Water Supply Assessment
For The
Tidewater Crossing Master Plan Development

City of Stockton Municipal Utilities Department

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TABLE OF CONTENTS

1.0 INTRODUCTION 1

1.1 BACKGROUND 1
1.2 PROJECT DESCRIPTION 1
1.3 OVERVIEW OF CURRENT WATER SUPPLY CONDITION 3
1.4 OVERVIEW OF COSMA'S FUTURE WATER DEMANDS 5

2.0 ELEMENTS OF A WSA [WATER CODE SECTION 10910] 7

2.1 DETERMINE IF PROJECT IS SUBJECT TO CEQA [SECTION 10910(A)] 8
2.2 IDENTIFY RESPONSIBLE PUBLIC WATER SYSTEM [SECTION 10910(B)] 8
2.3 DETERMINE IF UWMP INCLUDES WATER DEMANDS [SECTION 10910(C)] 8
2.4 IDENTIFY EXISTING WATER SUPPLIES FOR THE PROJECT [SECTION 10910(D)] 9
2.4.1 Existing Surface Water Supplies 9
2.4.2 Existing SEWD Surface Water Contract Entitlements 10
2.4.3 Existing Groundwater Supplies 15
2.4.4 Section 10910(d)(2)(B) 19
2.4.5 Section 10910(d)(2)(C) 20
2.4.6 Section 10910(d)(2)(D) 20
2.5 SECTION 10910(E) 21
2.6 SECTION 10910(F) 21
2.6.1 Section 10910(f)(1) 22
2.6.2 Section 10910(f)(2) 22
2.6.3 Section 10910(f)(3) 23
2.6.4 Section 10910(f)(4) 24
2.6.5 Section 10910(f)(5) 26
2.7 EXISTING CONJUNCTIVE MANAGEMENT PROGRAM AND MODEL 28
2.8 WATER SUPPLY ASSESSMENT AS PER SECTION 10910 29
2.8.1 Sustainable Yield of Groundwater 29

3.0 CONJUNCTIVE USE MODEL RESULTS 31

4.0 DETERMINATION OF SUFFICIENCY 36

LIST OF TABLES

Table 1. Tidewater Crossing Conceptual Land Use Summary 3
Table 2. Projected Future Water Demands based on Approved General Plan 9
Table 3. Current and Future SEWD Water Sources and Critical Year Availability 12
Table 4. Availability of Water Under the OID/SSJID Interim Water Contract 14
Table 5. Water Demand and Groundwater Yield Considered in WSA 31
Table 6. Existing (2004), Proposed, and Project Water Supplies and Water Demands for the COSMA by Retail Service Provider 35

LIST OF FIGURES

Figure 1. Project Location Map 2
Figure 2. COSMA Water Retail Providers 4
Figure 3. Population and Water Demand Increase Over Time 7
Figure 4. COSMA Water Demand By Water Retailer 11
Figure 5. Use of SEWD and Groundwater Supplies by Water Retailer 11
Figure 6. SEWD Existing, Future, and Potential Surface Water Right 13
Figure 7. Groundwater Elevation Hydrographs for Areas Near the City of Stockton 16
Figure 8. COSMA Spring 2004 Groundwater Elevation Contours 18
Figure 9. Conceptual Rate Design of Water Retailers (COSMUD Model) 20
Figure 10. COSMA Historical Groundwater and Surface Water Supplies (1994 to 2005) 22
Figure 11. Existing COSMA Well Locations 25
Figure 12. Regional Change in Groundwater Elevations based on 2035 General Plan Update 27
Figure 13. Projected Average Surface Water Contract Use from 2000 to 2035 Based on Existing Supplies and Existing Water Demands Plus Project 33
Figure 14. 70-year Historic Hydrologic Period Using Existing Water Demands Plus Project and Existing Water Supply Conditions at 2035 34
Figure 15. Average Groundwater Use vs. Existing Demand Plus Project From 2000 to 2035 Using 0.75 AF/ac/year Groundwater Sustainable Yield 34
Figure 16. Maximum Single Year Groundwater Use vs. Demand From 2000 to 2035 36

