3.4	5.7	9.2	10.5	11.2	9.3	7.4	3.4	0.0	0.3	63.1	5.3
Grain and Grain Hay*	Barley, Grain, Hay, Oats, Wheat	1,253.3	0.2	2.5	3.9	7.4	4.6	0.0	0.0	0.0	0.0	0.0	0.0	0.1	18.6	1.5
Corn and Grain Sorghum*	Corn	921.8	0.2	0.8	1.0	1.5	3.0	8.5	10.0	6.5	0.5	0.0	0.0	0.0	31.8	2.7
Peach, Nectarine and Apricots	Peach, Nectarine and Apricots	0.0	0.1	0.8	0.3	2.4	7.3	8.3	8.9	7.4	5.7	2.0	0.0	0.0	43.1	3.6
Peach, Nectarine, etc. w/ cover crop	Peach, Nectarine, etc. w/ cover crop	784.2	0.1	2.6	3.4	5.6	9.0	10.5	11.2	9.3	7.3	3.3	0.0	0.3	62.6	5.2
Immature Peaches, Nectarines, etc	Peach, Nectarine and Apricots (immature)	0.0	0.1	0.8	0.0	1.3	4.1	4.8	5.1	4.1	3.2	1.2	0.0	0.0	24.6	2.1
Beans **	Beans	767.5	0.2	0.8	1.0	1.2	3.0	8.7	9.4	3.4	0.0	0.0	0.0	0.0	27.6	2.3
Alfalfa Hay and Clover*	Alfalfa	619.2	0.2	2.5	3.6	6.2	8.1	8.5	8.8	7.0	6.1	1.9	0.0	0.2	53.1	4.4
Melons, Squash, and Cucumbers	Melons, Squash, and Cucumbers	550.4	0.2	0.8	0.0	0.0	1.0	1.0	5.0	5.7	1.8	0.0	0.0	0.0	15.5	1.3
Flowers, Nursery and Christmas Tree	Lilac	373.0	0.1	0.8	0.3	2.6	7.5	8.3	8.9	7.4	5.8	2.0	0.0	0.0	43.6	3.6
Small Vegetables	Asparagus	345.7	0.2	1.5	2.9	6.7	1.8	0.0	0.0	1.4	1.6	0.8	0.0	0.2	16.9	1.4
Misc. field crops	Pumpkin, Eggplant, Carrots, Row or Field crops	332.1	0.2	0.8	1.0	1.5	3.0	8.6	9.5	3.4	0.0	0.0	0.0	0.0	28.0	2.3
Onions and Garlic	Onions	234.8	0.2	2.2	2.9	5.7	6.2	1.4	0.0	0.0	0.0	0.0	0.0	0.1	18.8	1.6
Almonds	Almonds	0.0	0.1	0.9	0.6	3.5	7.8	8.4	8.9	7.3	5.8	3.0	0.0	0.0	46.4	3.9
Almonds w/cover crop	Almonds w/cover crop	197.3	0.1	2.3	2.7	5.8	9.3	9.9	10.3	8.6	6.7	3.2	0.0	0.2	59.3	4.9
Immature Almonds	Immature Almonds	0.0	0.1	0.9	0.3	2.2	4.7	5.0	5.3	4.5	3.4	1.7	0.0	0.0	27.9	2.3
Strawberries	Strawberries, Blueberries, Berries	71.2	0.2	0.8	1.0	1.5	3.0	8.6	9.5	3.4	0.0	0.0	0.0	0.0	28.0	2.3
Pistachio	Pistachio	0.0	0.1	0.8	0.0	1.2	3.1	7.3	10.5	8.8	6.7	2.7	0.0	0.0	41.0	3.4
Pistachio w/ cover crop	Pistachio w/ cover crop	17.0	0.1	2.3	2.5	4.4	6.3	8.9	11.1	9.2	7.3	3.7	0.0	0.2	56.0	4.7
Immature Pistachio	Immature Pistachio	0.0	0.1	0.8	0.0	0.6	1.7	4.4	6.2	5.4	4.0	1.4	0.0	0.0	24.6	2.0
Citrus (no ground cover)	Citrus (no ground cover)	0.0	0.1	2.4	2.8	4.6	5.8	6.1	6.3	5.3	4.3	2.7	0.0	0.2	40.6	3.4
Immature Citrus	Immature Citrus	0.0	0.2	1.6	1.5	2.5	3.5	3.6	3.8	3.2	2.5	1.6	0.0	0.1	24.0	2.0
Potatoes, Sugar beets, Turnip etc..	Potatoes, Sugar beets, Turnip etc..	0.0	0.2	1.2	1.6	6.7	9.5	9.9	8.8	0.1	0.0	0.0	0.0	0.0	37.8	3.2
Cotton	Cotton	0.0	0.2	0.8	0.0	1.0	1.9	5.6	10.4	8.8	6.2	0.9	0.0	0.0	35.7	3.0
Avocado	Avocado	0.0	0.1	0.8	0.3	2.6	7.5	8.3	8.9	7.4	5.8	2.0	0.0	0.0	43.6	3.6
Misc Subtropical	Misc Subtropical	0.0	0.1	0.8	0.3	2.6	7.5	8.3	8.9	7.4	5.8	2.0	0.0	0.0	43.6	3.6
	Total Acreage	49,154.3					Weighted Average Crop Water Requirement per acre								55.7	4.6

Note: Assumes 0.8 Distribution Uniformity
These values do not take into account extra water required for salinity or frost protection.
* ETc data from Surface Irrigation Calculation
** ETc data from Sprinkler Irrigation Calculation

Formula: Crop Water Required = (ETc - Effective Precipitation)/ DU

Appendix C:
Current Year ETc and Crop Water Requirement for Real-Time Irrigation Scheduling

ETo Zone 12 Monthly Evapotranspiration

Current Year

IRRIGATION TRAINING AND RESEARCH CENTER, California Polytechnic State University, San Luis Obispo (PUBLISHED DATA)

Table does not include adjustments for bare spots and reduced vigor

			Current Year (August 2013) Jan inch	Feb inch	Mar inch	Apr inch	May inch	Jun inch	Jul inch	Aug inch
Precipitation			1.1	0.2	1.4	0.4	0.0	0.1	0.0	0.0
Effective Precipitation			1.1	0.2	1.4	0.4	0.0	0.1	0.0	0.0
Grass Reference ETo			1.3	2.2	3.6	5.9	7.0	7.8	8.4	7.24
ITRC Crops	SEWD Crops	Acreage								
Walnuts	Walnuts	0.0	0.3	0.8	0.2	1.5	5.5	8.4	9.2	7.9
Walnuts w/ cover crop	Walnuts w/ cover crop	22,743.4	0.3	2.0	1.7	3.5	6.6	9.6	10.4	9.0
Apple, Pear, Cherry, Plum and Prune	Apple, Pear, Cherry, Plum, Prune, Olives	0.0	0.3	0.8	0.1	2.3	6.2	7.4	8.1	6.9
Apples, Plums, Cherries etc w/cover crop	Apples, Plums, Cherries etc w/cover crop	11,937.0	0.3	2.3	2.3	4.8	7.5	9.2	10.1	8.6
Grape Vines with 80% canopy	Vineyards and Grapes	0.0	0.3	0.8	0.0	0.8	3.3	6.1	6.8	5.5
Grape Vines with cover crop (80% canopy)	Vineyards and Grapes w/ cover crop	4,242.6	0.4	1.9	1.5	2.9	5.0	6.9	7.6	6.2
Immature Grapes Vines with 50% canopy	Vineyards and Grapes (Immature)	0.0	0.4	0.8	0.0	0.5	2.2	3.7	4.2	3.4
Tomatoes and Peppers	Tomatoes and Peppers	2,270.0	0.4	0.8	0.2	0.4	3.5	8.1	7.7	1.7
Misc. Deciduous	Chestnuts, Orchard, Pecans, Persimmons	0.0	0.3	0.8	0.1	2.0	5.9	6.9	7.6	6.7
Misc. Deciduous w/ cover crop	Chestnuts, Orchard, etc. w/ cover crop	1,494.0	0.3	2.3	2.3	4.7	7.2	8.7	9.6	8.4
Grain and Grain Hay*	Barley, Grain, Hay, Oats, Wheat	1,253.3	0.4	2.2	2.7	6.1	3.7	0.2	0.2	0.4
Corn and Grain Sorghum*	Corn	921.8	0.4	0.8	0.6	1.1	2.4	7.1	8.6	5.9
Peach, Nectarine and Apricots	Peach, Nectarine and Apricots	0.0	0.3	0.8	0.1	1.9	5.7	6.9	7.6	6.7
Peach, Nectarine, etc. w/ cover crop	Peach, Nectarine, etc. w/ cover crop	784.2	0.3	2.3	2.3	4.6	7.0	8.7	9.6	8.3
Immature Peaches, Nectarines, etc	Peach, Nectarine and Apricots (Immature)	0.0	0.3	0.8	0.0	0.9	3.3	4.1	4.4	3.9
Beans **	Beans	767.5	0.4	0.8	0.6	0.9	2.5	7.2	8.1	3.2
Alfalfa Hay and Clover*	Alfalfa	619.2	0.4	2.2	2.5	5.1	6.3	7.1	7.6	6.4
Melons, Squash, and Cucumbers	Melons, Squash, and Cucumbers	550.4	0.4	0.8	0.0	0.0	0.9	1.0	4.4	5.2
Flowers, Nursery and Christmas Tree	Lilac	373.0	0.3	0.8	0.1	2.0	5.9	6.9	7.6	6.7
Small Vegetables	Asparagus	345.7	0.4	1.4	1.9	5.5	1.5	0.2	0.2	1.5
Misc. field crops	Pumpkin, Eggplant, Carrots, Row or Field crops	332.1	0.4	0.8	0.6	1.1	2.5	7.2	8.1	3.3
Onions and Garlic	Onions	234.8	0.4	2.0	2.0	4.7	4.9	1.3	0.2	0.4
Almonds	Almonds	0.0	0.3	0.8	0.3	2.8	6.2	7.0	7.7	6.6
Almonds w/cover crop	Almonds w/cover crop	197.3	0.3	2.1	1.8	4.8	7.2	8.2	8.9	7.8
Immature Almonds	Immature Almonds	0.0	0.3	0.8	0.1	1.7	3.8	4.2	4.6	4.2
Strawberries	Strawberries, Blueberries, Berries	71.2	0.4	0.8	0.6	1.1	2.5	7.2	8.1	3.3
Pistachio	Pistachio	0.0	0.3	0.8	0.0	0.8	2.5	6.1	9.0	7.9
Pistachio w/ cover crop	Pistachio w/ cover crop	17.0	0.3	2.1	1.7	3.5	5.0	7.4	9.5	8.3
Immature Pistachio	Immature Pistachio	0.0	0.3	0.8	0.0	0.4	1.4	3.7	5.4	4.9
Citrus (no ground cover)	Citrus (no ground cover)	0.0	0.3	2.1	1.9	3.8	4.6	5.2	5.5	4.9
Immature Citrus	Immature Citrus	0.0	0.4	1.5	0.9	2.0	2.8	3.1	3.4	3.1
Potatoes, Sugar beets, Turnip etc..	Potatoes, Sugar beets, Turnip etc..	0.0	0.4	1.1	1.0	5.6	7.4	8.2	7.6	0.5
Cotton	Cotton	0.0	0.4	0.8	0.0	0.7	1.6	4.7	8.9	7.9
Avocado	Avocado	0.0	0.3	0.8	0.1	2.0	5.9	6.9	7.6	6.7
Misc Subtropical	Misc Subtropical	0.0	0.3	0.8	0.1	2.0	5.9	6.9	7.6	6.7
	Total Acreage	49,154.3								

Note: Assumes 0.8 Distribution Uniformity

These values do not take into account extra water required for salinity or frost protection.

* ETc data from Surface Irrigation Calculation

** ETc data from Sprinkler Irrigation Calculation

*** To Date does not include Projected Values

Formula: Crop Water Required = (ETc - Effective Precipitation)/ DU

Projected Crop Water Requirement for September**** Week 1 Sun 9/1-Sat 9/7 inch	Week 2 Sun 9/8-Sat 9/14 inch	Week 3 Sun 9/15-Sat 9/21 inch	Week 4 Sun 9/22-Sat 9/27 inch
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0
1.4	1.5	1.4	1.2
1.7	1.8	1.6	1.4
1.9	2.1	1.9	1.6
1.6	1.7	1.5	1.3
2.0	2.1	1.9	1.7
0.9	1.0	0.9	0.8
1.1	1.2	1.1	0.9
0.5	0.6	0.5	0.5
0.0	0.0	0.0	0.0
1.5	1.6	1.5	1.3
1.9	2.1	1.9	1.6
0.0	0.0	0.0	0.0
0.2	0.2	0.2	0.1
1.5	1.6	1.4	1.3
1.9	2.0	1.9	1.6
0.9	0.9	0.8	0.7
0.0	0.0	0.0	0.0
1.6	1.7	1.5	1.4
0.5	0.5	0.5	0.4
1.5	1.6	1.5	1.3
0.4	0.5	0.4	0.4
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0
1.5	1.6	1.5	1.3
1.8	1.9	1.7	1.5
0.9	1.0	0.9	0.8
0.0	0.0	0.0	0.0
1.8	1.9	1.7	1.5
1.9	2.0	1.8	1.6
1.1	1.1	1.0	0.9
1.1	1.2	1.1	1.0
0.7	0.7	0.7	0.6
0.0	0.0	0.0	0.0
1.6	1.7	1.6	1.4
1.5	1.6	1.5	1.3
1.5	1.6	1.5	1.3

Oct inch	Nov inch	Dec inch	To Date*** inches	To Date(AF)***
			3.1	
			3.1	
			48.9	
			33.9	2.8
			43.2	3.6
			31.8	2.7
			45.0	3.8
			23.6	2.0
			32.4	2.7
			15.1	1.3
			22.2	1.9
			30.4	2.5
			43.6	3.6
			15.7	1.3
			26.8	2.2
			30.1	2.5
			43.3	3.6
			17.7	1.5
			23.7	2.0
			37.6	3.1
			12.7	1.1
			30.4	2.5
			12.6	1.0
			24.0	2.0
			15.8	1.3
			31.8	2.6
			41.2	3.4
			19.7	1.6
			24.0	2.0
			27.5	2.3
			37.8	3.1
			17.0	1.4
			28.2	2.3
			17.1	1.4
			31.6	2.6
			25.0	2.1
			30.4	2.5
			30.4	2.5

****Projected Crop Water Requirement is an Estimate and should be checked against the actual conditions in the field

Formula: Projected Weekly Crop Water Required = (Projected Weekly ETc -Projected Weekly Effective Precipitation)/ DU

ETc Table for Irrigation Scheduling and Design
Zone 12 Monthly Evapotranspiration

Current Crop Evapotranspiration for SEWD

Current Year
IRRIGATION TRAINING AND RESEARCH CENTER, California Polytechnic State University, San Luis Obispo (PUBLISHED DATA)
Table does not include adjustments for bare spots and reduced vigor

			Current Year (June)							
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
			Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch
Precipitation			1.1	0.2	1.4	0.4	0.0	0.1	0.0	0.0
Effective Precipitation			1.1	0.2	1.4	0.4	0.0	0.1	0.0	0.0
Grass Reference ETo			1.5	2.2	3.6	5.9	7.0	7.8	8.4	7.2
ITRC Crops	SEWD Crops	Acreages								
Walnuts	Walnuts	0.0	1.4	1.0	1.5	1.9	5.5	6.5	9.2	7.9
Walnuts w/ cover crop	Walnuts w/ cover crop	22,748.4	1.4	2.2	3.1	3.9	6.6	9.7	10.4	9.0
Apple, Pear, Cherry, Plum and Prune	Apple, Pear, Cherry, Plum, Prune, Olives	0.0	1.4	1.0	1.4	2.5	6.2	7.4	8.1	6.9
Apples, Plums, Cherries etc w/cover crop	Apples, Plums, Cherries etc w/cover crop	11,937.0	1.4	2.5	3.7	5.2	7.5	9.2	10.1	8.6
Grape Vines with 80% canopy	Vineyards and Grapes	0.0	1.4	1.0	1.1	1.2	3.4	6.2	6.8	5.5
Grape Vines with cover crop (80% canopy)	Vineyards and Grapes w/ cover crop	4,242.6	1.5	2.1	2.9	3.3	5.0	7.0	7.6	6.2
Immature Grapes Vines with 50% canopy	Vineyards and Grapes (Immature)	0.0	1.5	1.0	1.1	0.9	2.2	5.8	4.2	3.4
Tomatoes and Peppers	Tomatoes and Peppers	2,270.0	1.5	1.0	1.5	0.8	3.5	8.1	7.7	1.2
Misc. Deciduous	Chestnuts, Orchard, Pecans, Persimmons	0.0	1.4	1.0	1.4	2.4	5.9	7.0	7.6	6.7
Misc. Deciduous w/ cover crop	Chestnuts, Orchard, etc. w/ cover crop	1,494.0	1.4	2.3	3.7	5.1	7.2	8.8	9.6	8.4
Grain and Grain Hay*	Barley, Grain, Hay, Oats, Wheat	1,253.3	1.5	2.4	4.0	6.5	3.7	0.2	0.2	0.4
Corn and Grain Sorghum*	Corn	921.8	1.5	1.0	1.9	1.5	2.5	7.1	8.6	5.9
Peach, Nectarine and Apricots	Peach, Nectarine and Apricots	0.0	1.4	1.0	1.4	2.3	5.8	7.0	7.6	6.7
Peach, Nectarine, etc. w/ cover crop	Peach, Nectarine, etc. w/ cover crop	784.2	1.4	2.5	3.7	5.0	7.0	8.8	9.6	8.3
Immature Peaches, Nectarines, etc	Peach, Nectarine and Apricots (Immature)	0.0	1.4	1.0	1.2	1.3	3.3	4.1	4.4	3.9
Beans **	Beans	767.5	1.5	1.0	1.9	1.3	2.5	7.3	8.1	3.2
Alfalfa Hay and Clover*	Alfalfa	629.2	1.5	2.4	3.8	5.5	6.4	7.2	7.6	6.4
Melons, Squash, and Cucumbers	Melons, Squash, and Cucumbers	550.4	1.5	1.0	1.0	0.2	1.0	1.0	4.4	5.2
Flowers, Nursery and Christmas Tree	Lilac	573.0	1.4	1.0	1.4	2.4	5.9	7.0	7.6	6.7
Small Vegetables	Asparagus	345.7	1.5	1.5	3.3	5.9	1.5	0.2	0.2	1.5
Misc. field crops	Pumpkin, Eggplant, Carrots, Row or Field crops	332.1	1.5	1.0	1.9	1.5	2.5	7.3	8.1	3.3
Onions and Garlic	Onions	294.8	1.5	2.2	3.3	5.1	4.9	1.4	0.2	0.4
Almonds	Almonds	0.0	1.4	1.0	1.6	3.2	6.2	7.1	7.7	6.6
Almonds w/cover crop	Almonds w/cover crop	197.3	1.4	2.3	3.2	5.2	7.3	8.3	8.9	7.8
Immature Almonds	Immature Almonds	0.0	1.4	1.0	1.4	2.1	3.8	4.9	4.6	4.2
Strawberries	Strawberries, Blueberries, Berries	71.2	1.5	1.0	1.9	1.5	2.5	7.3	8.1	3.3
Pistachio	Pistachio	0.0	1.4	1.0	1.0	1.2	2.5	8.2	9.0	7.9
Pistachio w/ cover crop	Pistachio w/ cover crop	17.0	1.4	2.3	3.0	3.9	5.0	7.5	9.5	8.3
Immature Pistachio	Immature Pistachio	0.0	1.4	1.0	1.0	0.7	1.5	3.8	5.4	4.9
Citrus (no ground cover)	Citrus (no ground cover)	0.0	1.4	2.3	3.2	4.1	4.6	5.2	5.5	4.9
Immature Citrus	Immature Citrus	0.0	1.5	1.6	2.3	2.4	2.9	3.1	3.4	3.1
Potatoes, Sugar beets, Turnip etc..	Potatoes, Sugar beets, Turnip etc..	0.0	1.5	1.3	2.3	5.9	7.4	8.3	7.6	0.5
Cotton	Cotton	0.0	1.5	1.0	1.0	1.1	1.6	4.8	8.9	7.9
Avocado	Avocado	0.0	1.4	1.0	1.4	2.4	5.9	7.0	7.6	6.7
Misc Subtropical	Misc Subtropical	0.0	1.4	1.0	1.4	2.4	5.9	7.0	7.6	6.7
	Total Acreage	49,154.3								

Projected Crop Water Requirement for September				Oct	Nov	Dec	To Date***	
Week 1 Sun 9/1-Sat 9/7	Week 2 Sun 9/8-Sat 9/14	Week 3 Sun 9/15-Sat 9/21	Week 4 Sun 9/22-Sat 9/27				Inches	
Inch	Inch	Inch	Inch	Inch	Inch	Inch		To Date***(AF)
0.0	0.0	0.0	0.0				3.1	
0.0	0.0	0.0	0.0				3.1	
1.4	1.5	1.4	1.2				48.9	
1.3	1.4	1.3	1.1				37.0	3.1
1.5	1.6	1.5	1.3				46.3	3.9
1.3	1.5	1.2	1.1				35.0	2.9
1.6	1.5	1.1	1.4				48.1	4.0
0.7	0.8	0.7	0.6				26.5	2.2
0.9	0.9	0.9	0.8				35.5	3.0
0.4	0.3	0.6	1.1				18.0	1.5
0.0	0.0	0.0	0.0				25.3	2.1
1.2	1.0	0.6	1.1				33.5	2.8
1.5	1.6	1.5	1.3				46.7	3.9
0.0	0.3	0.6	1.2				18.8	1.6
0.1	0.1	0.1	0.1				29.9	2.5
1.2	1.3	1.2	1.0				33.2	2.8
1.5	1.6	1.5	1.3				46.4	3.9
0.7	0.7	0.7	0.6				20.7	1.7
0.0	0.0	0.0	0.0				26.8	2.2
1.3	1.4	1.2	1.1				40.7	3.4
0.4	0.4	0.4	0.3				15.3	1.3
1.2	1.3	1.2	1.0				33.5	2.8
0.3	0.4	0.3	0.3				15.7	1.3
0.0	0.0	0.0	0.0				27.1	2.3
0.0	0.0	0.0	0.0				18.9	1.6
1.2	1.5	1.2	1.0				34.9	2.9
1.4	1.5	1.4	1.2				44.3	3.7
0.7	0.8	0.7	0.6				22.8	1.9
0.0	0.0	0.0	0.0				27.1	2.3
1.4	1.5	1.4	1.2				30.2	2.5
1.5	1.6	1.5	1.3				40.9	3.4
0.8	0.9	0.8	0.7				19.7	1.6
0.9	1.0	0.9	0.8				31.3	2.6
0.5	0.6	0.5	0.5				20.2	1.7
0.0	0.0	0.0	0.0				34.8	2.9
1.3	1.4	1.3	1.1				27.8	2.3
1.2	1.3	1.2	1.0				33.5	2.8
1.2	1.3	1.2	1.0				33.5	2.8

Note: ETo for Cimis Spatial Data taken at 38.01 N 121.17 N. Precipitation data taken from CIMIS Station 70, Manteca, CA
* ETc data from Surface Irrigation Calculation
** ETc data from Sprinkler Irrigation Calculation
*** To Date does not include Projected Values

Projected Weekly ETc = (ETo from the selected dates of the previous year * Kc for Specific Month)

ATTACHMENT Q

California Act Establishing the Stockton-East Water District

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CHAPTER 819

An act to repeal Chapter 1775 of the Statutes of 1963, to change the name of the Stockton and East San Joaquin Water Conservation District to the Stockton-East Water District and to grant certain powers to such district, relating to water conservation and water supply, and declaring the urgency thereof to take effect immediately.