LIST OF EXHIBITS

EXHIBIT “A” ..... Project Location Map

EXHIBIT “B” ..... City of Stockton General Plan Update Water Supply Evaluation

EXHIBIT “C” ..... Existing Surface Water and Wheeling Contracts

EXHIBIT “D” ..... List of Pending Developments

LIST OF ACRONYMS

AF – Acre-feet

AF/ac/year – Acre-feet per acre per year

Cal-Water – California Water Service Company

CEQA – California Environmental Quality Act

COS – City of Stockton

COSMUD – City of Stockton Municipal Utilities Department

COSMA – City of Stockton Metropolitan Area

CVP – Central Valley Project

DPH – California Department of Public Health

DWR – California State Department of Water Resources

DWSP – Delta Water Supply Project

ESA – Endangered Species Act

GP Update – General Plan Update

GIS – Geographic Information System

IGSM – Integrated Groundwater Surface Water Model

M&I – Municipal and Industrial Uses

mgd – million gallons per day

msl – mean sea level

NEPA – National Environmental Policy Act

OID – Oakdale Irrigation District

SEWD – Stockton East Water District

SOI – General Plan Sphere of Influence

SSJID – South San Joaquin Irrigation District

SWP – State Water Project

TAF – Thousands of Acre-feet

USBR – United States Bureau of Reclamation

UWMP – Urban Water Management Plan

WSE – Water Supply Evaluation

WSA – Water Supply Assessment (as defined by SB610)

WTP – Water Treatment Plant

1.0 INTRODUCTION

1.1 Background

The California Water Code requires coordination between land use lead agencies and public water purveyors. The purpose of this coordination is to ensure that prudent water supply planning has been conducted, and that planned water supplies are adequate to meet existing demands, anticipated demands from approved projects and tentative maps, and the demands of a proposed development (Project).

Water Code Sections 10910 - 10915 (inclusive) require land use lead agencies: 1) to identify the responsible public water purveyor for a proposed development project, and 2) to request from the responsible purveyor, a "Water Supply Assessment" (WSA). The purpose of the WSA is to demonstrate the sufficiency of the purveyors' water supplies to satisfy the water demands of the proposed development project, while still meeting the current and projected water demands of existing customers. Water Code Sections 10910 – 10915 delineate the specific information that must be included in the WSA.

This WSA is structured in way that clearly shows which portion of the Water Code Section is being satisfied by stating the section number and title. Additional information is provided where it is useful in the understanding of the Project, its water demands, and its water supplies.

1.2 Project Description

The Tidewater Crossing Specific Plan is located immediately south and southwest of the Stockton Metropolitan Airport. The Project bisects South Airport Way. The southwestern portion of the site abuts French Camp Road. (see **Figure 1** and **Exhibit "A"** for location map). The Tidewater Crossing Specific Plan is comprised of approximately 895 acres.

Tidewater Crossing Specific Plan is presently located in the unincorporated area of San Joaquin County, California, immediately adjacent to the City of Stockton at its south central limits and lies within the City of Stockton's Urban Services Boundary as designated by the adopted 1990 City of Stockton General Plan (General Plan). The Project application is for mixed land uses including residential, multi-family, commercial, schools, parks, and open space. A detailed breakdown of each land use category, its acreage, its unit water demand, and its total water demand is provided in **Table 1**. While land use is relevant to water use, it will be explained later in the WSA that a uniform water demand is assigned to this area regardless of land use unless there is a special use requiring significant quantities of water.