[Approved by Governor September 29, 1971. Filed with Secretary of State September 29, 1971.]

CHAPTER 553

An act to amend Section 4 of, and to add Section 21.5 to Chapter 819 of the Statutes of 1971, relating to the Stockton-East Water District.

[Approved by Governor September 5, 1975. Filed with Secretary of State September 6, 1975.]

CHAPTER 1126

(Senate Bill No. 1120)

An act to repeal and add Sections 4 and 9 of, and to add Sections 9.2, 9.3 and 9.4 to, Chapter 819 of the Statutes of 1971, relating to the Stockton-East Water District, and declaring the urgency thereof, to take effect immediately.

[Approved by Governor September 27, 1979 Filed with Secretary of State September 25, 1979.]

CHAPTER 1287

(Senate Bill No. 1449)

An act to amend Sections 4247, 4402, 5019, 5020, and 5021 of the Education Code, to amend Sections 75, 318, 512, 1007, 1017, 1340, 1508.5, 1515, 3520, 3521, 4011, 4055, 5353, 6460, 10211, 14213, and 35006 of, to repeal Section 6509 of, and to repeal and add Section 14000 of, the Elections Code, to amend Sections 24001 and 31105.2 of the Government Code, and to amend Section 34 of Chapter 819 of the Statutes of 1971, relating to elections, and declaring the urgency thereof, to take effect immediately.

The people of the State of California do enact as follows:

SECTION 1
Chapter 1775 of the Statutes of 1963 is repealed.

SECTION 2
(a) The name of the Stockton and East San Joaquin Water Conservation District is changed to the Stockton-East Water District.
(b) In all respects not inconsistent with this act, the Stockton-East Water District shall continue to be organized under; and governed by, the Water Conservation District Law of 1931, Division 21 (commencing with Section 74000) of the Water Code as the same now exists and as it may be amended hereafter. The provisions of Division 21 (commencing with Section 74000) of the Water Code and all other acts of the Legislature applicable to the district and not inconsistent with the provisions of this act shall remain in full force and effect and shall be fully applicable to the district.
(c) In all cases in which it may be otherwise required that the district be described as a "water conservation district" it shall be sufficient to describe the district as a "water district".

SECTION 3
(a) The Legislature finds and declares that the problems of providing for the management of the underground water basin and the provision of supplemental water supplies, in the area of the Stockton-East Water District are peculiar to that district and that area and for that reason it is necessary to deal specially with such area and to provide special provisions for the government and operation of that district.
(b) The Legislature further finds and declares that this act is necessary to the solution of a problem arising out of the following unique and special circumstances: The water supplies in the underground basin in the area of the-Stockton-East Water District are insufficient to meet the water demands of the area, and, because of the geologic conditions peculiar to the area and because excessive pumping has seriously depleted the underground water storage, there has been an intrusion of saline waters into the underground water basin causing serious water quality deterioration and the destruction of the usefulness of a portion of the underground water basin. Further excessive pumping, without proper management of the underground water basin and the provision of supplemental water supplies, is certain to destroy the usefulness of a major portion of the underground water basin and endanger the health and welfare of the district.
(c) The Legislature further finds and declares that the district includes within its territory a large urban area, a large agricultural area, and territory formerly within an irrigation district, and that for these reasons it is necessary in order to accommodate the various interests within the district to provide special procedures to be observed by the district in its government and operation.
(d) The Legislature further finds and declares that only a portion of the City of Stockton and only a portion of the Metropolitan Stockton Planning Area as defined by the City of Stockton and the County of San Joaquin are within the district, and that unless all of such city and all of the Metropolitan Stockton Planning Area are within the district there will be uneconomic duplications and inefficiencies and it will be both more costly and more difficult to solve the grave and urgent water problems of the Stockton Metropolitan Area and the existing Stockton-

East Water District. The Legislature further finds and declares that the territory that is outside the district but within the Metropolitan Stockton Planning Area includes territory that is within the City of Stockton, within county maintenance districts, within other water conservation districts, and within an irrigation district. The Legislature further finds and declares that the special problems of including all of the City of Stockton and the Metropolitan Stockton Planning Area within the Stockton-East Water District are peculiar to that district and that area, and for that reason it is necessary to deal specially with such inclusion and to provide special provisions and procedures for such inclusion and the necessary adjustment of district boundaries.

SECTION 4

(a) The definition of a word applies to any of its variants.

(b) The following words and phrases shall have the following meanings:

(l) "Accumulated overdraft" means the aggregate amount by which the quantity of ground water removed from the ground water supplies within the district during all preceding water years shall have exceeded the quantity of water replaced therein by the replenishment of the, ground water supplies in such water years by any natural or artificial means, based upon reports, records, and other data or evidence appropriate for the purpose of making such determination.

(2) "Administration division" means the budgeting and accounting division established by Section 9 which is primarily concerned with administration of the district and with obtaining and making available to the other divisions a supply of water.

(3) "Advisory commission" means the California District Securities Advisory Commission.

(4) "Agricultural division" means the budgeting and accounting division established by Section 9 which is primarily concerned with the supply of water for agricultural purposes.

(5) "Agricultural water" and "water used for agricultural purposes" shall mean water used primarily in the commercial production of agricultural crops or livestock on parcels of land of more than two acres and shall not include water used for agricultural product-processing purposes.

(6) "Annual overdraft" means the amount by which the production of water from the ground water supplies within the district during the water year exceeds the natural replenishment of such ground water supplies in such year.

(7) "Assessor" means the assessor of the county.

(8) "Auditor" means the auditor of the county.

(9) "Benefit review procedure" means the procedure set forth in subdivisions (g) through (i) of Section 28.

(10) "Board" means the board of directors of the Stockton-East Water District.

(11) "Board of Supervisors" means the board of supervisors of the county.

(12) "Collector" means the person appointed by the board to determine and collect the accounts due the district prior to their transfer to the auditor, as set forth in this act. The collector shall be appointed by the board and hold office at the pleasure of the board. The collector may hold other offices, including, but not limited to, the office of secretary, or may perform other duties for the district but shall not be a member of the board.

(13) "Committee" means a group of directors of the district consisting of three directors, one of whom shall be appointed chairperson by the president of the board, together with

an alternate member, which shall study particular areas and recommend policy to the full board. The members and alternate member shall be appointed by the president of the board. There shall be the Agricultural Operations Committee and the Municipal Operations Committee, and there may be such other committees as may be established by the board.
(14) "County" means the County of San Joaquin.
(15) "Delinquent account" means any sum or sums due the district from an owner as disclosed by an annual bill presented by the collector pursuant to Section 13 which is not paid within the times set forth in Section 15, together with all penalties applicable to such sum or sums pursuant to this act.
(16) "Delinquent landowner" means the owner or owners of a parcel of land upon which one or more delinquent water-producing facilities are located as such ownership is disclosed by the last equalized assessment roll of the county.
(17) "Delinquent parcel" means a parcel of land upon which one or more delinquent water-producing facilities are located.
(18) "Delinquent water-producing facility" means a water-producing facility for which payment is required by this act and for which payment in full, has not been received by the district within the times set forth in Section 15.
(19) "Director" means a member of the board.
(20) "District" means the Stockton-East Water District.
(21) "Division" means a division of the district established pursuant to the Water Conservation District Act of 1931, Division 21 (commencing with Section 74000) of the Water Code.
(22) "Domestic ground water" means water produced from the underground on any parcel of two acres or less where the water is used and disposed of on that parcel, and also means water produced from the underground and used for residential or commercial purposes on agricultural parcels larger than two acres.
(23) "Dry year" means any year in which the board determines that there may be insufficient quantities of surface water to meet the needs of users who are dependent upon surface water sources.
(24) "Full tax area" means any area within a planning area which has been excluded from the partial tax area; in the manner provided in subdivision (b) of Section 27.
(25) "Ground water" means potable water beneath the surface of the ground suitable for municipal, domestic and irrigation use.
(26) "Municipal division" means the budgeting and accounting division established by Section 9 which is primarily concerned with the supply of water for municipal and industrial purposes.
(27) "Municipal ground water" means water produced from the underground other than domestic ground water or agricultural ground water.
(28) "Owner" means the person or persons owning any water-producing facility or any interest therein other than a lien to secure the payment of a debt or other obligation. Unless there is filed with the district by an owner, information to the contrary, the district may presume that the owner of the parcel of land on which a water-producing facility is located is the owner of the water-producing facility.
(29) "Partial tax area" means all areas of the district which pursuant to the terms of subdivision (a) of Section 27 are not required to pay the taxes, assessments, and charges

specified in subdivision (a) of Section 27.
(30) "Person" means any public agency or public corporation, whether federal, state, or local, or any private corporation, firm, partnership, individual, or group of individuals.
(31) "Planning area" means any one of the planning areas mentioned in subdivision (a) of Section 24 or in Section 35.
(32) "Prior act" means Chapter 1775 of the Statutes of 1963, as amended.
(33) "Production" or "producing" means the diversion or taking of stream-delivered water or the extraction or extracting of ground water, by any means, for domestic, municipal, irrigation, industrial, or other beneficial use.
(34) "Revenue sources" means those sources of expected revenue which shall be used to establish a budget, respectively, for each of the administration, agricultural, and municipal divisions. These revenue sources for each division are as follows:

(i) Administration division: General property taxes, other general revenue sources which may be provided by state law, payments from other divisions, or other sources of revenue which may be established in the future by law or by rule of the board.

(ii) Agricultural division: Stream-delivered water charges, domestic ground water assessments, agricultural ground water assessments, penalties collected on such charges and assessments, and other sources of revenue which may be established in the future by law or by rule of the board.

(iii) Municipal division: Contract sales of treated surface water, contract sales of ground water, municipal ground water assessments, penalties collected on such sales and assessments, and other sources of revenue which may be established in the future by law or by rule of the board.

(35) "Stream delivered water" means surface water used for agricultural purposes and taken by an owner's water-producing facility directly from the Stockton Diverting Canal, the Calaveras River, the Old Calaveras River, Mosher Creek, Mormon Slough, Potter Creek, or any other watercourse within the district except those portions of any of the foregoing watercourses which are located within the boundaries of the Sacramento-San Joaquin Delta, as such boundaries are presently defined by Section 12220 of the California Water Code.
(36) "Tax collector" means the tax collector of the county.
(37) "Treasurer" means the treasurer of the county.
(38) "Water-producing facility" means any device or method, mechanical or otherwise, for the production of ground water from the ground water supplies within the district, or for the diversion of stream delivered water.

SECTION 5
In addition and supplemental to the powers conferred upon the district by the Water Conservation District Law of 1931, Division 21 (commencing with Section 74000) of the Water Code, and by all other laws applicable to the district, the district shall have power:
(a) To acquire, control, distribute, store, spread, sink, treat, purify, reclaim, recapture, process, and salvage any water, including sewage and storm waters for the beneficial use or uses of the district, its inhabitants, or the owners of the rights to water in the district.
(b) To sell treated and untreated water under its control to any municipal corporation, political subdivision of the State of California, public utility, or other person at such charges and rates

as shall be set by the board by contract, agreement, rule, or otherwise, for use within the district.
(c) Subject to the requirements of Section 6, to sell treated and untreated water under its control to any municipal corporation, political subdivision of the State of California, public utility, or other person for use outside the district.
(d) Within or outside the district to construct, purchase, lease, or otherwise acquire, and to operate and maintain, waterworks, water treatment plants, spreading grounds, pipelines, conduits, canals and other facilities for the distribution of water, pumps and other facilities for the production of water, dams, weirs, reservoirs, and other facilities, installations, works, equipment, and machinery useful or necessary to replenish the underground water basin within the district, to manage, for the purpose of repelling saline intrusion, the underground water basin within the district for the common benefit of the district, to augment the common water supplies of the district, or to otherwise provide water for the beneficial use or uses of the district, its inhabitants, or the owners of rights to water in the district.
(e) For the common benefit of the district to store water in underground water basins or surface reservoirs within or outside the district, to appropriate and acquire water or water rights within or outside the district, to purchase or import water into the district, and to conserve water within or outside the district.
(f) Subject to the provisions of Sections 9 to 19, inclusive, to levy and collect a ground water assessment for the production of water from the ground water supplies within the district, and to fix and collect charges for stream-delivered water and to require such measuring devices as may be necessary for the purposes of this act and to inspect and test any such measuring devices whether installed by the district or by others.
(g) To maintain reserve funds in amounts deemed advisable by the board for the purpose of water for replenishment purposes, the stream delivery of agricultural surface water, or for other district purposes.
(h) To acquire real and personal property and interests therein, but the district shall not exercise the power of eminent domain for any purpose of this act or in carrying out any power granted by this act outside the boundaries of the district unless the board of supervisors of the county in which the property to be acquired is located has consented to such acquisition.

SECTION 6
(a) The district may sell treated and untreated water under its control for use outside of the district only pursuant to a written agreement made as provided in this section.
(b) The district may make an agreement to sell water for use outside the district for periods not in excess of one year where the board prior to the district's agreement to sell such water has found and declared by resolution that such water is not required for use within the district during the period, not to exceed one year, for which the agreement is to be made. The board's resolution shall be adopted no earlier than three months preceding the commencement of the period for which the agreement is to be made. The price charged for water sold pursuant to an agreement made pursuant to this subdivision shall be sufficient to at least cover the costs of the district, as determined by the board, in furnishing and delivering the subject water to its point of delivery.
(c) The district may make agreements to sell water for use outside the district for periods in excess of one year if the board prior to the district's agreement to sell water has by resolution found and declared that the subject water will not be required for use within the district for the

period for which the agreement is made and declares that the sale of the water and its use in the manner provided in the applicable agreement is for the direct and substantial furtherance of the purposes of the district. The charge for water sold pursuant to an agreement made pursuant to this subdivision shall at least be sufficient to cover the costs of the district, as determined by the board, in furnishing and delivering such water to its point of delivery, plus the equivalent of all applicable ad valorem property taxes that would be assessed by district on the property upon which such water is to be used, or in the case of a sale to a political subdivision, municipal corporation, public utility, or other operator of a common water distribution system on all of the property served by such common water distribution system, if the subject property were included within the district during the period covered by the agreement.

(d) The district may make agreements to sell water that would not be otherwise owned or possessed by the district that comes into the district's possession due to provisions of a contract with another political subdivision that operate when such other political subdivision fails to pay for such water or the costs related to such water, on any basis the board determines if the board makes the determination that such water is not needed for sale within the district for the period of the agreement.

SECTION 7

The board shall, from time to time, order an investigation and report to be made by an engineer or engineers employed by the district for the purpose of investigating and reporting upon the ground water conditions of the district and making recommendations as to water management practices to be followed by the district. The report shall include an estimate as to the accumulated overdraft, if any, as of the date of the report, estimates of the ground water production anticipated by years for the period covered by the report, and an estimate of the average annual overdraft, if any, for the period covered by the report. The report shall also include recommendations as to necessary and desirable surface and underground water management practices to be followed during the period covered by the report.

SECTION 8

The engineering investigation and report shall be delivered to the secretary in writing. The secretary shall publish pursuant to Section 6061 of the Government Code a notice of the receipt of such report and fixing a date for a public hearing to be held by the board, the publication to be in a newspaper of general circulation, printed and published within the district, at least 10 days prior to the date at which the public hearing is to be held. The notice, among other information which the district may include, shall contain an invitation to all owners of water-producing facilities within the district and all other interested parties to call at the office of the district to examine the engineering investigation and report.

SECTION 9

(a) There are hereby established within the district, budgeting and accounting divisions as follows: administration, agricultural, and municipal. Each such budgeting and accounting division shall have established a separate budget, and separate accounts shall be kept of the revenues and expenditures for each division.

(b) Notwithstanding the establishment of such divisions, the board shall have authority to approve temporary transfers between divisions on such terms and with such repayment

provisions, as may be approved by the board.

SECTION 9.2
(a) The board at a regular, special, or continued meeting between November 1st and December 15th of each year shall hold a public hearing to consider the budget for each of the administration, agricultural and municipal divisions, and an overall budget for the district, for the next calendar year.
(b) Notice of the hearing shall be published pursuant to Section 6061 of the Government Code at least 10 days prior to the date of the hearing. Any person interested in the district may, in person or by representative, appear and submit evidence concerning the water conditions of the district, the financial needs of the district, proposals for rates, and other relevant matters.
(c) The board shall at the hearing receive recommendations from the. Agricultural Operations Committee as to the budget to be established for the agricultural division and from the Municipal Operations committee as to the budget to be established for the municipal division. Each of such committees shall also make recommendations to the board as to the budget of the administration division.
(d) Following the budget hearing by the full board, the board shall adopt by resolution prior to December 15 of each year a budget for the administration division, for the agricultural division for the municipal division and for the district overall.

SECTION 9.3
The rates to be established pursuant to Section 9.4 shall equitably divide the cost of meeting a balanced agricultural division budget among the sources of revenue for the agricultural division, but in a manner which will encourage the use of surface water available for agricultural use within the district.

SECTION 9.4
(a) The board at a regular, special, or continued meeting between March 15 and April 15 of each year shall hold a public hearing to consider the necessity, amount, and rates of a municipal ground water assessment, an agricultural ground water assessment, and a domestic ground water assessment, if any, to be levied for the then current calendar year and charges to be made for stream delivered water to the extent that such charges for stream delivered water are not controlled by contract or agreement.
(b) Notice of the hearing shall be published pursuant to Section 6061 of the Government Code at least 10 days prior to the date of the hearing. Any person interested in the district may, in person or by representative, appear and submit evidence concerning the water conditions of the district, the financial needs of the district, proposals for rates, and other relevant matters.
(c) Following the hearing, and prior to April 15 of that year, the board may, by adoption of an ordinance, determine, levy, and assess a municipal ground water assessment against all owners of water-producing facilities within the district which produce municipal ground water during the current year and an agricultural ground water assessment against all owners of water-producing facilities within the district which produce water from the ground during the current year for agricultural purposes and a domestic ground water assessment against all owners of water-producing facilities within the district which produce domestic ground water and shall determine and fix charges for stream delivered water for the current year to the extent that such charges for stream delivered water are not governed by contract or

agreement.
(d) The method of computing ground water assessments and charges for stream-delivered water may be uniform for all water-producing facilities or may be uniform for each of several classes of water-producing facilities. The board shall, by rule, establish one or more methods to be used in computing the amount of water production from a water-producing facility which is not measured by a water-measuring device approved by the collector. Such methods shall be established by rule adopted by the board and may be based on any criteria which may be used to determine or estimate with reasonable accuracy the amount of water production.
(e) The board, by rule, may waive any assessment upon any class or classes of water-producing facilities which it determines because of the small amount of water produced by such facilities, would yield to the district a sum less than the estimated cost of making and collecting the assessment.
(f) Any ground water assessment or charges for stream-delivered water levied or made pursuant to this section shall be in addition to any general assessment levied by the district.
(g) Clerical errors in the name of any owner or in other recorded information, or in the making or extension of any assessment upon the records which do not affect the substantial rights of the subject owner or owners shall not invalidate the assessment.
(h) The procedures established by Sections 9 to 9.4 inclusive, shall not be applicable for calendar year 1979. The rates for calendar year 1979 only are established as fol1ows:

(1) The domestic ground water assessment shall be ten dollars ($10) per domestic use unit, as such unit is established by the board.

(2) The rate for sales of stream-delivered water shall be seven dollars and sixty cents ($7.60) per acre-foot of water.

(3) The agricultural ground water assessment rate shall be one dollar and sixteen cents ($1.16) per acre-foot of water.

(4) The municipal ground water assessment rate shall be set at three dollars ($3) per acre-foot of water. It is not the intent of the Legislature that the rates set for 1979 shall serve as precedent for future rates.

(i) For calendar year 1980 and thereafter, water rates shall be established in accordance with Sections 9 to 9.4 except that no rate may be established in any calendar year which exceeds the individual rates set in paragraph (1), (2), or (3) of subdivision (h) by 20 percent plus a factor to reflect the percentage increase in the federal consumer price index with calendar year 1979 as a base; provided, however, that this subdivision (i) shall not be effective from and after the date of any election in which a majority of those electors voting approve a contract by the district for new supplement water or approve bonds for financing a distribution system for new supplemental water.
(j) During calendar year 1980 and thereafter, water rates shall be established by ordinance following public notice. Such ordinances shall be subject to referendum; provided, however, that no referendum shall modify or affect the terms of any bond resolution issuing bonds approved by the voters.

SECTION 10
All assessments and charges due for water produced within the district during the 1971 calendar year and for water produced within the district prior to 1971 shall be assessed, charged, calculated, determined, billed, and collected pursuant to the prior act and all applicable rules duly adopted by the board, and for those purposes the prior act shall remain

in effect until such sums have been collected in full or otherwise discharged in the manner provided by the prior act and the applicable rules duly adopted by the board.

SECTION 11

(a) Commencing with 1972, not later than the first day of October of each year the collector shall mail progress bills to each owner of one or more water-producing facilities within the district. The progress bills shall state an amount due which shall be computed by multiplying one-half of each owner's water production for the preceding calendar year in acre-feet by the respective ground water assessment rates and the stream-delivered water charges applicable for the current year.

(b) Any progress bill may be reduced in amount or canceled by the collector, if upon good cause shown, the collector determines that the production of water from the water-producing facility or facilities of the owner during the current year, to the date of the collector's determination, is such that a progress payment based on one-half of the preceding year's water production will be substantially in excess of one-half of such owner's next succeeding annual bill as the same will ultimately be determined pursuant to Sections 12, 13, and 14.

(c) The board may, by rule, establish alternate procedures for the computation and payment of progress bills in the case of water-producing facilities within the district, the water production of which is measured by a water measuring device approved by the collector.

(d) Should any owner of a water-producing facility fail to pay on or before the 31st day of October, or any alternate date specified in a rule adopted pursuant to subdivision (c) of this section, the amount disclosed by a progress bill the district shall impose a penalty against such owner in an amount of 5 percent of the total sum due the district for the current calendar year as such sum is finally determined in accordance with Sections 12, 13, and 14. The 5-percent penalty shall be added to the annual bill and shall be due and payable at the same time as the other amounts included in the annual bill.

(e) The board may, by rule, waive the requirement of making a progress payment as required by this section as to any one or more classes of water-producing facilities.

SECTION 12

(a) Commencing with 1973, each owner of one or more water-producing facilities within the district shall, after January 1st and not later than January 15th, file with the collector on a form acceptable to the collector a water use statement showing the amount of water produced by the water-producing facility or facilities of such owner in the case of facilities the water production of which is measured by a water-measuring device approved by the collector and as to all other facilities the information the collector determines to be reasonably necessary to permit the determination, or estimation with reasonable accuracy, of the amount of water produced during the preceding calendar year by the subject water-producing facility or facilities. The collector may require that all statements of fact in the water use statement be verified by a written declaration that they are made under the penalties of perjury.

(b) The board, by rule, may waive the filing of water use statements as to any one or more classes of water-producing facilities.

SECTION 13

(a) Commencing with 1973, not later than the last day of February, the collector shall mail an annual bill for the preceding calendar year to each owner of one or more water-producing

facilities within the district.

(b) The collector in preparing the annual bill for submission to each owner of water-producing facilities shall consider the information disclosed by the annual water use statement if one has been filed, the information disclosed by existing district records, district inspections, if any, of the water-producing facilities or the area served by such water-producing facilities, and any other information, of which the collector is aware and which is relevant to the amount of water production by each of the owner's water-producing facilities and shall determine the amount of each owners water production.

(c) In all cases where an annual water use statement has been filed and where a water-measuring device approved by the collector is permanently attached to a water-producing facility and the water production has been reported on the basis of the approved water-measuring device, the record of water production as disclosed by such water-measuring device shall be presumed to be accurate and the burden is upon the collector to establish to the contrary.

(d) The amount of the annual bill shall be computed by multiplying the production in acre feet of water as determined by the collector by the respective ground water assessment rates and stream-delivered water charges. After determining the amount due the collector shall add the penalty provided in Section 11, if applicable, and shall also add a penalty of 5 percent of the total sum due the district for water produced during the preceding year by any water-producing facility for which an annual water use statement was required and not filed within the time specified in Section 12.

(e) Upon the discovery by the collector of any water-producing facility within the district:

(1) For which no water use statement has been filed for any year in which the same was required by virtue of Section 12 and any applicable rules of the district and for which no annual bill was submitted pursuant to this section; or

(2) For which a water use statement was filed as required but for which the collector has good cause to believe that the production of water from such water-producing facility was in excess of that disclosed by a filed water use statement; or

(3) For which no water use statement was required to be filed by virtue of Section 12 and the applicable rules of the district but for which no annual bill has been submitted by the collector pursuant to this section; the collector shall immediately investigate and estimate the amount of unreported or unbilled water production by such water-producing facility. In making such estimate, as to cases arising under subparagraph (3) above, the estimate of prior water production shall not include water production for more than three (3) preceding calendar years.

(f) After making an estimate of water production pursuant to subdivision (e) of this section, the collector shall calculate the amount due for ground water assessments and stream-delivered water charges during the subject years at the rates applicable during those years, and add the amount so calculated as a separate item to the next annual bill submitted to the owner of such water-producing facility together with the penalties, if any, applicable pursuant to subdivision (d) of Section 11 and subdivision (d) of this section.

(g) After computing the amount of the annual bill the collector shall allow as a credit against the amount due, and show such allowance on the annual bill, the sums paid for the subject water-producing facilities as a result of the applicable progress bill or bills for the subject year.

SECTION 14
(a) An annual bill shall be conclusive on all persons having an interest in the subject water-producing facilities unless the owner files with the secretary on or before March 15th a written objection on forms made available by the district setting forth the owner's ground or grounds for objecting to the amount of current or prior, if any, production and the assessments, charges, and penalties so fixed.
(b) Upon the filing of an objection the secretary shall schedule a hearing on the objection before the board at which time the total amount of the water production and the ground water assessment and stream-delivered water charges thereon shall be determined together with any applicable penalties, which determinations by the board shall be conclusive if based upon substantial evidence.
(c) A notice of such hearing before the board shall be mailed to the objector at least 10 days before the date fixed for the hearing unless the form furnished by the district for the filing of the objection specifies the date, time, and place for the hearing.
(d) Notice of the final determination by the board as to his objection shall be mailed to each objector by the secretary.

SECTION 15
(a) All annual bills presented by the collector pursuant to Section 13 shall be due when mailed by the collector and shall be delinquent after April 30th with the exception of any bill as to which an objection has been filed pursuant to Section 14.
(b) Annual bills, as to which an objection is filed, shall become delinquent not later than April 30th, or 20 days from the date of mailing by the secretary to the owner a notice of the final determination by the board as to his objection, whichever is later.

SECTION 16
Any annual bill not paid when delinquent shall be subject, on the date of its delinquency, to a further penalty of 5 percent of the amount of the ground water assessment and stream-delivered water charges set forth in the annual bill.

SECTION 17
(a) Upon the delinquency of all or any portion of an annual bill the collector shall transmit to the secretary the amount of the delinquent account, together with the name of the delinquent landowner and the current description of the delinquent parcel as such is then disclosed by the applicable records of the assessor. The description provided for in this section shall be the description or other designation currently used by the assessor and shall include the tax account number and the code area of the delinquent parcel.
(b) The secretary shall maintain a list of delinquent accounts as furnished to him by the collector. If prior to the transmission of the list of delinquent accounts to the auditor pursuant to subdivision (d) of this section, all or any portion of a delinquent account is collected by the collector, the collector shall report such payment to the secretary and the secretary shall reflect such payment in his list of delinquent accounts.
(c) Annually as of August 1st the secretary shall add to each delinquent account then on the list of delinquent accounts a penalty of 5 percent of the sum of the ground water assessments and stream-delivered water charges included in each delinquent account.
(d) Annually after August 1st and on or before August 10th the secretary shall transmit a

certified copy of his current list of delinquent accounts to the auditor. The list of delinquent accounts may combine all assessments, charges, and penalties into a single sum due for each delinquent account.

(e) Upon receipt of the certified copy of the list of delinquent accounts, the auditor shall enter the amount of each delinquent account against the delinquent parcel designated in the list of delinquent accounts as such parcel appears on the then current assessment roll.

(f) The tax collector shall then include the amount of each delinquent account on bills for county taxes levied against the delinquent parcel.

(g) Thereafter the amount of each delinquent account shall be collected at the same time and in the same manner as county taxes are collected, and are subject to the same penalties and the same procedure and sale in case of delinquency, as provided for ordinary county taxes.

(h) Upon collection of delinquent accounts, within a reasonable time the auditor shall deposit the sums so collected to the account of the district, but the auditor may deduct, from time to time, an amount not to exceed one-quarter of 1 percent of the sums collected pursuant to this section to defray the costs of the county in processing such accounts.

(i) All laws applicable to the levy, collection, and enforcement of county taxes are applicable to such delinquent accounts so transmitted to the auditor pursuant to this section.

(j) All or any portion of any such delinquent accounts shall on order of the board of supervisors be canceled by the auditor if uncollected, or except in the case provided for in paragraph (5) of this subdivision, refunded by the treasurer out of district funds, if collected, if it or they were entered, charged, or paid:

(1) More than once;

(2) Through clerical error;

(3) Through the error or mistake of the collector, secretary, or board in respect to any material fact, in the course of establishing the amount of the assessments, charges, and penalties due upon said delinquent account under this act;

(4) Illegally; or

(5) On property acquired after the lien date by the State of California or by any county, city, school district, or other political subdivision of the State of California and because of such public ownership not subject to sale for delinquent taxes.

(k) No order for a refund under the subdivision (j) shall be made except on a claim:

(l) Verified by the person who paid said delinquent account and penalties or his guardian, conservator, executor, or administrator; and

(2) Filed within three years after making the payment sought to be refunded.

(l) The provisions of this subdivision do not apply to cancellation. The provisions of this Section 17 shall not be applicable to a delinquent parcel owned by the State of California or by any county, city, school district or other political subdivision of the State of California.

SECTION 18

The owner of any parcel of land within the district, two acres or more in size, on which no water is produced during any calendar year, shall file an annual report stating that no water was produced on the property during the subject calendar year. The annual report shall be filed annually on or before January 15th of each year for the immediately preceding calendar year.

SECTION 19
The board shall establish rules providing for the making of refunds in the event of the overpayment of any ground water assessment or stream-delivered water charges. Such rules shall provide that no overpayment shall be refunded unless a request for refund is filed with the secretary within three years of such overpayment, Such rules may provide for the payment of a fee to cover all or a portion of the district's costs in processing a request for refund.

SECTION 20
The district may bring a suit in any court of competent jurisdiction against any person or persons indebted to the district for the collection of any delinquent sums due the district for any ground water assessment, stream-delivered water charge, penalties, or charges due for any sale or use of water by contract, or otherwise. Should the district, as a provisional remedy in bringing suit, seek an attachment against any property of any named defendant therein, the district shall not be required to provide a bond or undertaking as is otherwise provided in Chapter 4 (commencing with Section 537) of Title 7 of Part 2 of the Code of Civil Procedure. All procedures and remedies applicable to the processing, collection, and enforcement of delinquent accounts and penalties granted to the district by this act or otherwise are alternative and the utilization of one such procedure shall not bar the use of another.

SECTION 21
Any person who injures, alters, removes, resets, adjusts, manipulates, obstructs or in any manner interferes or tampers with or procures or causes or directs any person to injure, alter, remove, reset, adjust, manipulate, obstruct or in any manner interfere or tamper with any water-measuring device affixed to any water producing facility as required by this act, so as to cause such water-measuring device to improperly or inaccurately measure and record such water production, is guilty of a misdemeanor and is punishable by a fine not to exceed five hundred dollars ($500) or imprisonment in the county jail not to exceed six months, or by both such fine and imprisonment.

SECTION 21.5
The board is authorized to establish a reserve fund financed by the transfer of up to ten cents ($0.10) for each acre-foot of water to which the ground water assessment rate or the stream-delivered surface water charges levied pursuant to subdivision (a) of Section 9, in addition to ten cents ($0.10) for each acre-foot of treated water sold by the district under either an existing or future water service contract executed pursuant to Section 6. Such amounts transferred into a reserve fund created pursuant to this section shall be a part of, and not in addition to, the above-referenced ground water assessment rates, stream-delivered surface water charges, and contract prices. The reserve fund established under the authority of this section shall be a limited-purpose reserve fund. Expenditures out of such fund shall only he made for the purpose of constructing, leasing or purchasing, maintaining, and operating ground water pumping facilities capable of delivering ground water into then existing district watercourses, water supply, or distribution facilities for the purpose of insuring the availability, to the extent possible, of a full supply of water to all users during dry years.

SECTION 22
The board is authorized to adopt the rules it deems necessary and proper for carrying out the provisions of this act, including but not limited to, rules providing that the district shall not deliver or make available water to water users who fail to pay for water when required by statute, contract, or rule.

SECTION 23
No rules shall be adopted by the board without first reviewing such at a public hearing held by the board. Notice of the public hearing shall be published pursuant to Section 6061 of the Government Code at least 10 days prior to the date of such a hearing and the notice shall contain a brief description of any rule to be considered at the hearing.

SECTION 24
(a) There is hereby included within the Stockton-East Water District the following territories:
(1) The North Stockton Planning Area which shall include the following territory:
Beginning at a point on the Stockton and East San Joaquin Water Conservation District boundary, said point being on the intersection of the North line of Township Two (2) North and the centerline of State Highway 99, said Stockton and East San Joaquin Water Conservation District boundary being described in notice of election for the organization of the Stockton and East San Joaquin Water Conservation District, said election being held on June 1, 1948; thence Southerly 3.5 miles, more or less, along said District boundary and along said centerline of State Highway 99 to intersection with the centerline of the Calaveras River; thence Westerly six (6 miles, more or less, along said District boundary and said centerline of the Calaveras River downstream to intersection with the centerline of the Stockton Deep Water Channel; thence leaving said District boundary Northwesterly one (1) mile, more or less, along said centerline of the Stockton Deep Water Channel to centerline Station 286+00, said Station 286+00 bearing Southwesterly 375 feet at right angles to said centerline from U.S.E.D., B.M. 4008; thence Northeasterly at right angle to said centerline 300 feet, more or less, to a point on the Southerly boundary of the Elmwood Tract; thence Easterly and Northerly along the Southerly and Easterly boundary of said Elmwood Tract 1.9 miles, more or less, to the point of intersection of said Easterly boundary with the Southerly levee of Fourteen Mile Slough (formerly called Twelve Mile Slough); thence North 500 feet, more or less, to the Stockton City Limits Line, said City Limits Line being along the centerline of said Fourteen Mile Slough; thence Westerly, Northwesterly, and Northeasterly 0.6 mile, more or less, along said City Limits Line and said centerline of Fourteen Mile Slough to a point on the West line of Section 19, Township 2 North, Range 6 East, Mount Diablo Base and Meridian; thence Northerly 0.5 mile, more or less, along said West line of Section 19 and said City Limits Line to the Southeasterly corner of Mitchell Slough-Wright Tract Annexation—A-7-67; thence along the City Limits Lines established by Annexation—A-7-67 and by Wright Tract Annexation—A-1-62 the following eight (8) courses, (1) South 57° 47’ 30” West 150 feet, more or less, to a point, said point being on the water toe of levee of said Fourteen Mile Slough, (2) South 57° 47’ 30” West 949.75 feet, (3) South 58° 35’ 30” West 1011.23 feet to a point on the centerline of an existing drainage ditch, (4) Northerly along said drainage ditch centerline to intersection with centerline of a 75 foot wide Pacific Gas & Electric Company easement, as described in deed recorded in

Book of Official Records, Volume 2076, Page 470, San Joaquin County Records, (5) continuing Northerly along said drainage ditch centerline to a point on the water toe of the South levee of said Fourteen Mile Slough, (6) meandering Easterly along said water toe of the South levee to intersection with centerline of said 75 foot wide Pacific Gas & Electric Company easement, (7) continue meandering Easterly along said water toe of said South levee to a point bearing South 45° 00' West from the Northwest corner of said-Section 19, and (8) North 45° 00' East to said Northwest corner of Section 19; thence Easterly 1900 feet, more or less, along the North line of said Section 19 and along Stockton City Limits Line to the Southeast corner of the Shima Tract thence leaving said City Limits Line Northerly 6600 feet, more or less, along the Easterly boundary of said Shima Tract to a corner thereof; thence Westerly 1500 feet, more or less, along the Northerly boundary of said Shima Tract to the Southeast corner of the Atlas Tract; thence Northerly 3,800 feet, more or less, along the Easterly boundary of said Atlas Tract to the Southwest corner of Section 6, Township 2 North, Range 6 East, Mount Diablo Base and Meridian; thence Northerly one (1) mile, more or less, along the West line of said Section 6 to the Northwest corner thereof; thence Easterly six (6) miles, more or less, along said North line of Township 2 North to the point of beginning, containing 20,200 acres, more or less.

(2) The Central Stockton Planning Area which shall include the following territory:
Beginning at the point of intersection of the centerline of the Calaveras River with the centerline of the Stockton Deep Water Channel; thence Southerly and Easterly along the Southerly and Westerly line of the Stockton and East San Joaquin Water Conservation District Boundary to the point of intersection of the North line of Section 23, C. M. Weber Grant with the Easterly line of McKinley Avenue, said Stockton and East an Joaquin Water Conservation District Boundary being described in Notice of Election for the organization of the Stockton and East San Joaquin Water Conservation District, said election being held on June 1, 1948; thence Southerly 0.5 mile, more or less, along the Easterly line of McKinley Avenue to intersection with the centerline of Duck Creek; thence Westerly 1.3 miles, more or less, along the centerline of said Duck Creek and along the centerline of Walker Slough and the Southwesterly projection of said centerline of Walker Slough to a point on the Southerly bank of French Camp Slough, said point being on the boundary of Reclamation District No. 17; thence Westerly one (1) mile, more or less, along said boundary of Reclamation District No. 17 to the right or Easterly bank of the San Joaquin River; thence Northwesterly 1.0 mile, more or less, downstream along the said right or Easterly bank of the San Joaquin River to a point bearing East 500 feet, more or less, from the Southeast corner of the 3.55 acre parcel of Oxidation Pond Annexation No. 3—A-1-66; thence West 500 feet, more or less, to said Southeast corner; thence Westerly 1.6 miles, more or less, along the Stockton City Limits Line to the Easterly line of Dagget Road; thence Northerly one (1) mile, more or less, along said Easterly line of Dagget Road and along the Stockton City Limits Line to a point on the centerline of Burns Cutoff; thence in a general Westerly, Northerly, and Northeasterly direction 3.09 miles, more or less, along said centerline of Burns Cutoff to intersection with said centerline of the Stockton Deep Water Channel; thence Southeasterly 0.1 mile, more or less, along said centerline of the Stockton Deep Water Channel to the point of beginning, containing 4,900 acres, more or less.

(3) The South Stockton Planning Area which shall include the following territory:
Beginning at the Northeast corner of Section 58, C. M. Weber Grant, said corner being a point on the boundary of the Central San Joaquin Water Conservation District; thence along said Central San Joaquin Water Conservation District boundary the following four (4) courses, (1) Southerly along the West line of Sections 68, 69, and 70 of said C. M. Weber Grant to the Southerly line of said Grant being also the North line of Section 28, Township 1 North, Range 7 East, Mount Diablo Base and Meridian; (2) Westerly along said Weber Grant line and along said North line of Section 28 to the Northwest corner of said Section 28; (3) Southerly along the West line of said Section 28 to intersection with the South line of Section 59, C. M. Weber Grant; and (4) Westerly along the said South line of Section 59 to a point on the Easterly right-of-way line of Highway 99; thence Southerly 3.4 miles, more or less, along said Easterly right-of-way line of Highway 99 to the intersection of said Easterly right-of-way with the Southwesterly boundary of French Camp Road, also known as French Camp Toll Road or Turnpike; thence Northwesterly 3 miles, more or less, along said Southwesterly boundary of French Camp Road to the Westerly right-of-way line Of the Western Pacific Railroad Company property; thence Southerly 1.8 miles, more or less, along said Westerly right-of-way to a point on the Southerly line of Section P of C. M. Weber Grant; thence Westerly 1.2 miles, more or less, along the South line of said C. M. Weber Grant to the Northeast corner of the Northwest ¼ of the Northwest ¼ of Section 14, Township 1 South, Range 6 East, Mount Diablo Base and Meridian, said corner being a point in the boundary of Reclamation District No. 17; thence Westerly 0.75 mile, more or less, along the boundary of said Reclamation District No. 17 to the Southeast corner of fractional Section 10 of said Township and Range and being the Southwest corner of the C.M. Weber Grant; thence along the boundary of said Reclamation District No. 17 and the boundary of said C. M. Weber Grant the following four (4) courses, (1) Northerly 232.41 chains, more or less, along the Easterly boundary of fractional Sections 10 and 3 of said Township and Range and along the Easterly boundary of fractional Section 34, Township 1 North, Range 6 East, Mount Diablo Base and Meridian to the Northeast corner of said fractional Section 34, (2) East 20 chains, (3) North 40 chains, and (4) East 1076 feet; thence leaving said C. M. Weber Grant boundary and continuing along the boundary of said Reclamation District No. 17 the following five (5) courses, (1) North 255.64 feet, (2) North 89° 15' East 364.98 feet, (3) North 66° 30' East 1246.34 feet to a point on the West line of said French Camp Road, (4) Northerly 1850 feet, more or less, along said West line of French Camp Road to the South bank of French Camp Slough, and (5) Westerly 0.75 mile, more or less, downstream along the Southerly bank of French Camp Slough to the intersection of said Reclamation District No. 17 boundary with the Southwesterly projection of the centerline of Walker Slough; thence Easterly 1.5 miles, more or less, along said centerline of Walker Slough and the centerline of Duck Creek to the Easterly line of McKinley Avenue; thence Northerly 0.3 mile, more or less, along said Easterly line of McKinley Avenue to a point of intersection with the North line of Section 23, C. M. Weber Grant, said point being on the Southerly boundary of the Stockton and East San Joaquin Water Conservation District; thence Easterly 3.6 miles, more or less, along said Southerly boundary of said Stockton and East San Joaquin Water Conservation District to the point of beginning, containing 12,800 acres, more or less.

(b) The inclusion of each of such three planning areas (the North Stockton Planning Area, the Central Stockton Planning Area, and the South Stockton Planning Area) shall occur and be complete for all purposes, subject to Section 26, unless on or before the 60th day after the effective date of this act there is filed with the secretary of the district, at the district's office, a petition requesting an election signed by at least 25 percent of the registered voters in such planning area.
(c) A petition may consist of any number of separate instruments, which identify the planning area to which it is applicable and shall contain a request that an election shall be held to determine whether such planning area shall be included within the district.
(d) Within 20 days of the date of the filing of such a petition the secretary of the district shall examine the same and ascertain whether or not such petition is signed by the requisite number of voters.
(e) When the secretary of the district has completed his examination of the petition he shall attach to the same his certificate properly dated showing the result of such examination, and if from such examination he finds that such petition is signed by the requisite number of voters or is not so signed, he shall certify that the same is sufficient or insufficient, as the case may be.
(f) If such petition is sufficient the proposition of whether or not the subject planning area shall be included within the district shall be submitted to the vote of the voters in the subject planning area at an election called by the board and held within 70 days after the filing of a sufficient petition requesting an election.
(g) The manner of holding and conducting the election, the selection of officers to conduct it, the designation of precincts and polling places, the preparation, receipt, counting, and returning of ballots, and the canvassing and determining results of the election shall be as provided in Chapter 3 (commencing with Section 74790) of Part 6 of Division 21 of the Water Code, and in particulars not so provided shall be in accordance with the general laws of the state relative to elections at which propositions are submitted and voted upon.
(h) Upon the canvassing of the votes cast in the election if it appears that a majority of all votes cast are in favor of the inclusion of the subject planning area, then the inclusion of the subject planning area shall occur and be considered completed at the conclusion of the canvass, subject to the provisions of Section 26. Upon the canvassing of the votes cast in the election if it appears that a majority of all votes cast are against the inclusion of the subject planning area within the district, the inclusion shall be of no force and effect.
(i) If on or before the 60th day after the effective date of this act sufficient petitions have been filed with the secretary of the district requesting elections in more than one planning area, then the question of such inclusion shall be submitted to the vote of the voters in each of the subject planning areas at an election called and held on the same day.
(j) The secretary of the district may contract with the County Clerk of San Joaquin County to perform any of the duties imposed upon the secretary by this section. In such cases the costs of the county clerk in connection with such duties shall be paid by the district.

SECTION 25
(a) There is hereby excluded from the Central San Joaquin Water Conservation District the following territory:
Beginning at the intersection of the North line of Section 24, C. M. Weber Grant, with the Easterly line of the Tidewater and Southern Railroad, and being a point on the Central San

Joaquin Water Conservation District Boundary; thence along said Central San Joaquin Water Conservation District Boundary the following five (5) courses, (1) Southeasterly along the Easterly boundary of said railroad to its intersection with the North line of Section 39, C. M. Weber Grant, (2) Northeasterly along the Northerly line of said Section 39 and its extension to a point on the West line of fractional Section 5, Township 1 South, Range 7 East, Mount Diablo Base and Meridian, (3) Southerly along said Westerly line of fractional Section 5 and the Easterly line of C. M. Weber Grant to the North line of the property conveyed to Joe Marchesotti, a married man, by Deed recorded January 8, 1957 in Book of Official Records, Volume 1933, Page 221, San Joaquin County Records, (4) Easterly along the North line of said Marchesotti property to the Easterly line of Highway 99, and (5) Northerly along said Easterly line of Highway 99 to the intersection of the North line of Section 4, Township 1 North, Range 7 East, Mount Diablo Base and Meridian; thence leaving said Central San Joaquin Water Conservation District Boundary Northerly along said Easterly line of Highway 99 to its intersection with the Southerly line of Section 59, C. M. Weber Grant and being a point on the Northerly boundary of said Central San Joaquin Water Conservation District; thence along said Central San Joaquin Water Conservation District Boundary the following six (6) courses, (1) Westerly along the Southerly lines of Sections 59 and 48 of C. M. Weber Grant to the Southwest corner of said Section 48, (2) Northerly along the West line of said Section 48 and Section 47 of said C. M. Weber Grant to the Northeast corner of land described in Deed to John S. Ladd, Jr. recorded September 17, 1947 in Book of Official Records, Volume 1082, Page 344, San Joaquin County Records, (3) South 72’ 35’ West along the North line of said Ladd land 35 chains, (4) South 73° 10’ West 34.72 chains to a point on the West line of Section 35, C. M. Weber Grant, (5) Southerly along said West line of Section 35 to the Northeast corner of said Section 24, C. M. Weber Grant, and (6) Westerly along the Northerly line of said Section 24 to the point of beginning, containing 3150 acres, more or less.

(b) Such exclusion shall take effect at the same time that the inclusion of the South Stockton Planning Area takes effect, and if the inclusion of the South Stockton Planning Area is of no force and effect by virtue of an election held pursuant to Section 24, such exclusion from the Central San Joaquin Water Conservation District shall similarly be of no force and effect.

(c) The inclusion of territory into the district pursuant to this act, except as specifically provided in this section, shall have no effect upon the continuing inclusion of the subject territory in other water conservation districts or in any irrigation district or any other special districts.

SECTION 26

(a) After the time for filing petitions pursuant to Section 24 has expired or an election has been held pursuant to Section 24, as the case may be, the board shall adopt a resolution confirming the inclusion of any planning area within the district pursuant to Section 24 and the exclusion of territory from the Central San Joaquin Water Conservation District pursuant to Section 25 if such inclusion and exclusion has not been disapproved at an election held pursuant to Section 24, and the secretary shall then prepare and execute a certificate of completion. Such certificate shall contain the following:

(1) The name of each district affected.

(2) A description of any territory included in the district and any territory excluded from the Central San Joaquin Water Conservation District, which descriptions may be made by

reference to the boundary shown on a map attached to such certificate.

(3) The date of adoption of the resolution confirming the inclusion and exclusion.

(4) A statement of the fact that the territory included shall be subject to a one-half-mill tax rather than the tax permitted by Section 75357 of the Water Code, as provided in Section 27.

(b) The secretary shall file his certificate of completion with the Secretary of State. Thereupon the Secretary of State shall execute a certificate of filing identifying the certificate of completion filed with him and stating the date of such filing. The Secretary of State shall transmit to the secretary a counterpart original of the certificate of filing.

(c) After receipt of the Secretary of State's certificate of filing, the secretary shall file with the County Recorder of the County of San Joaquin:

(1) A counterpart original of the secretary's certificate of completion; and

(2) The original or a counterpart original of the Secretary of State's certificate of filing.

(d) After recordation of the secretary's certificate of completion the Recorder of the County of San Joaquin shall file with the County Surveyor of the County of San Joaquin a copy of each of the boundary descriptions included in the certificate of completion.

(e) Any inclusion or exclusion confirmed by resolution of the board adopted pursuant to this section shall be completed from the date of filing the certificate of completion with the Secretary of State and shall be effective upon the date of the recordation made with the county recorder.

(f) The secretary shall also make such filings as may be provided for by Chapter 8 (commencing at Section 54900) of Part 1 of Division 2 of Title 5 of the Government Code, and for such purpose the inclusion and exclusion shall be deemed to be effective from the date of filing of the certificate of completion with the Secretary of State.

SECTION 27

(a) Upon the effective date of the inclusion of a planning area into the district pursuant to this act, each planning area shall thereafter be treated in all respects as a part of the district, except that the following special provisions shall apply within each planning area included within the district:

(1) The assessment permitted by Section 75357 of the Water Code shall not exceed one-half mill ($0.0005) on each one hundred cents ($1) of the assessed value of the lands within such planning area according to the last assessment rolls instead of the maximum two and one-half mills ($0.0025) permitted by Section 75357 of the Water Code.

(2) No ground water assessment or stream-delivered water charge shall be levied.

(b) A parcel of land within a planning area shall cease to be excluded from the full taxes, assessments, and charges as such exclusions are set forth in subdivision (a) in the event of either of the following:

(1) A parcel within a planning area is within the service area of a publicly or privately owned water utility which distributes domestic and industrial water which is all or in part furnished to such utility as treated surface water by the district; or

(2) The independent benefit commission pursuant to procedures set forth in Section 28 determines that a subject parcel is receiving a substantial benefit from district operations.

(c) In the case of the North Stockton Planning Area, the Central Stockton Planning Area, and the South Stockton Planning Area, no removal from the partial tax area shall take effect for any purpose prior to July 1, 1974.

(d) As used in this act "substantial benefit", means an actual raising by prior district operations, of ground water levels under a subject parcel or the actual retarding, by prior district operations, of the lowering of ground water levels under a subject parcel.
(e) Whenever one or more parcels are transferred from a partial tax area to a full tax area, the secretary shall file a statement as to all parcels which are transferred to a full tax area, as required by Chapter 8 (commencing at Section 54900) of Part 1 of Division 2 of Title 5 of the Government Code.
(f) After a parcel has been excluded from a partial tax area such exclusion shall be permanent.

SECTION 28
(a) If any one or more of the planning areas are finally included within the district, then following such final inclusion the board shall give written notice to the California District Securities Advisory Commission, and the advisory commission shall thereupon appoint a three-member commission, one of whom shall be a civil engineer whose practice encompasses irrigation, and one of whom shall be a civil engineer whose practice encompasses municipal water supply. Such independent benefit commission shall serve at the pleasure of the advisory commission. When a vacancy occurs in the membership of the independent benefit commission the secretary shall give notice to the advisory commission, and the advisory commission shall promptly appoint a successor. If the advisory commission fails to appoint a successor or to initially appoint the three members of the independent benefit commission, then after 60 days notice in writing to the advisory commission by the board, the board may fill such vacancy or make such appointments and the person so appointed by the board shall serve until such time as they are replaced by the advisory commission. The advisory commission may charge the district for the actual cost of performing the services required of the State Treasurer by this section.
(b) It shall be the duty of the independent benefit commission from time to time, in the manner set forth in this section, to determine whether a parcel within a planning area is receiving a substantial benefit from district operations.
(c) No member of the independent benefit commission shall have any interest in any land in the district, either directly or indirectly.
(d) Each member of the independent benefit commission, before entering upon his duties, shall take and subscribe an oath that he is not in any manner interested either directly or indirectly in any land in the district, and that he will perform the duties of commissioner to the best of his ability.
(e) The members of the independent benefit commission shall be paid by the district compensation for the services rendered by them in the amount or amounts fixed by the State Treasurer from time to time.
(f) The members of the independent benefit commission, upon their appointment and thereafter from time to time, shall select one of their members as chairman.
(g) Within 60 days of its appointment, and thereafter as provided in subdivision (j) of this section, the independent benefit commission shall meet at the district office. At the time of such initial meeting and thereafter as requested by the independent benefit commission the board shall furnish or make available to the independent benefit commission all data and information possessed by the district and which in the judgment of the independent benefit commission is relevant to the determinations to be made by it.
(h) After its initial meeting the independent benefit commission within the next succeeding

120 days shall determine which parcels within the partial tax areas are receiving a substantial benefit by the operations of the district and shall prepare a preliminary report of its findings. Upon its completion the preliminary report of the independent benefit commission shall be delivered to the secretary in writing. Such preliminary report shall list and identify each parcel which the independent benefit commission has determined is receiving a substantial benefit from district operations by the current description of such parcel as such description is then disclosed by the applicable current records of the assessor, and accordingly should be transferred from the partial tax area to the full tax area, Upon receipt of such preliminary report of the independent benefit commission the secretary shall publish pursuant to Section 6061 of the Government Code a notice of the receipt of such preliminary report. Such notice shall fix a date for a public hearing to be held on the report. Such publication shall be by a display advertisement in a newspaper of general circulation printed and published within the district, at least 20 days prior to the date at which the public hearing is to be held. The notice, among other information, shall contain an invitation to all interested persons to call at the office of the district and to examine said report of the independent benefit commission. At the time appointed in the notice, the independent benefit commission shall meet in the district office and hold a public hearing on its preliminary report. At the hearing any person interested in the district, including the board and members of the board, may, in person or by representative, appear and submit evidence concerning the matters contained in the preliminary report and the matters pending before the independent benefit commission. Within 30 days of the conclusion of its public hearing the independent benefit commission shall deliver its final report to the secretary.

(i) Upon receipt of the final report of the independent benefit commission the secretary shall publish a notice that such final report has been received and that the same is available for inspection by all interested persons at the office of the district. The notice shall be published pursuant to Section 6061 of the Government Code by display advertisement in a newspaper of general circulation printed and published within the district, and shall advise interested persons of their right to request review pursuant to this paragraph. Within 30 days of the publication of the notice required by this paragraph any person interested in a parcel affected by the final report of the independent benefit commission who is dissatisfied with the action of the independent benefit commission in connection with such parcel may file a request for review in writing on forms provided by the secretary requesting review by the board of the action of the independent benefit commission as to the parcel in which such person is interested. Upon the filing of a request for review the secretary shall set the matter for hearing by the board. At least 20 days prior to the hearing the secretary shall mail notice of such hearing to the person or persons requesting review. At the hearing the board shall hear evidence concerning the subject parcel and whether it is receiving a substantial benefit by the operations of the district. At the conclusion of the hearing the board may modify the report of the independent benefit commission by excluding one or more parcels from the list of parcels to be transferred from the partial tax area to the full tax area, but the board shall have no power to include any parcel within the full tax area which was not initially so included by the final report of the independent benefit commission. A final report of the independent benefit commission shall be final and shall take effect for all purposes upon either the expiration of 30 days after the publication of the notice provided for in this subdivision or upon the final action of the board in modifying the final report or determining not to modify the final report following the public hearing of the board in the event of the filing of a request for review

pursuant to this subdivision.
(j) After the initial hearing of the independent benefit commission so long as any portion of the district is not within the full tax area the independent benefit commission shall again hold an initial meeting as provided in subdivision (i) of this section during the fifth year next succeeding the year of the final adoption of the last final report of the independent benefit commission or at more frequent intervals upon written request of the board, and after such initial meeting shall proceed to the adoption of a new final report of the independent benefit commission in the manner set forth in subdivisions (g) to (i), inclusive, of this section.

SECTION 29
Failure of the district at any time to take action to collect any delinquent replenishment assessment or charge shall not be a waiver of the right of the district to collect such account at any time in the future by the utilization of such procedures and remedies as are granted to the district by this act.

SECTION 30
Whenever the district is required to mail any bill or notice to any owner the requirement of mailing shall be satisfied by deposit of such bill or notice in any postal facility regularly maintained by the government of the United States, with postage paid, addressed to the owner at his address as disclosed by the most recent record of the district. If the records of the district do not contain an address for such owner, such mailing shall be to his address as disclosed by the most recent equalized tax roll of the county. Any owner may, from time to time, file notices of change of address with the district.

SECTION 31
Notwithstanding Section 74223 of the Water Code and any other provisions of law in conflict with this section, the board shall hold regular meetings on the third Tuesday of each month. The board may by resolution change the frequency of, and the day for, holding regular meetings. Notice of any such change shall be published once a week for at least two consecutive weeks before the time for a regular meeting on the new meeting date in a newspaper of general circulation circulated in the district.

SECTION 32
Notwithstanding Section 74091 of the Water Code and any other provisions of law in conflict with this section, one director, who shall be an elector of the division in which such director resides, shall be elected for such division, by vote of the electors of the entire district, This section shall be applicable to voting at any district election held after January 1, 1972.

SECTION 33
The boundaries of the divisions of the district are relocated as follows:

Division No. 1

Beginning at a point on the Stockton and East San Joaquin Water Conservation District boundary, said point being the Southwest corner of the Northeast ¼ of Section 25, Township 2 North, Range 8 East, Mount Diablo Base and Meridian, said Stockton and East San Joaquin

Water Conservation District boundary being described in notice of election for the organization of the Stockton and East San Joaquin Water Conservation District, held June 1, 1948; thence along said Stockton and East San Joaquin Water Conservation District boundary the following thirty-five (35) courses, (1) East 1.0 mile, more or less, along the South line of the Northeast ¼ of said Section 25 and along the South line of the Northwest ¼ of Section 30, Township 2 North, Range 9 East to the center of said Section 30, (2) North 2½ miles, more or less, along the half section line running North and South through Sections 30, 19, and 18, Township 2 North, Range 9 East to the Southwest corner of the Southeast ¼ of Section 7, Township 2 North, Range 9 East, (3) East ½ mile, more or less, along the South line, of said Section 7 to the Southeast corner thereof, (4) North ¼ mile, more or less, along the East line of said Section 7 to the Southwest corner of the Northwest ¼ of the Southwest ¼ of Section 8, Township 2 North, Range 9 East, (5) East ¼ mile, more or less, along the South line of said Northwest ¼ of the Southwest ¼ of said Section 8 to the centerline of the Escalon-Bellota Road, (6) North ¼ mile, more or less, along said centerline of the Escalon-Bellota Road to its intersection with the South line of the North one-half of said Section 8, (7) East ¾ mile, more or less, along the South line of the North ½ of said Section 8 to the Southeast corner of the North ½ of said Section 8, (8) North ¼ mile, more or less, along the East line of Section 8 to the Southwest corner of the Northwest ¼ of the Northwest ¼ of Section 9, Township 2 North, Range 9 East, (9) East ¼ mile, more or less, along the South line of the Northwest ¼ of the Northwest ¼ of Section 9 to the Southeast corner thereof in the center of the Gilmore Road No.616, (10) North along the ¼, ¼ section line and along the center of said Gilmore Road No. 616 to a point 300.0 feet Southerly from the South line of Section 4, Township 2 North, Range 9 East, Mount Diablo Base and Meridian, (11) East 750.0 feet, (12) North 300.0 feet to a point on said South line of Section 4, (13) East along the South line of Section 4 to the Southeast corner of the Southwest ¼ of said Section 4, (14) North ½ mile, more or less, along the East line of the Southwest ¼ of Section 4 to the center of said Section 4, (15) East ½ mile, more or less, along the South line of the Northeast ¼ Section 4 to the Southeast corner of the Northeast ¼ of said Section 4, (16) North ½ mile, more or less, along the East line of said Northeast ¼ of Section 4 to the Southwest corner of Section 34, Township 3 North, Range 9 East, (17) East 1.0 mile, more or less, along the South line of Section 34 to the Southeast corner thereof, (18) South, along the West line of Section 2, Township 2 North, Range 9 East, to the center of the Bellota River Road, (19) Northeasterly along the center of said road to the East line of the Northwest ¼ of said Section 2, (20) North along said East line of the Northwest ¼ of said Section 2 to the Southwest corner of the Southeast ¼ of Section 35, Township 3 North, Range 9 East, (21) East $\frac{5}{16}$ mile, more or less, along the South line of Section 35 to the center of the Bellota River Road, (22) Northeasterly ¾ mile, more or less, along the center of said road to a point on the South line of the North ½ of Section 36, Township 3 North, Range 9 East, Mount Diablo Base and Meridian, (23) East ⅝ mile, more or less, along the South line of said North ½ of Section 36 to the County line between San Joaquin and Stanislaus Counties, (24) North ½ mile, more or less, along said County line to the corner common to San Joaquin, Stanislaus and Calaveras Counties, (25) Northwesterly ½ mile, more or less, along County Line between San Joaquin and Calaveras Counties to its intersection with the North line of the South ½ of Section 25, Township 3 North, Range 9 East, (26) West, along said North line to the Northwest corner of the Southwest ¼ of said Section 25, (27) South ½ mile, more or less, to the Southwest corner of said Section 25, (28) West ½ mile, more or less, to the Northwest corner of the Northeast,

¼ of Section 35 of Township 3 North, Range 9 East, (29) South ¼ mile, more or less, to the Northeast corner of the South ½ of the Northwest ¼ of said Section 35, (30) West ½ mile, more or less, to the Northwest corner of said South ½ of the Northwest ¼ of said Section 35, (31) South ¼ mile, more or less, to the Northeast corner of the South ½ of Section 34, Township 3 North, Range 9 East, (32) West 1½ miles, more or less, to a point in the center of the Linden Road at the center of Section 33, (33) Westerly ½ mile, more or less, along the center of said Linden Road to its intersection with the West line of Section 33, Township 3 North, Range 9 East, (34) South ½ mile, more or less, along the West line of Section 33 to the Northeast corner of Section 5, Township 2 North, Range 9 East, (35) West 3¼ miles, more or less, along the North line of Sections 5 and 6 of Township 2 North, Range 9 East, and the North line of Sections 1 and 2 of Township 2 North, Range 8 East to the Southwest corner of the East ½ of the East ½ of Section 35, Township 3 North, Range 8 East to a point on the boundary of that certain petition dated May 14, 1953, for inclusion in the Stockton and East San Joaquin Water Conservation District; thence along the boundary described in said petition, dated May 14, 1953 the following eighteen (18) courses, (1) Northerly ¾ mile, more or less, along the Westerly line of said East ½ of the East ½ of said Section 35 to the Northeast corner of the Southwest ¼ of the Northeast ¼ of said Section 35, (2) Westerly 418.3 feet along the North line of the Southwest ¼ of the Northeast ¼ of said Section 35, (3) Northerly ¼ mile, more or less, along a line parallel with, 418.3 feet Westerly of, measured at right angles to the West line of the Northeast ¼ of the Northeast ¼ of said Section 35 to intersection with the North line of said Section 35, (4) Westerly 1072.5 feet, more or less, along the North line of said Section 35 to the Northwest corner of the East 5 acres of the Northeast ¼ of the Northwest ¼ of said Section 35, (5) Southerly along the West line of said 5 acre tract to intersection with the North line of the Southeast ¼ of the Northwest ¼ of said Section 35, (6) Westerly along said North line to the Northwest corner of the Southeast ¼ of the Northwest ¼ of said Section 35, (7) Southerly 2645 feet, more or less, along the West line of the East ½ of the West ½ of said Section 35 to the Northeast corner of the Southwest ¼ of the Southwest ¼ of said Section 35, (8) Westerly 1324.5 feet, more or less, along the North line of the Southwest ¼ of the Southwest ¼ of said Section 35 to the Northwest corner of said Southwest ¼ of the Southwest ¼ of said Section 35, (9) Northerly 1 ¼ miles, more or less, along the East line of Sections 34 and 27, Township 3 North, Range 8 East, Mount Diablo Base and Meridian, to the Northeast corner of the Southeast ¼ of said Section 27, (10) Westerly ¼ mile, more or less along the North line of said Southeast ¼ to the Northwest corner of the Northeast ¼ of said Southeast ¼, (11) Southerly ⅛ mile, more or less, along the West line of the Northeast ¼ of the Southeast ¼ of said Section to the Southeast corner of the Northeast ¼ of the Northwest ¼ of the Southeast ¼ of said Section 27, (12) Westerly $^{1}/_{16}$ mile, more or less, along the South line of the Northeast ¼ of the Northwest ¼ of the Southeast ¼ of said Section to the Northwest corner of the East ½ of the Southwest ¼ , of the Northwest ¼ of the Southeast ¼ of said Section 27, (13) Southerly ⅓ mile, more or less, along the West line of the East ½ of the Southeast ¼ of the Northwest ¼ of the Southeast ¼ of said Section to the Southwest corner thereof, (14) Westerly $^{1}/_{16}$ mile, more or less, along the North line of the East ½ of the Southwest ¼ of the Southeast ¼ of said Section 27 to the Northwest corner thereof, (15) Southerly ¼ mile, more or less, along the West line of the East ½ of the Southwest ¼ of the Southeast ¼ to the Southwest corner thereof, (16) Westerly ⅞ mile, more or less, along the North line of Sections 34 and 33, Township 3 North, Range 8 East, Mount Diablo Base and Meridian to the Northwest corner of the Northeast ¼ of the

Northeast ¼ of said Section 33, (17) Southerly ¼ mile, more or less, along the West line of the Northeast ¼ of the Northeast ¼ of said Section to the Southwest corner thereof, and (18) Westerly ¼ mile, more or less, along the South line of the Northwest ¼ of the Northeast ¼ of said Section to the Southwest corner thereof being a point on said Stockton and East San Joaquin Water Conservation District boundary; thence along last said boundary the following four (4) courses; (1) Northerly ¼ mile, more or less, along the East line of the Northwest ¼ of said Section 33 to the Northeast corner of said Northwest ¼ , (2) Westerly ½ mile, more or less, along the North line of said Northwest ¼ to the Northwest corner thereof, (3) Northerly ½ mile, more or less, along the East line of the Southeast ¼ of Section 29, Township 3 North, Range 8 East to the Northeast corner of said Southeast ¼, and (4) Westerly ½ mile, more or less, along the North line of said Southeast ¼ to the Northwest corner thereof being a point on the centerline of Tully Road; thence leaving said Stockton and East San Joaquin Water Conservation District boundary the following seven (7) courses, (1) Southerly 2½ miles, more or less, along said centerline of Tully Road to intersection with the centerline of Comstock Road, said intersection being at the Southeast corner of the West ½ of Section 5, Township 2 North, Range 8 East, Mount Diablo Base and Meridian, (2) Westerly ¼ mile, more or less, along said centerline of Comstock Road to intersection with Tully Road at the Northeast corner of the West ½ of the West ½ of Section 8, Township 2 North, Range 8 East, Mount Diablo Base and Meridian, (3) Southerly 1.0 mile, more or less, along said centerline of Tully Road to intersection with the centerline of Baker Road at the Southeast corner of said West ½ of the West ½ of Section 8, (4) Easterly 3.0 miles, more or less, along said centerline of Baker Road and the ½ mile extension thereof to intersection with the centerline of Wall Road and being at the Southeast corner of the West ½ of the West ½ of Section 11, Township 2 North, Range 8 East, Mount Diablo Base and Meridian, (5) Southerly ½ mile, more or less, along said centerline of Wall Road to intersection with the centerline of Linden Road, (6) Northeasterly 1.3 miles, more or less, along said centerline of Linden Road to intersection with the centerline of Fine Road and (7) Southerly 2½ miles, more or less, along said centerline of Fine Road to the point of beginning.

Division No. 2

Beginning at a point on the Stockton and East San Joaquin Water Conservation District boundary, said point being the Southwest corner of fractional Section 1, Township 1 North, Range 7 East, Mount Diablo Base and Meridian, and being a point on the Easterly boundary of C. M. Weber Grant, said Stockton and East San Joaquin Water Conservation District boundary being described in notice of election for the organization of the Stockton and East San Joaquin Water Conservation District, held June 1, 1948; thence along said Stockton and East San Joaquin Water Conservation District boundary the following seven (7) courses, (1) Easterly ½ mile, more or less, along the Southerly line of said fractional Section 1 to the Southeast corner thereof, said corner being on the centerline of Jack Tone Road, (2) Easterly 4.0 miles, more or less, along the South lines of Sections 6, 5, 4, and 3, Township l North, Range 8 East, to the Southeast corner of said Section 3, (3) Northerly 1.0 mile, more or less, along the East line of said Section 3 to the Southwest corner of Section 35, Township 2 North, Range 8 East, being a point on the centerline of Copperopolis Road, (4) Easterly 1.0 mile, more or less, along the South line of said Section 35 and being along said centerline of Copperopolis Road to the Southeast corner of said Section 35 (5) Northerly ½ mile, more or

less, along the East line of said Section 35 to the Southwest corner of the Northwest ¼ of Section 36, Township 2 North, Range 8 East, (6) Easterly ½ mile, more or less, along the South line of said Northwest ¼ to the center of said Section 36 and being a point on the centerline of Fine Road, and (7) Northerly 1.0 mile, more or less, along the ¼ section line of Sections 36 and 25, Township 2 North, Range 8 East and along said centerline of Fine Road to the center of Section 25, Township 2 North, Range 8 East; thence leaving said Stockton and East San Joaquin Water Conservation District boundary the following nine (9) courses, (1) Northerly 2½ miles, more or less, along the said centerline of Fine Road to intersection with the centerline of Linden Road, (2) Southwesterly 1.3 miles, more or less, along said centerline of Linden Road to intersection with the centerline of Wall Road, (3) Northerly ½ mile, more or less, along said centerline of Wall Road to intersection with the Easterly projection of the centerline of Baker Road at a point being the Northeast corner of the West ½ of the Northwest ¼ of Section 14, Township 2 North, Range S East, (4) Westerly 3¼ miles, more or less, along said Easterly projection and said centerline of Baker Road to the Northwest corner of Section 17, Township 2 North, Range 8 East, said projection and said centerline of Baker Road being along the North lines of Sections 14, 15, 16, and 17, Township 2 North, Range 8 East, (5) Southerly 1.7 miles, more or less, along the West lines of Sections 17 and 20 to a point on the said centerline of Linden Road, (6) Southwesterly 3.7 miles, more or less, along said centerline of Linden Road to intersection with the centerline of Alpine Road, (7) Southeasterly 0.8 mile, more or less, along said centerline, of Alpine Road to intersection with the centerline of the Southern Pacific Railroad Company property, (8) Easterly 1¾ miles, more or less, along said centerline of the Southern Pacific Railroad Company property to a point on the Northerly projection of said Westerly line of fractional Section 1, Township I North, Range 7 East, and (9) Southerly 1½ miles, more or less, along said Northerly projection and said Easterly line of fractional Section 1 to the point of beginning.

Division No. 3

Beginning at a point on the Stockton and East San Joaquin Water Conservation District boundary, said point being the Northeast corner of the Southwest ¼ of Section 29, Township 3 North, Range 8 East, Mount Diablo Base and Meridian, said Stockton and East San Joaquin Water Conservation District boundary being described in notice of election for the organization of the Stockton and East San Joaquin Water Conservation District, held June 1, 1948; thence along said Stockton and East San Joaquin Water Conservation District boundary the following four (4) courses, (1) Westerly 1½ mile, more or less, along the ½ Section lines of Sections 29 and 30, Township 3 North, Range 8 East to the Northeast corner of the Southeast ¼ of Section 25, Township 3 North, Range 7 East, Mount Diablo Base and Meridian, (2) Westerly 3½ miles, more or less, along the ½ Section lines of Sections 25, 26, 27, and 28, Township 3 North, Range 7 East to intersection with the centerline of Alpine Road, (3) Southerly 1½ miles, more or less, along said centerline of Alpine Road to intersection with the North line of Section 4, Township 2 North, Range 7 East, Mount Diablo Base and Meridian, and being on the centerline of Eight Mile Road, (4) Westerly 0.9 mile, more or less, along the North line of Sections 4 and 5, Township 2 North, Range 7 East and being along said centerline of Eight Mile Road to intersection with the centerline of Hildreth Road; thence Southerly 1¼ mile, more or less, along said centerline of Hildreth Road to

intersection with centerline of Ashley Road; thence Southeasterly 1¼ mile, more or less, along said centerline of Ashley Road to intersection with centerline of the Calaveras River; thence Northeasterly 1.1 mile, more or less, along said centerline of the Calaveras River to intersection with centerline of Alpine Road; thence Southeasterly 3.7 miles, more or less, along said centerline of Alpine Road to intersection with the centerline of Linden Road; thence Northeasterly 3.7 miles, more or less, along said centerline of Linden Road to intersection with the West line of Section 20, Township 2 North, Range 8 East, Mount Diablo Base and Meridian; thence Northerly 1.7 miles, more or less, along said West line of Section 20 and along the West line of Section 17, Township 2 North, Range 8 East, Mount Diablo Base and Meridian to the Northwest corner thereof, being a point on the centerline of Baker Road; thence Easterly ¼ mile, more or less, along the North line of said Section 17 and the centerline of Baker Road to intersection with the centerline of Tully Road at the Southeast corner of the West ½ of the West ½ of Section 8, Township 2 North, Range 8 East, Mount Diablo Base and Meridian; thence Northerly 1.0 mile, more or less, along said centerline of Tully Road to intersection with the centerline of Comstock Road at the Northeast corner of said West ½ of West ½ of Section 8; thence Easterly ¼ mile, more or less, along said centerline of Comstock Road being along the South line of Section 5, Township 2 North, Range 8 East, Mount Diablo Base and Meridian to intersection with centerline of Tully Road at the Southeast corner of the West ½ of said Section 5; thence Northerly 2½ miles, more or less, along said centerline of Tully Road and the ½ Section line of said Section 5 and the ½ Section lines of Sections 32 and 29, Township 3 North, Range 8 East, Mount Diablo Base and Meridian to the point of beginning.

Division No. 4

Beginning at a point on the Stockton and East San Joaquin Water Conservation District boundary, said point being on the intersection of the centerline of Hildreth Road and the North line of Section 5, Township 2 North, Range 7 East, Mount Diablo Base and Meridian, said Stockton and East San Joaquin Water Conservation District boundary being described in notice of election for the organization of the Stockton and East San Joaquin Water Conservation District, said election being held June 1, 1948; thence leaving said District boundary Southerly 1¼ mile, more or less, along said centerline of Hildreth Road to intersection with the centerline of Ashley Road; thence Southeasterly 1¼ mile, more or less, along said centerline of Ashley Road to intersection with the centerline of the Calaveras River; thence Southwesterly 6.0 miles, more or less, along said centerline of the Calaveras River to intersection with the centerline of Pacific Avenue; thence Northerly 1.2 mile, more or less, along said centerline of Pacific Avenue to intersection with the centerline of Robinhood Drive; thence Westerly 0.6 mile, more or less, along said centerline of Robinhood Drive to intersection with the centerline of Pershing Avenue; thence Northerly 0.2 mile, more or less, along said centerline of Pershing Avenue to intersection with the South line of Swain Oaks Manor; thence South 69° 40’ West 1652.20 feet along said South line of Swain Oaks Manor to the Southwest corner thereof; thence North 02° 35’ West 112.62 feet along the West line of said Swain Oaks Manor to the North line of Section 29, Township 2 North, Range 6 East, Mount Diablo Base and Meridian; thence Westerly 1.0 mile, more or less, along said North line of Section 29 to the Northwest corner thereof; thence Southerly ⅛ mile, more or less, along the West line of said Section 29 to intersection with the centerline of Fourteen Mile

Slough (formerly called Twelve Mile Slough); thence Southerly and Westerly ½ mile, more or less, along said centerline of Fourteen Mile Slough to a point on the City Limits line; thence Westerly, Northwesterly, Northerly and Northeasterly 1.3 miles, more or less, along said centerline of Fourteen Mile Slough and said City Limits line to intersection with the West line of Section 19, Township 2 North, Range 6 East, Mount Diablo Base and Meridian; thence Northerly 0.5 mile, more or less, along said West line of Section 19 and said City Limits line to the Southeasterly corner of Mitchell Slough-Wright Tract Annexation—A-7-67; thence Westerly, Northerly, and Easterly 1.3 miles, more or less, along the City Limits line established by said Annexation—A-7-67 and by the Wright Tract Annexation—A-1-62 to the Northwest corner of said Section 19; thence Easterly 1900 feet, more or less, along the North line of said Section 19 and said City Limits line to the Southeast corner of the Shima Tract; thence leaving said City Limits line Northerly 6600 feet, more or less, along the Easterly boundary of said Shima Tract to a corner thereof; thence Westerly 1500 feet, more or less, along the Northerly boundary of said Shima Tract to the Southeast corner of the Atlas Tract; thence Northerly 3800 feet, more or less, along the Easterly boundary of said Atlas Tract to the Southwest corner of Section 6, Township 2 North, Range 6 East, Mount Diablo Base and Meridian; thence Northerly 1.0 mile, more or less, along the West line of said Section 6 to the Northwest corner thereof; thence Easterly 7⅞ miles, more or less, along the North line of said Township and Range and along the North line of Township 2 North, Range 7 East, Mount Diablo Base and Meridian, to the point of beginning.

Division No. 5

Beginning at a point on the Stockton and East San Joaquin Water Conservation District boundary, said point being the Southwest corner of fractional Section 1, Township 1 North, Range 7 East, Mount Diablo Base and Meridian, and being a point on the Easterly boundary of C. M. Weber Grant, said Stockton and East San Joaquin Water Conservation District boundary being described in notice of election for the organization of the Stockton and East San Joaquin Water Conservation District, held June 1, 1948; thence Northerly 1½ mile, more or less, along the Westerly line of said fractional Section 1 and the Northerly projection thereof to intersection with the centerline of the Southern Pacific Railroad Company property; thence Westerly 1¾ miles, more or less, along said centerline of the Southern Pacific Railroad Company property to intersection with the centerline of Alpine Road; thence Northwesterly 4½ miles, more or less, along said centerline of Alpine Road to intersection with the centerline of the Calaveras River; thence Westerly 5.1 miles, more or less, along said centerline of the Calaveras River to intersection with the centerline of the Stockton Diverting Canal; thence Southeasterly ¾ mile, more or less, along said centerline of the Stockton Diverting Canal to intersection with the centerline of North Wilson Way; thence Southerly 4⅝ miles, more or less, along the centerline of North Wilson Way and South Wilson Way to intersection with the centerline of Charter Way; thence Easterly 1¾ miles, more or less, along said centerline of Charter Way to intersection with the centerline of State Highway 99; thence Northerly 0.6 mile, more or less, along said centerline to the centerline of Washington Street; thence Easterly 1.4 miles, more or less, along said centerline of Washington Street to intersection with the centerline of the Stockton Diverting Canal; thence Southeasterly 0.8 mile, more or less, along said centerline of the Stockton Diverting Canal to intersection with the centerline of Copperopolis Road; thence Southwesterly 0.1 mile, more or less, along said

centerline of Copperopolis Road to intersection with Gillis Road; thence Southerly ⅞ mile, more or less, along said centerline of Gillis Road to a point on the boundary of said Stockton and East San Joaquin Water Conservation District, on the South line of State Highway Route 4 (Farmington Road); thence Easterly 1¼ mile, more or less, along said South line to intersection with the North line of fractional Section 11, Township 1 North, Range 7 East, Mount Diablo Base and Meridian and being also the Southerly boundary of C. M. Weber Grant; thence Easterly 1¼ mile, more or less, along said Southerly boundary of C. M. Weber Grant to a point where the Farmington Road turns Southeasterly; thence North 80.0 feet to a point on the Northerly line of a private roadway 80.0 feet in width; thence Easterly ¼ mile, more or less, along the Northerly line of said roadway to a point on the Westerly line of the Northeast ¼ of Section 12, Township 1 North, Range 7 East, Mount Diablo Base and Meridian, said point being on the Easterly line of the C. M. Weber Grant and distant 80.0 feet Northerly from the center of said Section 12; thence Northerly ½ mile, more or less, along said Easterly boundary of C. M. Weber Grant to the point of beginning.

Division No. 6

Beginning at the Northeast corner of Section 58, C. M. Weber Grant, said corner being a point on the boundary of the Central San Joaquin Water Conservation District; thence along said Central San Joaquin Water Conservation District boundary the following four (4) courses, (1) Southerly along the West line of Sections 68, 69, and 70 of said C. M. Weber Grant to the Southerly line of said Grant being also the North line of Section 28, Township 1 North, Range 7 East, Mount Diablo Base and Meridian; (2) Westerly along said Weber Grant line and along said North line of Section 28 to the Northwest corner of said Section 28; (3) Southerly along the West line of said Section 28 to intersection with the South line of Section 59, C. M. Weber Grant, and (4) Westerly along the said South line of Section 59 to a point on the Easterly right-of-way line of Highway 99; thence Southerly 3.4 miles, more or less, along said Easterly right-of-way line of Highway 99 to the intersection of said Easterly right-of-way with the Southwesterly boundary of French Camp Road, also known as French Camp Toll Road or Turnpike; thence Northwesterly 3 miles, more or less, along said Southwesterly boundary of French Camp Road to the Westerly right-of-way line of the Western Pacific Railroad Company property; thence Southerly 1.8 miles, more or less, along said Westerly right-of-way to a point on the Southerly line of Section P of C. M. Weber Grant; thence Westerly 1.2 miles, more or less, along the South line, of said C. M. Weber Grant to the Northeast corner of the Northwest ¼ of the Northwest ¼ of Section 14, Township 1 South, Range 6 East, Mount Diablo Base and Meridian, said corner being a point in the boundary of Reclamation District No. 17; thence Westerly 0.75 mile, more or less, along the boundary of said Reclamation District No. 17 to the Southeast corner of fractional Section 10 of said Township and Range and being the Southwest corner of the C. M. Weber Grant; thence along the boundary of said Reclamation District No. 17 and the boundary of said C. M. Weber Grant the following, four (4) courses, (1) Northerly 232.41 chains, more or less, along the Easterly boundary of fractional Sections 10 and 3 of said Township and Range and along the Easterly boundary of fractional Section 34, Township 1 North, Range 6 East, Mount Diablo Base and Meridian to the Northeast corner of said fractional Section 34, (2) East 20 chains, (3) North 40 chains, and (4) East 1076 feet; thence leaving said C. M. Weber Grant boundary and continuing along the boundary of said Reclamation District No. 17 the following five (5)

courses, (1) North 255.64 feet, (2) North 89° 15' East 364.98 feet, (3) North 66° 30' East 1246.34 feet to a point on the West line of said French Camp Road, (4) Northerly 1850 feet, more or less, along said West line of French Camp Road to the South bank of French Camp Slough, and (5) Westerly 1.75 mile, more or less, continuing along said boundary of Reclamation District No. 17 to the right or Easterly bank of the San Joaquin River; thence Northwesterly 1.1 mile, more or less, downstream along said right or Easterly bank of the San Joaquin River to intersection with the centerline of State Highway 4; thence Easterly 1¾ miles, more or less, along said centerline of Highway 4 to intersection with the centerline of Charter Way; thence Easterly 3½ miles, more or less, along said centerline of Charter Way to intersection with centerline of State Highway 99; thence Northerly 0.6 mile, more or less, along said centerline of State Highway 99 to intersection with centerline of Washington Street; thence Easterly 1.4 miles, more or less, along said, centerline of Washington Street to intersection with the centerline of the Stockton Diverting Canal; thence Southeasterly 0.8 mile, more or less, along said centerline of the Stockton Diverting Canal to intersection with the centerline of Copperopolis Road; thence Southwesterly 0.1 mile, more or less, along said centerline of Copperopolis Road to intersection with Gillis Road; thence Southerly ⅞ mile, more or less, along said centerline of Gillis Road to a point on the Stockton and East San Joaquin Water Conservation District boundary on the South line of Farmington Road, said Stockton and East San Joaquin Water Conservation District boundary being described in notice of election for the organization of the Stockton and East San Joaquin Water Conservation District, said election being held on June 1, 1948; thence along said Stockton and East San Joaquin Water Conservation District boundary the following three (3) courses, (1) Westerly ¼ mile, more or less, along said South line of Farmington Road to intersection with the Easterly line of Section 67, C. M. Weber Grant, (2) Southerly 0.4 mile, more or less, along said Easterly line of Section 67 to the Southeast corner thereof, and (3) Westerly 0.9 mile, more or less, along the Southerly line of said Section 67 to the point of beginning.

Division No. 7

Beginning at the point of intersection of the centerline of the Calaveras River with the centerline of Pacific Avenue, said point being on the Stockton and East San Joaquin Water Conservation District boundary, said Stockton and East San Joaquin Water Conservation District boundary being described in notice of election for the organization of the Stockton and East San Joaquin Water Conservation District, said election being held June 1, 1948; thence Easterly 2.0 miles, more or less, meandering the centerline of the Calaveras River upstream to intersection with centerline of the Stockton Diverting Canal; thence Southeasterly ¾ mile, more or less, along said centerline of Stockton Diverting Canal to intersection with the centerline of North Wilson Way; thence Southerly 4⅝ miles, more or less, along the said centerline of North Wilson Way and the centerline of South Wilson Way to intersection with the centerline of State Highway 4; thence Westerly 3.5 miles, more or less, along said centerline of State Highway 4 to the intersection with the right or Easterly bank of the San Joaquin River; thence Southerly 0.1 mile, more or less, along said right or Easterly bank of the San Joaquin River to a point bearing East 500 feet, more or less, from the Southeast corner of the 3.55 acre parcel of Oxidation Pond Annexation No. 3—A-1-66; thence West 500 feet, more or less, to said Southeast corner; thence Westerly 1.6 miles, more or less, along the Stockton City Limits line to the Easterly line of Dagget Road; thence Northerly 1.0 mile,

more or less, along said Easterly line of Dagget Road and along the Stockton City Limits line to a point on the centerline of Burns Cutoff; thence in a general Westerly, Northerly, and Northeasterly direction 3.09 miles, more or less, along said centerline of Burns Cutoff to intersection with the centerline of the Stockton Deep Water Channel; thence Northwesterly 0.9 mile, more or less, along said centerline of the Stockton Deep Water Channel to centerline Station 286+00, said Station 286+00 bearing Southwesterly 375 feet at right angles to said centerline from U.S.E.D., B.M. 4008; thence Northeasterly 300 feet, more or less, at right angles to said centerline to a point on the Southerly boundary of the Elmwood Tract; thence Easterly and Northerly 1.9 mile, more or less, along the Southerly and Easterly boundary of said Elmwood Tract to the point of intersection of said Easterly boundary with the Southerly levee of Fourteen Mile Slough (formerly called Twelve Mile Slough); thence North 500 feet, more or less, to the Stockton City Limits line, said City Limits line being along the centerline of said Fourteen Mile Slough; thence Easterly 1.2 mile, more or less, along said centerline of Fourteen Mile Slough to intersection with the West line of Section 29, Township 2 North, Range 6 East, Mount Diablo Base and Meridian; thence Northerly ⅛ mile, more or less, along said West line to the Northwest corner of said Section 29; thence Easterly 1.0 mile, more or less, along the North line of said Section 29 to intersection with the West line of Swain Oaks Manor; thence South 02° 35’ East 112.62 feet along the West line of said Swain Oaks Manor to the Southwest corner thereof; thence North, 69° 40’ East 1652.20 feet along the South line of said Swain Oaks Manor to the centerline of Pershing Avenue; thence Southerly 0.2 mile, more or less, along said centerline of Pershing Avenue to intersection with the centerline of Robinhood Drive; thence Easterly 0.6 mile, more or less, along said centerline of Robinhood Drive to intersection with the centerline of Pacific Avenue; thence Southerly 1.2 miles, more or less, along said centerline of Pacific Avenue to the point of beginning.

After the effective date of this section the division boundaries may be further relocated pursuant to the procedures set forth in Chapter 3 (commencing at Section 74430) of Part 4 of Division 21 of the Water Code, but no such relocation of division boundaries shall occur until four years after the effective date of this section, except that the board shall be authorized pursuant to the provisions of Section 74433 of the Water Code to relocate the boundaries of the division’s established by this section to the extent of any exclusion of land, including, but not limited to, any exclusion as a result of an election held pursuant to Section 24 of this act, and any inclusion of land or annexation of land to the district. This section shall not take effect until the adoption, pursuant to Section 26, of a resolution including one or more planning areas into the district.

SECTION 34

Notwithstanding the provisions of Sections 74019 and 74202 of the Water Code and Sections 23506 and 23509 of the Elections Code and any other provisions of law in conflict with this section, directors shall be elected as provided in this section. In all other respects the election of directors and the holding of office by directors and the expiration of their terms of office shall be governed by Division 21 (commencing at Section 74000) of the Water Code and the Uniform District Election Law. The general district election shall be held on the date of the general municipal election for the City of Stockton.

SECTION 35

Upon the annexation of any territory to the City of Stockton not within the district, such

territory shall automatically be included within the district and such inclusion shall take effect upon the effective date of the annexation of such territory to the City of Stockton. Upon the inclusion of any territory pursuant to this section, such territory shall be an additional planning area and shall be in the partial tax area, subject to the provisions of Section 27 as to inclusion in the full tax area. It shall not be necessary to undertake a benefit review procedure solely for the purpose of reviewing an area included within the district as an additional planning area pursuant to this section, but such additional planning area shall be reviewed at the time of subsequent benefit review procedures.

SECTION 36

Parcels of land within any planning area shall be excluded from paying all ad valorem taxes assessed by the district during any fiscal year (July 1 to June 30) following a preceding period extending from November 1 of any year to the next succeeding October 31 during which there was utilized on such a parcel for irrigated agricultural crops water taken from any watercourse which is located within the boundaries of the Delta Water Agency as the boundaries of the Delta Water Agency are presently defined by Section 10.1 of the Delta Water Agency Act of 1968 (Chapter 419 of the Statutes of 1968, as amended by Chapter 285 of the Statutes of 1969) or from the distribution system of the Woodbridge Irrigation District or from any watercourse entirely outside the boundaries of the district prior to the effective date of this act, if less than 50 percent of such a parcels water supply during such a subject period is extracted from the underground. This section shall be implemented by rule adopted by the board and any owner of a parcel desiring to take advantage of this section shall file such reports with the board as the board may require by rule. It shall be the duty of the secretary to annually file a statement as to all parcels to which this section is applicable, as provided by Chapter 8 (commencing at Section 54900) of Part 1 of Division 2 of Title 5 of the Government Code.

SECTION 37

The provisions of this act, insofar as they are substantially the same as existing law, are restatements and continuations of existing law and not new enactments.

SECTION 38

This act is an urgency statute necessary for the immediate preservation of the public peace, health or safety within the meaning of Article IV of the Constitution and shall go into immediate effect. The facts constituting such necessity are:

There is an urgent need to provide treated water within the Stockton-East Water District and facilities for such purpose cannot be adequately planned and initiated until such time as the extent of the jurisdiction of the district is determined, in order, therefore, to permit the provision of urgently needed water within the district at the earliest possible time, it is necessary that this act go into immediate effect.

ATTACHMENT R

Items to Address DWR Agricultural Water Management Plan Requirements

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DWR ATTACHMENT A

Legal Certification and Apportionment Required for Water Measurement

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Legal Certification and Apportionment Required for Water Measurement

SEWD can measure water at the farm-gate for all customers and therefore does not need to submit legal certification and apportionment required for water measurement. This DWR Attachment A requirement is not applicable to SEWD.

A recent field investigation conducted by SEWD determined that the seven unmetered customer delivery points can be metered, and two of those meters have already been installed. Therefore, there are no legal constraints to installing or operating water meters for any of the District's customers.

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DWR ATTACHMENT B

Engineer Certification and Apportionment Required for Water Measurement

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Engineer Certification and Apportionment Required for Water Measurement

SEWD can measure water at the farm-gate for all customers and does not measure at the lateral (upstream of multiple customers). Therefore, SEWD does not need to submit engineer certification and apportionment required for water measurement. This DWR Attachment B requirement is not applicable to SEWD.

A recent field investigation conducted by SEWD determined that the seven previously unmetered customer delivery points can be metered, and two of those meters have already been installed. Therefore, there are no physical constraints at the farm-gate that prevent the installation or operation of water meters for any of the District's customers.

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DWR ATTACHMENT C

Water Measurement Best Professional Practices

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Water Measurement Best Professional Practices

Water Measurement Data Collection

Water measurement data are collected via manual readings. SEWD uses a certified pump tester to calibrate their meters. An SEWD engineer reviews and approves the pump tests.

Measurement Frequency

Meter readings are collected monthly during use.

Method for Determining Irrigated Acres

SEWD requests that each of their agricultural customers reports on their agricultural irrigation use for the previous year. Customers are sent an *Owner's Water Use Statement for Calendar Year (the upcoming calendar year)*, and must return it to SEWD by mid-January. Customers are asked to report the following data and information:

1. crops grown,
2. method of irrigation,
3. acres fallow/not irrigated,
4. acres being irrigated with well water, and
5. acres being irrigated with surface water.

The customers are also asked to report non-agricultural irrigation use. The Owner's Water Use Statement requires acknowledgement that the information submitted is truthful under penalty of perjury. If the form is not turned in by the requested date, a 5 percent penalty is added to the customer's water bill.

Quality Control and Quality Assurance Procedures

Information provided by the customers on the *Owner's Water Use Statement for Calendar Year (the upcoming calendar year)* form sent out annually by SEWD is cross-checked by the District using water meter readings. SEWD first compares customer current water use with historical use to identify potential metering inaccuracies or errors. For any suspected inaccuracies or errors, SEWD then conducts a further investigation with the customer, including conducting a detailed meter inspection or testing.

SEWD conducts water audits for the DJWWTP. SEWD measures their diversions, the amount treated at the DJWWTP, and the amount delivered to its urban customers. Any discrepancies are immediately investigated, and repairs made as necessary.

As part of the preparation of the USBR Water Management Plan and the DWR Agricultural Water Management Plan, SEWD has improved two significant water management practices. In 2012, SEWD investigated seven customer delivery points that had previously been determined to be unmeasurable due to physical limitations of the turnouts. This recent field investigation determined that all of these delivery points can be metered, and 2 meters have already been installed. Secondly, it was determined that the PG&E or hour meters used for 18 customers have an accuracy well above +/- 6 percent. SEWD has begun replacing these meters, and has scheduled replacement by the end of 2015.

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DWR ATTACHMENT D

Description of Water Measurement Conversion to Volume

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Description of Water Measurement Conversion to Volume

For SEWD water measurement devices that are not measuring water volume, the water measurements are obtained from flow meters by taking the gallons per minute rating of the pump and the run time reading from each pump system to calculate usage through the following formula:

(pump flow in gallons per minute) X (1 ft^3/7.481 gal) X (1 acre/43,560ft^2) X total minutes pump is operating = total acre-feet (volume)

A similar water measurement conversion to volume procedure is used for the PG&E or hour meters; however, all pumps measured by pump test, run time or PG&E readings will be replaced over the next three years (by 2015) in order to obtain more accurate volume reading measurements.

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DWR ATTACHMENT E

Device Corrective Action Plan Required for Water Measurement

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Device Corrective Action Plan Required for Water Measurement

Prior to preparation of the USBR Water Management Plan and the DWR Agricultural Water Management Plan, SEWD had seven unmeasured customer delivery points and two customers that shared one unmeasured turnout. It had previously been determined that these seven delivery points were unmeasurable due to physical limitations of the turnouts. A 2012 field investigation determined that all of these delivery points can be metered. Individual meters have already been installed for the customers who shared a turnout. Only five unmeasured delivery points remain.

It was also recently determined that the PG&E or hour meters used for 18 customers have an accuracy above +/- 6 percent. SEWD has begun replacing these meters, and expects to have them replaced within the next three years (by 2015).

The implementation schedule, finance plan, and budget allotment to install meters at the five remaining unmeasured delivery points, and to replace the 18 meters that are not accurate to +/- 6 percent is presented in Table E-1, below.

Table E-1. (DWR Table VII.A.3) Schedule to Implement EWMPs

EWMP	Implementation Schedule	Finance Plan	Budget Allotment
Critical EWMP 1: Water Measurement	5 meters will be installed at the unmeasured turnouts by the end of 2013.	Monies will be transferred to the water meter maintenance category from the Ag Division Fund 67 budget to cover planned meter installations.	$8,000 in 2013[a]
Critical EWMP 1: Water Measurement	9 PG&E or hour meters will be replaced each year in 2014 and 2015, resulting in the replacement of all 18 by 2015.	Monies will be transferred to the water meter maintenance category from the Ag Division Fund 67 budget to cover planned meter replacements.	$13,000/year for 2014 and 2015[a]
Critical EWMP 1: Water Measurement	10 percent of the district's existing water meters will be tested each year.	Monies will be transferred to the water meter maintenance category from the Ag Division Fund 67 budget to cover planned meter calibrations.	$5,000/year

[a] These monies include budget to cover unplanned but needed meter replacements.

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DWR ATTACHMENT F

DWR Notice of AWMP Preparation

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NOTICE OF PUBLIC HEARING

Stockton East Water District will be holding a public hearing on their 2012 Agricultural Water Management Plan, prepared for the California State Department of Water Resources, on December 18, 2012, at 12:00 PM, at Stockton East Water District, 6767 East Main Street, Stockton, California, 95215. A copy of the 2012 Agricultural Water Management Plan will be available for review prior to the hearing at SEWD offices at 6767 Main Street. Please call Ed Morley, 209/948-0537, with any questions.

#943211 12/4, 11, 2012

ATTACHMENT S

USBR Exemption Letter

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O-9

United States Department of the Interior

BUREAU OF RECLAMATION
Central California Area Office
7794 Folsom Dam Road
Folsom, California 95630-1799

IN REPLY REFER TO:
CC-414
RES-3.10

JUN 05 1997

Mr. John W. Stovall
Neumiller & Beardslee
PO Box 20
Stockton, California 95201-3020

Subject: Stockton East Water District's Request for Exemptions for Best Management Practices--New Melones Dam and Power Plant--Central Valley Project, California

Dear Mr. Stovall:

After review by our Regional Solicitor of the information you provided, we concluded that the Stockton East Water District (District) is exempt from requiring the California Water Service Company, the City of Stockton, the Lincoln Village Maintenance District, and the Colonial Heights Maintenance District to implement certain municipal and industrial Best Management Practices (BMPs). A list of the exempted and non-exempt municipal and industrial BMPs is enclosed. This exemption is in place as long as the existing contract among the parties is not amended or renegotiated. In addition, if any other legal issue that is tied to this contract is executed, the District will be required to implement all exempted BMPs.

Although the District is not required to implement these BMPs with their contractors at this time, the District is encouraged to continue assisting their contractors with implementation. The District's Resolution 95-96-08 committed the District to implementing all the urban BMPs by either requiring the retailers to implement or by implementing regionally. Reclamation's Water Conservation Field Service Program is available to assist the District and its contractors in implementing these BMPs and promoting the best management of water.

If you have any questions, please contact Mr. Pete Vonich (Water Conservation Specialist) at (916) 989-7265 (TDD 989-7285).

Sincerely,

Thomas J. Aiken
Area Manager

Enclosure

Exempted BMPs 1993 Criteria

B-3 Tiered block or similar water pricing

Exempted BMPs 1996 Criteria

A- 1 Distribution system water audits, leak detection and repair

A-2 Metering with commodity rates for all new and existing conditions

A-3 Landscape efficiency requirements for new/existing commercial, industrial, institutional governmental and multi-residential developments

A-5 School education

A-7 Conservation pricing - water and sewer

A-8 Water waste prohibition

B-1 Interior and exterior water audits and incentive programs for single family residential, multi family residential and governmental/institutional customers

B-2 Plumbing, new and retrofit

B-3 Large landscape audits and incentives

B-4 Commercial, industrial and institutional conservation

B-5 Landscape water conservation for new and existing single family homes

B-6 Ultra low flush toilet installation

Non-exempted BMPs 1996 Criteria

A-4 Public Information

A-6 New commercial, industrial and institutional water use review

A-9 Demand management staff

A-10 Financial incentives

ATTACHMENT T

City of Stockton and California Water Service Company
Urban Water Management Plan – Demand Management Measures

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Section 6: Water Demand Management Measures

10631 (f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:

(1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:

(A) Water survey programs for single-family residential and multifamily residential customers; (B) Residential plumbing retrofit; (C) System water audits, leak detection, and repair; (D) Metering with commodity rates for all new connections and retrofit of existing connections; (E) Large landscape conservation programs and incentives; (F) High-efficiency washing machine rebate programs; (G) Public information programs; (H) School education programs; (I) Conservation programs for commercial, industrial, and institutional accounts; (J) Wholesale agency programs; (K) Conservation pricing; (L) Water conservation coordinator; (M) Water waste prohibition; (N) Residential ultra-low-flush (ULFT) toilet replacement programs.

(2) A schedule of implementation for all water demand management measures proposed or described in the plan.

(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.

(4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.

(g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:

(1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors.

(2) Include a cost-benefit analysis, identifying total benefits and total costs.

(3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.

This section presents the City's past, current, and future water conservation effort in compliance with the section 10631 of the UWMP Act. The 2010 UWMP Guidebook states that wholesale and

retail urban water suppliers have different requirements for Demand Management Measures (DMM) implementation:

- Wholesale urban water suppliers need to address DMM 3, 4, 10, 11, 12
- Retail urban water suppliers need to address all DMMs, except DMM 10.

The City operates mainly as a retail urban water supplier, with a very little wholesale capacity (less than 0.6% if its annual water deliveries in 2010). The City is committed to implementing economically feasible programs that promote efficient water use and continues to implement demand management measures to the extent practicable. Section 10631 (f) of the Act requires that "all" DMMs are to be discussed and a discussion of each DMM is presented in this section. The 14 DMMs are listed in Table 28 below:

Table 28: UWMP Demand Management Measures (DMM)

DMM No.	DMM Name	Implementation Status	Comments
1	Water survey programs for single-family residential and multifamily residential customers	Yes	Fully implemented and ongoing
2	Residential plumbing and retrofit	Yes	Over 1,000 kits distributed
3	System water audits, leak detection, and repair	Yes	Fully implemented
4	Metering with commodity rates for all new connections and retrofit of existing connections	Yes	Fully implemented
5	Large landscape conservation programs and incentives	Yes	No specific program by COS; However COS performs services that fall under this DMM
6	High-efficiency washing machine rebate programs	Yes	311 rebates distributed
7	Public information programs	Yes	Participating through own programs and SAWS
8	School education programs	Yes	Participating through SAWS
9	Conservation programs for commercial, industrial, and institutional accounts	Yes	269 toilet rebates distributed
10	Wholesale agency programs	Yes	Participates through SAWS
11	Conservation pricing	Yes	Fully implemented
12	Water Conservation Coordinator	Yes	Fully implemented and ongoing
13	Water waste prohibition	Yes	Through Stockton Municipal Code
14	Residential ultra-low-flush toilet replacement program	Yes	137 toilet rebates distributed

COSMUD became a signatory to the CUWCC in 2006. However, due to limited staff resources and the CUWCC's late release of its new reporting database, COSMUD has been unable to complete the CUWCC's on-line BMP reporting and for purposes of this UWMP is evaluating the 14 DMM's listed above, which mirror the CUWCC's BMP's. COSMUD administers the program to the greatest benefit of the resources available to promote water conservation. In this section, each DMM includes the following:

A. Description of the DMM as implemented by COSMUD,

B. Schedule of Implementation,

C. Methods to Evaluate Effectiveness, and

D. Water Savings.

If the DMM is currently not being implemented, a cost effectiveness evaluation is provided and if it is cost effective to implement, a plan for implementation is outlined.

6.1 DMM 1: Water Survey Programs for Single-Family Residential and Multifamily Residential Customers

A. Implementation

Until May 2010, the City offered complimentary water use surveys for single and multi-family residential customers. Surveys were conducted by City staff certified as AWWA Water Use Efficiency Practitioners, covering indoor and outdoor water uses.

Due to limited staff resources, the City is now developing a self-performed water use survey modeled after the City of Santa Rosa.

Surveys consist of water use evaluation for appliances, such as dishwashers, washing machines, toilets, and faucets. Landscape and irrigation systems are evaluated as a part of the outdoor water use survey and the customer's water meter is observed to ensure no leaks are occurring. Following completion of the survey, customers are provided a low-flow water use efficiency kit that includes low-flow shower head(s), faucet aerators, toilet flapper(s), a metal garden hose nozzle, and a brochure containing water conservation facts and tips.

B. Implementation Schedule

The City first implemented water surveys for single and multi-family residential customers in May 2009. This program is still being implemented and will continue to be implemented for at least the next 5 years. In 2009, 148 water surveys were performed and 127 water surveys were performed in 2010.

C. Methods to Evaluate Effectiveness

Effectiveness for this DMM is quantifiable by the number of water surveys conducted. It should be noted that implementation of this DMM can also increase higher participation of DMMs 2, 6, 13, and 14.

Dependent upon available resources, the City may conduct a survey for participating customers on resulting awareness of water conservation and report the findings from the survey results with the next UWMP.

D. Water Savings Assumptions

The City currently has no means to quantify the water conservation savings from this DMM.

6.2 DMM 2: Residential Plumbing Retrofit

A. Implementation

The City offers and promotes low-flow water use efficiency kits through distribution at community events, after completion of water surveys, via the City website, through 866-STOKWTR, as well as advertising through utility bill inserts. The low-flow water use efficiency kit includes the following items: (2) 1.5 gpm low-flow shower head(s), a 1.5 gpm kitchen aerator, (2) 1.0 gpm bathroom aerators, toilet flapper(s), and a metal garden hose nozzle.

B. Implementation Schedule

The City has been distributing low-flow water use efficiency kits, in various forms, for a number of years back to 1990. However, distribution and tracking of the kits described above commenced in 2009 and continues. The City will continue to offer low-flow water use efficiency kits during the reporting period.

C. Methods to Evaluate Effectiveness

The City is tracking the number of retrofit kits distributed during the reporting period. The number of kits distributed during 2009 and 2010 is presented in Table 29.

Table 29: Number of Water Conservation Kits Distributed

Year	Number of Low-Flow Water Use Efficiency Kits
2009	467
2010	595

D. Water Savings Assumptions

The City will continue to track number of kits offered and compare the total water usage for customers before and after kits are received. The City will report the comparison results with the next adoption of UWMP.

6.3 DMM 3: System Water Audits, Leak Detection, and Repair

A. Implementation

The City of Stockton has a continuous distribution system water audit program in place. Ongoing analysis of unaccounted for water is one of the most effective means to achieve conservation by reducing leaks from the system. The City maintains an average of 5.3% water loss from 2000 to 2010.

The City currently documents unmetered consumption in its Monthly Operations and Maintenance Report. All water meter leaks, service line, main break and manifold leaks are reported to the City by customers calling in or by a system generated work order. All leaks/breaks are documented in the City's Computerized Maintenance Management System (CMMS). Information documented includes: date and time of reported leak, name of person responding to the call, type of leak, work done, customer side or city leak, and time to complete. Also documented is any communication with the customer or if a note was left to describe what was done and if any follow up is needed. All meter leaks are repaired the same day they are reported. All emergency breaks are also repaired the same day they are reported. Non-emergency service line and main breaks are usually held until a 48 hour USA is completed. Numbers from main and service line breaks are obtained by taking the line size, duration of the leak and volume of water leaking to estimate total water loss. Meter leak water loss numbers are estimated based on the volume of water found and duration of the leak.

Once a year, the City flushes the system through fire hydrants. The time spent flushing is documented in the CMMS. Hard copies of each hydrant flushed and how long it was flushed are kept as records. Water loss numbers are calculated by volume of water being flushed and time flushed multiplied by the number of hydrants flushed. City fire flow tests, commercial and residential construction usage and equipment testing are sources of water loss that are estimated based on the number of tests performed and number of new construction sites. Street sweeping water usage is documented on hard copies and calculated by size of tank, number of street sweepers and load counts.

In 2009, the City started using the AWWA Water Audit Software.

B. Implementation Schedule

This DMM is currently being implemented and will continue to be implemented as part of COSMUD's ongoing operations and maintenance program.

C. Methods to Evaluate Effectiveness

The City keeps records of the number and type of leaks reported monthly. The continuous review of the system allows the City to maintain unaccounted for water losses at an average of 5.3%.

D. Water Savings Assumptions

The total amount of water conserved over the five-year period by implementing this DMM is directly related to the percentage of unaccounted for water loss leaving the system. The City is committed to maintaining an average of 8% or less unaccounted for water during the reporting period.

6.4 DMM 4: Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections

A. Implementation

The entire City of Stockton service area is fully metered and all connections are billed based on the volume of water used. The City became fully metered in 1954. In addition, customers are classified by meter type including single-family residential, multi-family residential, commercial, institutional, industrial and irrigation accounts.

B. Implementation Schedule

This DMM is fully implemented.

6.5 DMM 5: Large Landscape Conservation Programs and Incentives

A. Implementation

The City currently does not currently have a Large Landscape Conservation Program. However, effective January 1, 2010, the City began implementing the State's Model Water Efficient Landscape Ordinance (MWELO) and is currently working to develop its own similar ordinance as part of the City's Climate Action Plan work. Upon request, COSMUD will meet with Homeowners Associations who are large landscape users and evaluate their water use and provide recommendations for improvements.

In addition, in 2009 the COSMUD invested $92,560 to finalize the conversion of 12 of the newest City parks to computerized (SMART) irrigation control to achieve an approximate energy and water savings of 25 percent.

In 2010, the City launched a web site offering water wise landscaping resources, tips and virtual tours and photo galleries of local low-water use gardens. This information can be found at: http://www.stockton.watersavingplants.com. Examples of print materials used in public information materials are included in Appendix J.

B. Implementation Schedule:

The City is currently working to identify its largest landscape/irrigation customers in an effort to launch a pilot program whereby water budgets will be established and monthly water use reports will be generated and distributed to customers to evaluate their water use and monetary savings.

The City park retrofit project was recently completed in 2010.

C. Methods to evaluate effectiveness:

The City will develop water use reports for large landscape/irrigation customers within 18 months of the UWMP adoption. The City will track report results and provide follow-up when necessary to evaluate the effectiveness of this DMM.

Data from the City park retrofit project is currently begin gathered to compare water use prior to and after the SMART controller retrofit.

D. Water Savings Assumptions

Water savings for this DMM are currently not quantifiable.

6.6 DMM 6: High-Efficiency Washing Machine Rebate Programs

A. Implementation

The City offers a rebate up to $150 per high-efficiency washing machine through the CUWCC's SMART Rebate Program. To date, the City has invested approximately $144,000 for the combined rebate program of high efficiency clothes washers and toilets and associated administrative costs (DMM14). The City's web page for Municipal Utilities Water Conservation advertises the available rebates as does the CUWCC website. Rebates are processed as received and as funding allows. The City has issued 311 rebates to date.

B. Implementation Schedule

This program was started in 2007 and is currently in place. The Program has not placed limitations on the quantity of rebates offered each year. The City will continue to issue rebates until the program funding is expended.

C. Methods to Evaluate Effectiveness

The City will continue to track the number of rebates during reporting period. The total number of rebates used will be the method to evaluate the effectiveness of this DMM.

D. Water Savings Assumptions

Gross water savings (gallons) are calculated using the CUWCC's formula for Gross Water Savings for high efficiency washing machine rebates. Each installation is assumed to save 0.314 AF. Since a total of 311 rebates have been issued, it can be assumed that a total of 97.6 AF is being saved as a result of this program.

6.7 DMM 7: Public Information Programs

A. Implementation

The City of Stockton provides water conservation information as part of MUD's outreach program. Current budget for the City's public information programs is $232,000. The public information program includes print and web-based publications, monthly bill inserts, and public outreach events.

The City includes water conservation tips and information in the City's monthly utility bill newsletter, *Stockton Water News*, which is mailed to all City of Stockton water customers. Water Conservation is featured in the May issue of *Stockton Water News* as a part of Water Awareness Month. City staff also provides an annual update on the City's water supply to the City's Water Advisory Group, Council Water Committee and City Council. This report provides information regarding anticipated water supplies and provides an overview of the City's water use and conservation programs.

The City is also a USEPA WaterSense Partner and is able to utilize available promotional materials and actively promotes EPA's Fix a Leak Week every year.

Water conservation outreach literature is also distributed at community events such as Family Day in the Park, Black Family Day, Cinco de Mayo, State of the City and the annual Earth Day Festival. Water conservation literature is also distributed throughout City departments and to various community centers and libraries. The public can access water conservation information on the Municipal Utilities Department section of the City's web page at:

http://www.stocktongov.com/government/departments/municipalUtilities/utilWaterCon.html

In 2010, the City launched a web site offering water wise landscaping resources, tips and virtual tours and photo galleries of local low-water use gardens. This information can be found at: http://www.stockton.watersavingplants.com. Examples of print materials used in public information materials are included in Appendix J.

B. Implementation Schedule

This DMM is currently in place. The City will continue to implement this DMM during the reporting period.

C. Methods to Evaluate Effectiveness

The City provides residents with an 866-STOKWTR number where they can call and report water wasters as well as request information.

The City is currently restructuring its website and is planning to add a "How Are We Doing" section to the City's water conservation web page to evaluate the effectiveness of its public outreach efforts.

D. Water Savings Assumptions

The City currently has no method to quantify water conservation savings from this DMM.

6.8 DMM 8: School Education Programs

A. Implementation

The City provides water conservation education as part of the community and school outreach program through the Stockton Area Water Suppliers (SAWS), a consortium of water agencies including the COSMUD, Cal Water, SEWD and San Joaquin County. SAWS water conservation materials are included with teacher packets for classroom presentations and are discussed during classroom programs.

The City participates with SAWS to develop and implement a water education program for public and private schools within its service area. SAWS is an association of water providers dedicated to communication and mutual assistance regarding issues affecting water supply, distribution, and conservation in the COSMA. The SAWS group believes that providing water education in elementary and secondary schools is highly effective in reaching the public at large because young children are apt to share the lessons they learn in class with their parents, siblings, and extended families.

Educational materials, pamphlets, and guidance to classroom activities are available to schools and the public to highlight the value of water and ways to conserve. SAWS's Water Conservation Program reaches approximately 28,000 K-6 grade students annually and has an outreach budget of $157,000. The program provides outreach in various formats, including: a large assembly program, in-class presentations, after-school programs, at festivals and community events, and various workshops. Examples of written materials used in public education programs are included in Appendix K.

B. Implementation Schedule

This DMM is currently in place. The City will continue to provide water conservation materials as part of its community and school outreach programs, as well as continue to work cooperatively with SAWS to develop and distribute water conservation information to K-6 grade students in public and private schools.

C. Methods to Evaluate Effectiveness

The City will work cooperatively with SAWS to develop teacher and student surveys to measure the effectiveness of the outreach campaign. All comments will be tracked and programmatic adjustments will be made based on the information received.

D. Water Savings Assumptions

The City currently has no method to quantify water conservation savings from this DMM.

6.9 DMM 9: Conservation Programs for Commercial, Industrial, and Institutional Accounts

A. Implementation

City of Stockton promotes water conservation to its commercial, industrial and institutional (CII) users by charging users by volume of wastewater discharged from their facility in addition to charging CII users per a uniform water rate structure.

Beginning in 2010, the City started offering a high efficiency toilet (HET) Direct Install Program for CII customers. The program covers the cost of the installation and hardware. CII customers may select a pre-approved plumbing contractor for the installation. The approved budget for the HET Direct Install Program is $150,000. To date, 269 HETs have been installed for approximately 27 CII customers.

In addition, the City, as part of SAWS, participates as part of the Greater Stockton Chamber of Commerce's REACON (Recycling, Energy & Conservation) Program and makes periodic visits to CII customers to conduct water use evaluations as a way to assist businesses with reducing their costs of doing business and at the same time, promote environmental stewardship via water conservation practices. In 2009, the City conducted 8 REACON assessments and in 2010, conducted 6 REACON assessments.

B. Implementation Schedule

This DMM is currently in place. The City will continue to implement this DMM. However, parts of the DMM overlaps with other DMMs implementation as listed below:

a. See DMM 4 for volumetric billing Implementation Schedule.

C. Methods to Evaluate Effectiveness

Effectiveness of this DMM will be evaluated through tracking multiple parameters including program participation, number of audits conducted for high water users, and comparison water use readings before and after program participation. The City will track the parameters and include the results in the next UWMP cycle.

D. Water Savings Assumptions

Water savings for a HET replacement is established by CUWCC. The City has installed 269 toilets since program commencement through its HET Direct Install Program at an approximate savings of 253.129 AF annually.

6.10 DMM 10: Wholesale Agency Programs

A. Implementation

The City of Stockton, Cal Water, County of San Joaquin and SEWD are members of Stockton Area Water Suppliers (SAWS). SAWS meets monthly to discuss water-related matters, including water supply, use, conservation and development of water shortage contingency plans. The City funds its portion of school education and public information through its wholesale water cost to SEWD.

B. Implementation Schedule

The City will continue to meet with SAWS to discuss the state of water-related matters in the Stockton area.

C. Methods to Evaluate Effectiveness

There is no available method to evaluate effectiveness of this DMM.

D. Water Savings Assumptions

The City currently has no method to quantify water conservation savings from this DMM.

6.11 DMM 11: Conservation Pricing

A. Implementation

See copy of City of Stockton Water Fee Schedule Effective July 1, 2010 in Appendix L. This fee schedule has a uniform rate structure. The City's water conservation ordinance allows the City to raise water prices during declared water emergencies.

B. Implementation Schedule

The Water Fee Schedule is in place and effective beginning July 1, 2010 and is adjusted annually July 1 in accordance with approved rate increases and/or cost of living adjustments. The City will continue to implement this DMM.

C. Methods to Evaluate Effectiveness

There is no available method to evaluate effectiveness this DMM.

E. Water Savings Assumption

The City currently has no method to quantify water conservation savings from this DMM.

6.12 DMM 12: Water Conservation Coordinator

A. Implementation

The City's Water Resources Program Manager currently serves part-time as the City's Water Conservation Coordinator. The Conservation Coordinator establishes an annual program budget based on available funding and resources. Program accomplishments are highlighted and corresponding goals are established for the upcoming year. Each DMM will be monitored to ensure implementation and the water use targets set by SBX7-7 and AB 1420 will be tracked.

B. Implementation Schedule

This DMM is currently in place. City will continue to implement this DMM.

C. Methods to Evaluate Effectiveness

The Water Conservation Coordinator is responsible for program management, tracking, planning, documenting, and reporting on the implementation of DMMs. The effectiveness of this DMM is based on the overall effectiveness of the program as it relates to annual water savings.

D. Water Savings Assumptions

The City currently has no method to quantify water conservation savings from this DMM.

6.13 DMM 13: Water Waste Prohibition

A. Implementation

The City of Stockton Municipal Code Chapter 13.28 is dedicated for Water Conservation and restricts certain uses of water. Water use restrictions include the following:

a. Use of potable water from fire hydrant other than for fire suppression purposes by the local fire department or by the responsible water agency.
b. Use of potable water for exterior irrigation other than drip and/or mist irrigation system between 11:00 a.m. to 6:00 p.m. (May 1 to November 1) or use that allows water to run off or escape from the premises or to be wasted, except for the initial 21-day period of establishment for new plantings
c. Use through leaks, breaks, or malfunction within the water user's plumbing or distribution system
d. Use of water for washing cars, boats, or buildings without the use of a quick-acting positive shut-off nozzle on the hose

e. Use of potable water for dust control purposes
f. Use of ornamental fountains in public or commercial establishments without recirculation system
g. Use of potable water for drinking in restaurants if not requested by customers

The restrictions are enforceable per the Stockton Municipal Code §13.28.090. and enforced by the COSMUD.

B. Implementation Schedule

This DMM is currently in place.

C. Methods to Evaluate Effectiveness

Water waste complaints and violations are received and investigated by COSMUD staff and addressed via door hangers and/or direct contact in person/via telephone with tenants and property owners. Complaints and/or violations are opened, tracked and closed in the COSMUD Monthly Operations and Maintenance Report.

D. Water Savings Assumptions

The City currently has no method to quantify water conservation savings from this DMM.

6.14 DMM 14: Residential Ultra Low Flush Toilet Replacement Program

A. Implementation

The City offers a rebate up to $100 per ultra low flush/high efficiency toilet through the CUWCC's SMART Rebate Program. To date, the City has invested approximately $144,000 for the combined rebate program of high efficiency clothes washers and toilets and associated administrative costs (DMM6). The City's web page for Municipal Utilities Water Conservation advertises the available rebates as does the CUWCC website. Rebates are processed as received and as funding allows. The City has issued 137 rebates to date.

B. Implementation Schedule

This program was started in 2007 and is currently in place. The Program has not placed limitations on the quantity of rebates offered each year. The City will continue to issue rebates until the program funding is expended.

C. Methods to Evaluate Effectiveness

The City will continue to track the number of rebates during reporting period. The total number of rebates used will be the method to evaluate the effectiveness of this DMM.

D. Water Savings Assumptions

Gross water savings (gallons) are calculated using the CUWCC's formula for Gross Water Savings for ultra low flush/high efficiency toilet rebates. Each installation is assumed to save 0.5600 AF. Since a total of 137 rebates have been issued, it can be assumed that a total of 76.72 AF is being saved as a result of this program.

6.15 AB 1420 Compliance

COSMUD submitted their AB 1420 self certification of DMMs in August of 2010. COSMUD submitted based on the gpcd compliance option. DWR has reviewed the submittal and found the City eligible to receive water management grant or loan funds based on gpcd compliance. The target water use for compliance is 159 gpcd by 2018. A copy of the AB 1420 compliance letter is contained in Appendix M COSMUD will continue to track their water use and provide compliance reports as required. The water usage for 2010 was 173 gpcd. This is encouraging and proves COSMUD is on target for 159 gpcd by 2018.

CUWCC BMP RETAIL COVERAGE REPORT 2009-2010

Foundation Best Management Practices for Urban Water Efficiency

Agency: California Water Service Company **District Name:** Stockton **CUWCC Unit #:** 5017
Retail

Primary Contact Natalie Pavlovski **Telephone** (310) 257-1484 **Email:** npavlovski@calwater.com

Compliance Option Chosen By Reporting Agency:
(Traditional, Flex Track or GPCD)
GPCD if used:

GPCD in 2010	149
GPCD Target for 2018	149

Year	Report	Target		Highest Acceptable Bound	
		% Base	GPCD	% Base	GPCD
2010	1	96.4%	175	100%	181
2012	2	92.8%	168	96%	175
2014	3	89.2%	162	93%	168
2016	4	85.6%	155	89%	162
2018	5	82.0%	149	82%	149

Not on Track if 2010 GPCD is ≥ than target

GPCD in 2010	149
Highest Acceptable GPCD for 2010	181

On Track

Agency: California Water Service Company
Retail

District Name: Stockton

CUWCC Unit #: 5017

CUWCC BMP RETAIL COVERAGE REPORT 2009-2010

Foundation Best Management Practices for Urban Water Efficiency

Foundational BMPs

BMP 1.1 Operational Practices

		2009	2010	Conservation Coordinator provided with necessary resources to implement BMPs?
1.Conservation Coordinator provided with necessary resources to implement BMPs?	Name	Ken Jenkins	Ken Jenkins	
	Title	Conservation Manager	Conservation Manager	
	Email		kjenkins@calwate	
		On Track	On Track	
2. Water waste prevention documentation	Descriptive File	City of Stockton, CPUC	City of Stockton, CPUC Instructions for Water Conservation	On Track if any one of the 6 ordinance actions done, plus documentation or links provided
	Descriptive File 2010			
	URL			
	URL 2010			
	Describe Ordinance Terms	Stockton Chapter 13.28: Water		
	Describe Ordinance Terms 2010		Stockton Chapter 13.28: Water Conservation	
		On Track	On Track	

Agency: California Water Service Company
Retail

District Name: Stockton

CUWCC Unit #: 5017

CUWCC BMP RETAIL COVERAGE REPORT 2009-2010

Foundation Best Management Practices for Urban Water Efficiency

BMP 1.2 Water Loss Control

	2009		
Complete a prescreening Audit	no	Not on Track	On Track if Yes
Metered Sales	0		
Verifiable Other Uses	0		
Total Supply	0		
(Metered Sales + System uses)/ Total Supply >0.89	n/a		On Track if =>.89, Not on Track if No
If ratio is less than 0.9, complete a full scale Audit in 2009?	No	Not on Track	On Track if Yes
Verify Data with Records on File?	n/a	Not on Track	On Track if Yes
Operate a system Leak Detection Program?	Yes	On Track	On Track if Yes

	2010		
Compile Standard Water Audit using AWWA Software?	Yes	On Track	On Track if Yes, Not on Track if No
AWWA file provided to CUWCC?		On Track	On Track if Yes, Not on Track if No
	CWS_WaterAudit_Stockton		
AWWA Water Audit Validity Score?	73		Info only until 2012
Completed Training in AWWA Audit Method?	no		
Completed Training in Component Analysis Process?	No		Info only until 2012
Complete Component Analysis?	No		Info only until 2012
Repaired all leaks and breaks to the extent cost effective?	Yes	On Track	On Track if Yes, Not on Track if No
Locate and repair unreported leaks to the extent cost effective.	Yes	On Track	On Track if Yes, Not on Track if No
Maintain a record-keeping system for the repair of reported leaks, including time of report, leak location, type of leaking pipe segment or fitting, and leak running time from report to repair.			Info only until 2012

Provided 7 types of Water Loss Control Info

Leaks Repaired	Value Real Losses	Value Apparent Losses	Miles Surveyed	Press Reduction	Cost of Interventions	Water Saved
0	$ -	$ -	0	Off	$ -	0

Info only until 2012

Agency: California Water Service Company Retail | District Name: Stockton | CUWCC Unit #: 5017

CUWCC BMP RETAIL COVERAGE REPORT 2009-2010

Foundation Best Management Practices for Urban Water Efficiency

1.3 METERING WITH COMMODITY RATES FOR ALL NEW CONNECTIONS AND RETROFIT OF EXISTING CONNECTIONS

If signed MOU prior to 31 Dec 1997, On Track if all connections metered; If signed after 31 Dec 1997, complete meter installations by 1 July 2012 or within 6 yrs of signing and 20% biannual reduction of unmetered connections.

	2009		2010		
Exemption or 'At least as Effective As' accepted by CUWCC					
Numbered Unmetered Accounts	0	On Track	0	On Track	On Track if no unmetered accounts
Metered Accounts billed by volume of use	Yes	On Track	Yes	On Track	Volumetric billing required for all connections on same schedule as metering
Number of CII accounts with Mixed Use meters	4,303		4,319		Info only
Conducted a feasibility study to assess merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters?	No		No		Info only until 2012
Feasibility Study provided to CUWCC?	Yes	On Track	No	On Track	On Track if Yes, Not on Track if No
Completed a written plan, policy or program to test, repair and replace meters	Yes	On Track	Yes	On Track	On Track if Yes, Not on Track if No

CUWCC BMP RETAIL COVERAGE REPORT 2009-2010

Foundation Best Management Practices for Urban Water Efficiency

Agency: California Water Service Company
Retail

District Name: Stockton

CUWCC Unit #: 5017

Coverage Report Date: June 9, 2011

Primary Contact Natalie Pavlovski

Email: npavlovski@calwater.com

1.4 Retail Conservation Pricing

Date 2009 data received November 21, 2011

Date 2010 data received November 21, 2011

On Track if: Increasing Block, Uniform, Allocation, Standby Service; Not on Track if otherwise

Metered Water Rate Structure

Customer Class	2009 Rate Type	Conserving Rate?
Single-Family	Increasing Block	Yes
Commercial	Uniform	Yes
Industrial	Uniform	Yes
Institutional	Uniform	Yes
Multi-Family	Uniform	Yes
	On Track	

Customer Class	2010 Rate Type	Conserving Rate?
Single-Family	Increasing Block	Yes
Commercial	Uniform	Yes
Industrial	Uniform	Yes
Institutional	Uniform	Yes
Multi-Family	Uniform	Yes
	On Track	

Year Volumetric Rates began for Agencies with some Unmetered Accounts

Info only

Agencies with Partially Metered Service Areas: If signed MOU prior to 31 Dec. 1997, implementation starts no later than 1July 2010. If signed MOU after 31 Dec. 1997, implementation starts no later than 1July 2013, or within seven years of signing the MOU,

Agency: **California Water Service Company** District Name: **Stockton** CUWCC Unit #: **5017**
Retail Coverage Report Date: June 9, 2011

CUWCC BMP RETAIL COVERAGE REPORT 2009-2010

Foundation Best Management Practices for Urban Water Efficiency

Adequacy of Volumetric Rates) for Agencies with No Unmetered Accounts

Customer Class	2009 Rate Type	2009 Volumetric Revenues $1000s	2010 Rate Type	2010 Volumetric Revenues $1000s
Single-Family	Increasing Block	$ 10,484	Single-Family	$ 10,218
Commercial	Uniform	$ 4,295	Commercial	$ 4,205
Industrial	Uniform	$ 1,618	Industrial	$ 1,454
Institutional	Uniform	$ 1,763	Institutional	$ 1,564
Multi-Family	Uniform	$ 1,402	Multi-Family	$ 1,357
Other		$ 53		$ 72
Other		$ -		$ -
Total Revenue Commodity Charges (V):		$ 19,614		$ 18,870
Total Revenue Fixed Charges (M):		$ 9,536		$ 8,965
Calculate: V / (V + M):		67%		68%
		Info Only untill 2011		Info Only untill 2011

Agency Choices for rates:

A) Agencies signing MOU prior to 13 June2007, implementation starts 1 July2007: On Track if (V / (V + M) ≥ 70% x .8 = **56% for 2009** and 70%x0.90 = **63% for 2010**; Not on track if (V / (V + M)) < 70%;

B) Use Canadian model. Agencies signing MOU after 13June2007, implementation starts July 1 of year following signing.

Canadian Water & Wastewater Rate Design Model Used and Provided to CUWCC: **No** (Info Only untill 2011) | **No** (Info Only untill 2011)

If Canadian Model is used, was 1 year or 3 year period applied?

Wastewater Rates

Does Agency Provide Sewer Service? 2009: **No** | If 'No', then wastewater rate info not required. | 2010: **No**

Customer Class	2009 Rate Type	Conserving Rate?	Customer Class	2010 Rate Type	Conserving Rate?
		On Track			On Track

On Track if: 'Increasing Block', 'Uniform', 'based on long term marginal cost' or 'next unit of capacity'

CUWCC BMP RETAIL COVERAGE REPORT 2009-2010

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BMP 2. EDUCATION PROGRAMS

BMP 2.1 Public Outreach Actions Implemented and Reported to CUWCC

	2009	2010	
Does a wholesale agency implement Public Outrach Programs for this unility's benefit?	no	no	Yes/No
Names of Wholesale Agencies			
1) Contacts with the public (minimum = 4 times per year)	4	4	
2) Water supplier contacts with media (minimum = 4 times per year, i.e., at least quarterly).	4	4	
3) An actively maintained website that is updated regularly (minimum = 4 times per year, i.e., at least quarterly).	Yes	Yes	All 6 action types implemented and reported to CUWCC to be 'On Track')
4) Description of materials used to meet minimum requirement.	Newsletter articles on conservation Newsletter articles on conservation Newsletter articles on conservation General water conservation information Radio contacts	Newsletter articles on conservation Newsletter articles on conservation Newsletter articles on conservation General water conservation information Radio contacts	
5) Annual budget for public outreach program.	$ 38,608	$ 32,677	
6) Description of all other outreach programs	Description is too large for text area. Data will be stored in the BMP Reporting database when online.	Description is too large for text area. Data will be stored in the BMP Reporting database when online.	
	On Track	**On Track**	

CUWCC BMP RETAIL COVERAGE REPORT 2009-2010

Foundation Best Management Practices for Urban Water Efficiency

2.2 School Education Programs Implemented and Reported to CUWCC

	2009	2010	
Does a wholesale agency implement School Education Programs for this unility's benefit?	Yes	Yes	
Name of Wholesale Supplier?	Stockton East Water District	Stockton East Water District	
1) Curriculum materials developed and/or provided by agency	CalWater coloring and activity books, pencil pouches, and stickers. Resource Action Programs Water Wise program, includes conservation materials, for students and teachers, and conservation kits.	CalWater coloring and activity books, pencil pouches, and stickers. Resource Action Programs Water Wise program, includes conservation materials, for students and teachers, and conservation kits.	Yes/ No
2) Materials meet state education framework requirements and are grade-level appropriate?	Yes	Yes	All 5 actions types implemented and reported to CUWCC to be
3) Materials Distributed to K-6?	Yes	Yes	
Describe K-6 Materials	CalWater coloring and activity books, pencil pouches, and stickers. Resource Action Programs Water Wise program, includes conservation materials, for students and teachers, and conservation kits.	CalWater coloring and activity books, pencil pouches, and stickers. Resource Action Programs Water Wise program, includes conservation materials, for students and teachers, and conservation kits.	Describe materials to meet minimum requirements
Materials distributed to 7-12 students?	n/a	n/a	Info Only
4) Annual budget for school education program.	$ 7,855	$ 24,530	
5) Description of all other water supplier education programs	Disney's Planet Challenge (DPC), a project-based learning environmental competition for classrooms. DPC teaches kids about science and conservation while empowering them to make a positive impact on their communities and planet.	Disney's Planet Challenge (DPC), a project-based learning environmental competition for classrooms. DPC teaches kids about science and conservation while empowering them to make a positive impact on their communities and planet.	
	0 On Track	0 On Track	

6 Demand Management Measures

6.1 Statewide Urban Water Demand Reduction Policies

As mentioned earlier, Cal Water is in the process of significantly expanding its conservation programs. Inter-related state-level policies and agreements aimed at reducing urban water use have provided much of the impetus for this change. The policies include: (1) recent decisions by the California Public Utilities Commission (CPUC) directing Class A and B water utilities to reduce per capita urban water demand; (2) state legislation mandating urban water suppliers to reduce per capita demand 20 percent by 2020; and (3) the Memorandum of Understanding Regarding Urban Water Conservation in California (MOU). This section discusses these requirements, their relationship to one another, and their relationship to Cal Water's overall conservation strategy.

The CPUC's Decision 07-05-062 directed Class A and B water utilities to submit a plan to achieve a 5 percent reduction in average customer water use over each three-year rate cycle. This policy was refined under Decision 08-02-036, which established a water use reduction goal of 3 to 6 percent in per customer or service connection consumption every three years once a full conservation program, with price and non-price components, is in place. These decisions anticipated enactment of policies by the State legislature to reduce urban water use in California 20 percent by 2020.

SBx7-7 requires the state to achieve a 20 percent reduction in urban per capita water use by December 31, 2020. The state is required to make incremental progress toward this goal by reducing per capita water use by at least 10 percent on or before December 31, 2015. SBx7-7 requires each urban retail water supplier to develop interim and 2020 urban water use targets. Urban retail water suppliers will not be eligible for state water grants or loans unless they comply with SBx7-7's requirements.

There are three ways in which a water supplier can comply with the MOU. The first way is to implement a set of water conservation best management practices (BMPs) according to the requirements and schedules set forth in Exhibit 1 of the MOU. The second way, called Flex Track compliance, is to implement conservation programs expected to save an equivalent or greater volume of water than the BMPs. The third way, similar to SBx7-7, is to reduce per capita water use. Each of these compliance options is briefly described below.

Originally, the MOU established a set of BMPs that signatories agreed to implement in good faith. For each BMP, the MOU established the actions required by the water supplier (e.g. site surveys, fixture and appliance rebates, water use budgets, volumetric pricing and conservation rate designs), the implementation schedule, and the required level of effort (in the MOU this is referred to as the coverage requirement). Additionally, the MOU established the terms by which a water supplier could opt out of implementing a BMP.

BMPs are grouped into five categories. Two categories, Utility Operations and Education, are "Foundational BMPs" because they are considered to be essential water conservation activities by any utility and are adopted for implementation by all signatories to the MOU as ongoing practices with no time limits. The remaining BMPs are "Programmatic BMPs" and are organized into Residential, Commercial, Industrial, and Institutional (CII), and Landscape categories. Table 6.1-1 shows the BMPs by category. The requirements and coverage levels of each BMP are set forth in Exhibit 1 of the MOU. As of the date of this UWMP, Cal Water is in process of completing and submitting BMP reports to the CUWCC for the period 2009-2010. Submission was delayed due to delays in the CUWCC reporting forms being made available.

Table 6.1-1: MOU Best Management Practices

BMP Group	BMP Name
1. Utility Operations Programs (F)	Conservation Coordinator
	Water Waste Prevention
	Wholesale Agency Assistance Programs
	Water Loss Control
	Metering & Volumetric Rates
	Retail Conservation Pricing
2. Education Programs (F)	Public Information Programs
	School Education Programs
3. Residential (P)	Residential Assistance Program
	Landscape Water Surveys
	High Efficiency Clothes Washer Program
	Watersense Toilet Program
	Watersense Specifications for Residential Development
4. Commercial, Industrial, Institutional (P)	Reduce baseline CII water use by 10% in 10 years
5. Landscape (P)	Large Landscape Water Budget Programs
	Large Landscape Water Surveys
F = Foundational BMP, P = Programmatic BMP	

Under Flex Track, a water supplier can estimate the expected water savings over the 10-year period 2009-2018 if it were to implement the programmatic BMPs in accordance with the MOU's schedule, coverage, and exemption requirements, and then achieve these water savings through any combination of programs it desires. Thus, through the Flex Track compliance option, a water supplier agrees to save a certain volume of water using whatever it determines to be the best combination of programs. Because the savings target depends on the programmatic BMP coverage requirements, which in turn are functions of service area size and composition of demand, the volume of water to be saved under this compliance option must be calculated separately for each supplier. The methodologies and tools for water suppliers to implement these calculations are still being developed by the CUWCC.

Under the gpcd option, a water supplier can comply with the MOU by reducing its baseline gpcd by 18 percent by 2018. The baseline is the ten-year period 1997-2006. The MOU also establishes interim gpcd targets and the highest acceptable levels of water use deemed to be in compliance with this option. The MOU's gpcd option is similar to using Method 1 to set the SBx7-7 target, except that it uses a fixed baseline period and only runs through 2018. This compliance option may be difficult to achieve for Cal Water districts that are part of a regional alliance for purposes of SBx7-7 compliance because savings as a percent of demand will vary considerably among the districts in the alliance. It may also conflict with district-specific SBx7-7 targets set using method 3 (hydrologic region-based target). Because of these potential conflicts, this is not considered a viable MOU compliance option for Cal Water districts.

Cal Water plans to use Flex Track to comply with the MOU. This compliance option affords the most flexibility in selecting conservation programs suited to each Cal Water district and allows for more streamlined reporting. Because CUWCC tools for calculating a district's Flex Track savings target are not yet available, Cal Water developed its own target estimates for planning purposes. Cal Water will update these estimates as necessary following the release of the CUWCC Flex Track target calculator.

6.2 Conservation Master Plans

In an effort to address the statewide policies for urban water use reduction Cal Water developed Conservation Master Plans for each of its service districts. These Conservation Master Plans are designed to provide a framework for meeting these statewide policies and to chart a course for Cal Water's conservation programs over the next five years. The major tasks of the Conservation Master Plans include:

1. A complete review of State policies and development of a compliance strategy
2. Calculating all appropriate per capita targets
3. Determining water savings required from new programs
4. Performing an analysis of conservation programs
5. Developing a portfolio of conservation programs
6. Creating a plan for monitoring and update of Conservation Master Plans

Cal Water's Conservation Master Plans have a five year planning horizon and are designed to be updated in coordination with the UWMP for each district. The Conservation Master Plan for the Stockton District is included in its entirety as Appendix G. A discussion of baseline and target water use can be found in Section 3 of this UWMP. A summary of the water savings requirements and program portfolio is summarized in the following section.

6.3 Water Savings Requirements

The gross water savings required under SBx7-7 can be determined with a simple calculation by subtracting the target water demand from the unadjusted baseline demand. According to this calculation the Stockton District has a gross savings requirement of -71 AF from 2011-2015, as shown in Table 6.3-1.

As discussed earlier, because CUWCC tools for calculating a district's Flex Track savings target are not yet available, Cal Water developed its own target estimates for planning purposes. The targets are based on the expected water savings from cost-effective programmatic BMPs over the ten-year period 2009-2018. The coverage requirements for the programmatic BMPs were used to calculate the Flex Track targets. Expected water savings and cost-effectiveness were based on the conservation program specifications and avoided water supply costs. The supporting data and calculations are provided in Appendix G.

The differences between the unadjusted baseline demand, district-specific SBx7-7 target, and MOU Flex Track target are shown in Table 6.3-1. This shows the maximum amount of water savings needed for SBx7-7 compliance, as well as the savings required for MOU compliance.

Table 6.3-1: SBx7-7 and MOU Gross Water Savings Requirements

Gross Water Savings Required by 2015	SBx7-7	MOU Flex Track
2015 Unadjusted Baseline Demand	32,036 AF	32,036 AF
2015 Target Demand	32,107 AF	31,910 AF
Gross Savings Requirement	**-71 AF**	**126 AF**

The unadjusted baseline demand described in Section 3 does not account for future changes in water demand due to the effects of plumbing fixture efficiency codes, changes in water rates, metering, and existing conservation programs. A portion of the gross savings requirements shown above are expected to come from these sources. The Conservation Master Plan includes an estimate of the volume of water saved as a result of these things. The results are used to adjust baseline demand so that the volume of water savings that will need to come from new conservation programs can be determined.

Two recent California laws are expected to accelerate the replacement of low efficiency plumbing fixtures – primarily toilets and showerheads – with higher efficiency alternatives.

- AB 715, passed in 2007, amended the California Building and Safety Code to require by January 1, 2014, that toilets sold or installed in California use no more than 1.28

gallons per flush. It also requires that urinals sold or installed use no more than 0.5 gallons per flush.

- SB 407, passed in 2009, amended the California Civil Code to require replacement of low efficiency plumbing fixtures with higher efficiency alternatives when a property undergoes alterations, improvements, or transfer. In the case of single-family residential properties, issuance of a certificate of final completion and occupancy or final permit approval by the local building department for building alterations or improvements will be conditional on the replacement of low efficiency plumbing fixtures beginning in 2014. Single-family property owners are required by law to replace any remaining non-compliant plumbing fixtures by no later than January 1, 2017. After this date, a seller or transferor of single-family residential real property must disclose in writing to the prospective purchaser or transferee whether the property includes any noncompliant plumbing fixtures. For multi-family and commercial properties non-compliant fixtures must be replaced by January 1, 2019. As with single-family properties, final permits or approvals for alterations or improvements are conditional on the replacement of low efficiency fixtures beginning in 2014.

The phase-in dates for AB 715 and SB 407 mean they will not greatly contribute to meeting the 2015 interim gpcd target under SBx7-7. But they will support meeting the 2020 target. Moreover, since the early 1990's, the sale and installation of toilets manufactured to flush more than 1.6 gallons, showerheads manufactured to have a flow capacity more than 2.5 gallons per minute, and interior faucets manufactured to emit more than 2.2 gallons per minute has been prohibited. These requirements will continue to improve the efficiency of plumbing fixtures in older residential and commercial buildings.

Water savings from expected rate adjustments in Stockton District were also calculated. The estimates are based on inflation-adjusted changes in rates for 2011, 2012, and 2013, as contained in CPUC's proposed GRC decision. Short-run price elasticity estimates used to calculate potential changes in demand were drawn from the CUWCC's conservation rate guidebook.

In addition to savings from codes and rates, expected on-going water savings from conservation activity occurring in 2009 and 2010 were also taken into account. The adjusted baseline demand and savings associated with code changes, rate changes, meter conversions, and existing conservation programs are shown in Table 6.3-2.

Table 6.3-2: Adjusted Baseline Demand Projection					
Adjusted Baseline (AF)	**2011**	**2012**	**2013**	**2014**	**2015**
Unadjusted Baseline	31,741	31,815	31,889	31,963	32,036
Less Savings from					
Codes	61	120	175	228	295
Schedule Rate Increases	68	101	92	16	-150
Existing Programs	61	60	59	47	35
Adjusted Baseline Demand	**31,551**	**31,534**	**31,562**	**31,672**	**31,856**
Per Capita (GPCD)	172	172	172	172	173

The amount of water savings required from new conservation programs is not the same for SBx7-7 and MOU Flex Track compliance. In the case of SBx7-7, the objective is to reduce 2015 per capita water use at least to the target of 174 gpcd, and any expected savings from codes, rates, and existing conservation programs can be credited toward meeting this goal. This is not the case for MOU Flex Track compliance, where the objective is to implement conservation programs that would save at least as much as the Flex Track target. Unlike SBx7-7, water savings from codes and rates cannot be credited against the Flex Track target. Only savings from existing conservation programs can be deducted.

Savings required from new conservation programs to meet SBx7-7 and MOU Flex Track compliance requirements are summarized in Table 6.3-3. In the case of SBx7-7, expected savings from codes, rates, and existing programs results in an adjusted baseline demand that is 251 AF less than the SBx7-7 target demand. However, an additional 5 percent reduction in adjusted baseline demand will be required to meet the 2020 SBx7-7 target. In the case of MOU Flex Track compliance, additional water savings of 91 AF are needed by 2015.

Table 6.3-3: New Program Savings Required for SBx7-7 and MOU Compliance		
2015 Net Savings Requirement (AF)	**SBx7-7**	**MOU Flex Track**
Gross Savings Requirement	**-71**	**126**
Less		
Savings from codes	295	NA
Savings from rates	-150	NA
Savings from existing programs	35	35
Subtotal Expected Savings	*180*	*35*
Savings Required from New Programs[1]	**-251**	**91**
[1]*Negative net savings indicates that no new program savings required for compliance*		

6.4 Conservation Program Analysis

Cal Water engaged in a detailed, multi-step process to identify the best mix of programs to achieve the required savings. The process began with an inclusive range of potential program concepts. These concepts were qualitatively analyzed to eliminate those that were clearly inappropriate for each district and thereby narrow the analytical focus to those remaining programs that were potentially appropriate. Those programs were then subjected to detailed quantitative analysis. This Section describes the steps of the analytical process for Stockton District, and the programs that emerged as potential components of a portfolio of programs for the district.

As a result of an exhaustive search of the literature, consultation with experts in the field, knowledge of conservation programming by other water suppliers, and the experience of the project team, a total of more than 75 conservation program concepts were defined. At this point in the process, the goal was to be as inclusive as possible. The list was therefore intentionally large to ensure that all possible program concepts were considered. Cal Water did not want to risk inadvertently excluding a program from consideration.

Once the range of program concepts was defined, the next step was to subject each program concept to a careful district-specific qualitative screen, the objective of which was to eliminate those program concepts that were clearly inappropriate.

A preliminary quantitative analysis was conducted on the programs that passed the qualitative screen. To do that, estimates were made of key savings and cost parameters for each of the programs. Where applicable, these estimates were based on prior Cal Water experience with similar programs. In the absence of such experience, the experience of other water suppliers, the expertise of the project team, consultation with national experts, and published figures, where available, were relied upon. In particular, estimates developed by the California Urban Water Conservation Council and the Alliance for Water Efficiency were utilized where such estimates were available. While in most cases, the savings assumptions for a program do not vary across districts, for several programs, they do due to district-specific characteristics of household size, climate, etc. Other than meter installation, program cost assumptions are uniform across districts, although in some cases, cost sharing with other water utilities reduce Cal Water's share.

Using the results of the qualitative screening and preliminary quantitative analysis, Cal Water identified five core programs that it would run in every district over the next five years. In addition to the core programs, an additional set of non-core programs was selected. Unlike core programs, Cal Water may not offer non-core programs in every district or in every year. Implementation of non-core programs will depend on whether additional water savings are required for SBx7-7 compliance, MOU compliance, or to help address local supply constraints. Table 6.4-1 lists all Cal Water core and non-core conservation programs.

Table 6.4-1: Cal Water Conservation Programs		
Program Name	Description	Target Market
CORE PROGRAMS		
Rebate/Vouchers for toilets, urinals, and clothes washers	Provide customer rebates for high-efficiency toilets, urinals, and clothes washers	All customer segments
Residential Surveys	Provide residential surveys to low-income customers, high-bill customers, and upon customer request or as pre-screen for participation in direct install programs	All residential market segments
Residential Showerhead/Water Conservation Kit Distribution	Provide residential showerhead/water conservation kits to customers upon request, as part of residential surveys, and as part of school education curriculum	All residential market segments
Pop-Up Nozzle Irrigation System Distribution	Offer high-efficiency pop-up irrigation nozzles through customer vouchers or direct install.	All customer segments
Public Information/Education	Provide conservation messaging via radio, bill inserts, direct mail, and other appropriate methods. Provide schools with age appropriate educational materials and activities. Continue sponsorship of Disney Planet Challenge program.	All customer segments
NON-CORE PROGRAMS		
Toilet/Urinal Direct Install Program	Offer direct installation programs for replacement of non-HE toilets and urinals	All customer segments
Smart Irrigation Controller Contractor Incentives	Offer contractor incentives for installation of smart irrigation controllers	All customer segments
Large Landscape Water Use Reports	Expand existing Cal Water Large Landscape Water Use Report Program providing large landscape customers with monthly water use reports and budgets	Non residential customers with significant landscape water use and potential savings
Large Landscape Surveys & Irrigation System Incentives	Provide surveys and irrigation system upgrade financial incentives to large landscape customers participating in the Large Landscape Water Use Reports programs and other targeted customers	Non residential customers with significant landscape water use and potential savings
Food Industry Rebates/Vouchers	Offer customer/dealer/distributor rebates/vouchers for high-efficiency dishwashers, food steamers, ice machines, and pre-rinse spray valves	Food and drink establishments, institutional food service providers
Cooling Tower Retrofits	Offer customer/dealer/distributor rebates/vouchers of cooling tower retrofits	Non-residential market segments with significant HVAC water use
Industrial Process Audits and Retrofit Incentives	Offer engineering audits/surveys and financial incentives for process water efficiency improvement	Non-residential market segments with significant industrial process water uses

Core and non-core programs were then subjected to a detailed benefit cost analysis, the results of which were used to inform program portfolio development discussed in the next section. The first step in this process was to refine and finalize the savings and cost specifications of each program. The program savings and cost assumptions enable the calculation of program benefits and costs to the utility and its ratepayers, and comparisons of these costs in the form of benefit-cost ratios. The tool used to do this comparison was a simplified version of the Alliance for Water Efficiency Tracking Tool. Following are descriptions of how the model calculates and compares conservation program benefits and costs.

6.5 Conservation Program Portfolio

This section presents the recommended conservation program portfolio for the Stockton District. The program analysis results described in the previous section provided the starting point for portfolio development. The next step was to determine the annual levels of program activity needed to, at minimum, meet Stockton District's water savings targets and local demand management goals. Several considerations informed these decisions, including budgetary constraints included in the current GRC decision, Cal Water conservation program administrative capacity, program market and water savings potential, and the program benefit-cost results.

The water savings requirement analysis showed that water savings from existing water efficiency codes and ordinances, scheduled adjustments to water rates, and past investment in conservation programs are expected to be sufficient to meet Stockton District's 2015 SBx7-7 per capita water use target. It also showed that an additional 9 AF of water savings from new programs would be required to satisfy MOU compliance requirements in 2015. This established the minimum level of water savings the program portfolio would need to produce by 2015. For the Stockton District, the programs selected and the activity level of each are shown in Table 6.5-1.

Table 6.5-1: Recommended Program Levels					
Program	Recommended Annual Activity Levels				
	2011	2012	2013	2014	2015
CORE PROGRAMS					
Rebates/Vouchers					
Toilets	360	360	360	420	420
Clothes Washers	170	170	170	170	170
Urinals	0	0	0	0	0
Customer Surveys/Audits	200	200	200	110	110
Conservation Kit Distribution	350	350	350	350	350
Pop-Up Nozzle Distribution	7,400	7,400	7,400	22,200	22,200
NON-CORE PROGRAMS					
Direct Install Toilets/Urinals	460	460	460	510	510
Smart Irr. Controller Vendor Incentives	10	10	10	10	10
Large Landscape Water Use Reports	60	60	60	150	150
Large Landscape Surveys/Incentives	20	20	20	90	90
Commercial Kitchen Rebates/Vouchers	0	0	0	30	30
Cooling Tower/Process Water Retrofit Incentives	0	0	0	0	0

The program levels for 2011-2013 reflect the funding level approved in Cal Water's most recent General Rate Case (GRC) settlement with the CPUC. Program levels for 2014 and 2015 will be dependent on the outcome of Cal Water's 2014-2016 GRC filing.

Table 6.5-2 shows projected water savings associated with the programs listed above. The projected savings exceed the 2015 SBx7-7 and MOU Flex Track targets but are needed for the district to meet its 2020 SBx7-7 target.

Table 6.5-2: Projected Water Savings by Program

Program	Annual Water Savings (AF)				
	2011	2012	2013	2014	2015
CORE PROGRAMS					
Rebates/Vouchers	10.8	21.3	31.3	48.4	64.9
Toilets	2.8	5.6	8.2	10.7	13.1
Clothes Washers	0.0	0.0	0.0	0.0	0.0
Urinals	16.1	30.5	43.6	44.2	44.8
Customer Surveys/Audits	5.5	10.3	14.5	18.2	21.5
Conservation Kit Distribution	29.6	59.2	88.8	177.5	266.3
Pop-Up Nozzle Distribution	*64.8*	*126.8*	*186.3*	*299.1*	*410.5*
Subtotal Core Programs					
NON-CORE PROGRAMS					
Direct Install Toilets/Urinals	15.9	31.2	45.8	71.1	95.4
Smart Irr. Controller Vendor Incentives	0.1	0.2	0.2	0.3	0.4
Large Landscape Water Use Reports	6.5	6.5	6.5	16.3	16.3
Large Landscape Surveys/Incentives	3.7	7.5	11.2	28.6	45.9
Commercial Kitchen Rebates/Vouchers	0.0	0.0	0.0	7.5	15.0
Cooling Tower/Process Water Retrofit Incentives	0.0	0.0	0.0	0.0	0.0
Subtotal Non-Core Programs	*26.2*	*45.3*	*63.8*	*123.8*	*173.1*
Total Core and Non-Core Program Savings	**91.1**	**172.2**	**250.1**	**422.9**	**583.6**

Based on the above analysis the district is projected to achieve its district-specific 2015 SBx7-7 compliance target through a combination of passive and active savings. Appendix C, Worksheet 24, includes a comparison of conservation savings required to meet SBx7-7 compliance targets to the savings expected as a result of existing and planned programs, including passive savings due to code changes.

For the purpose of this analysis it is assumed that there will be a linear reduction in GPCD from 2015-2020 to achieve the district-specific 2020 SBx7-7 compliance target. Programs required to achieve 2020 SBx7-7 compliance will be outlined in the next Conservation Master Plan for the district, which will be included in the 2015 UWMP. The activity level of each future program will depend on Cal Water's success in obtaining the necessary funding through the CPUC rate case process.

As part of the Conservation Master Plan development, one page program summaries, or fact sheets were developed for each recommended program. These fact sheets provide a quick reference summarizing program design and marketing, expected level of customer participation, projected water savings, and proposed program expenditure for the period 2011 – 2015. The fact sheets for the Stockton District are included in Appendix G.