Figure 1. Project Location Map

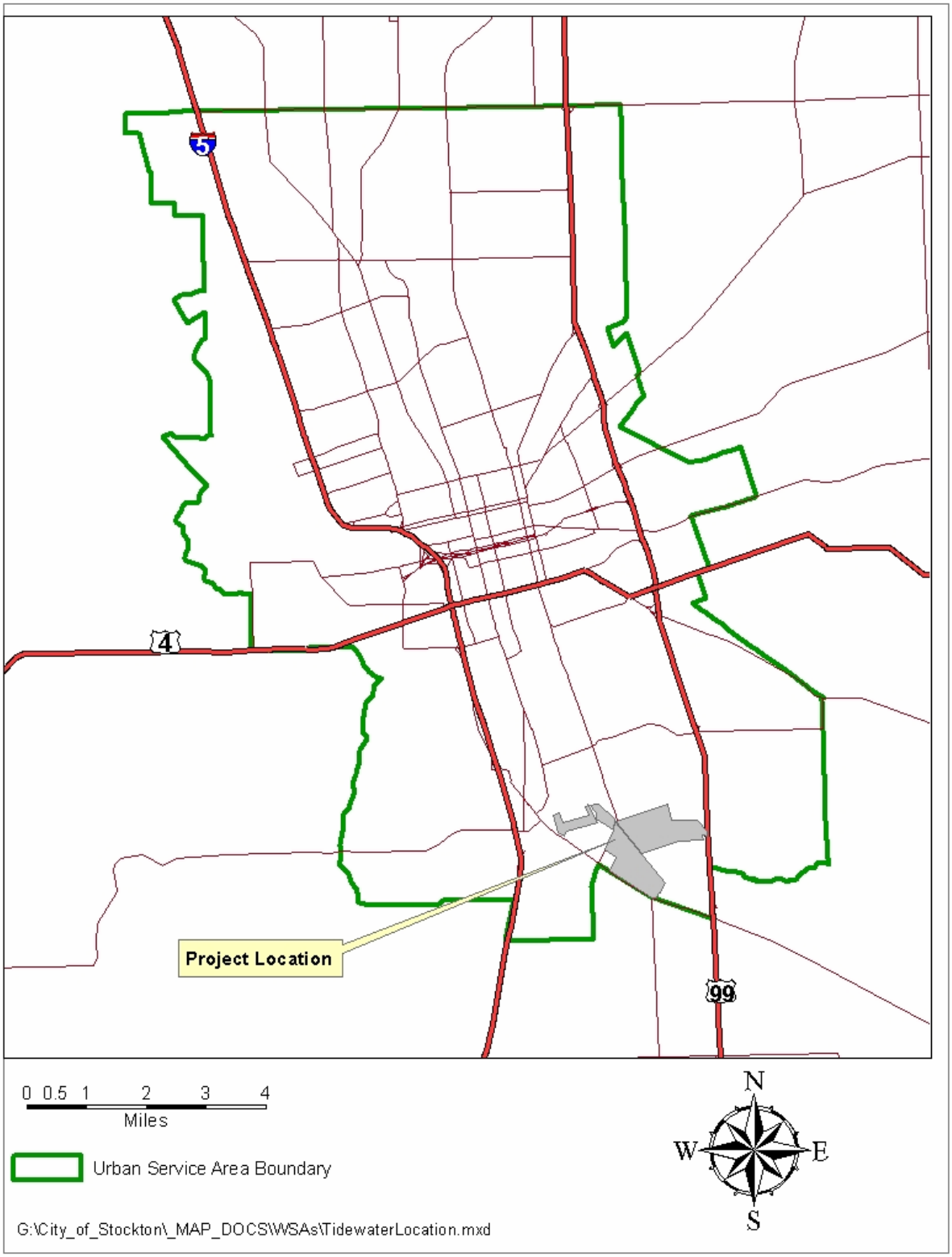


Table 1. Tidewater Crossing Conceptual Land Use Summary

Land Use	Acreage	Unit Water Demand Factor	Estimated Water Demand
High Density Residential	10.4	3.00	31.20
Medium Density Residential	90.9	1.50	136.35
Low Density Residential	192.7	1.50	289.05
Commercial	16.6	1.50	24.90
Industrial/Flood Control	341.7	1.50	512.55
Elementary School	19.4	1.50	29.10
Parks/Basins/Buffers/RR	222.9	2.00	445.80
TOTAL:	894.6		1,468.95

1.3 Overview of Current Water Supply Condition

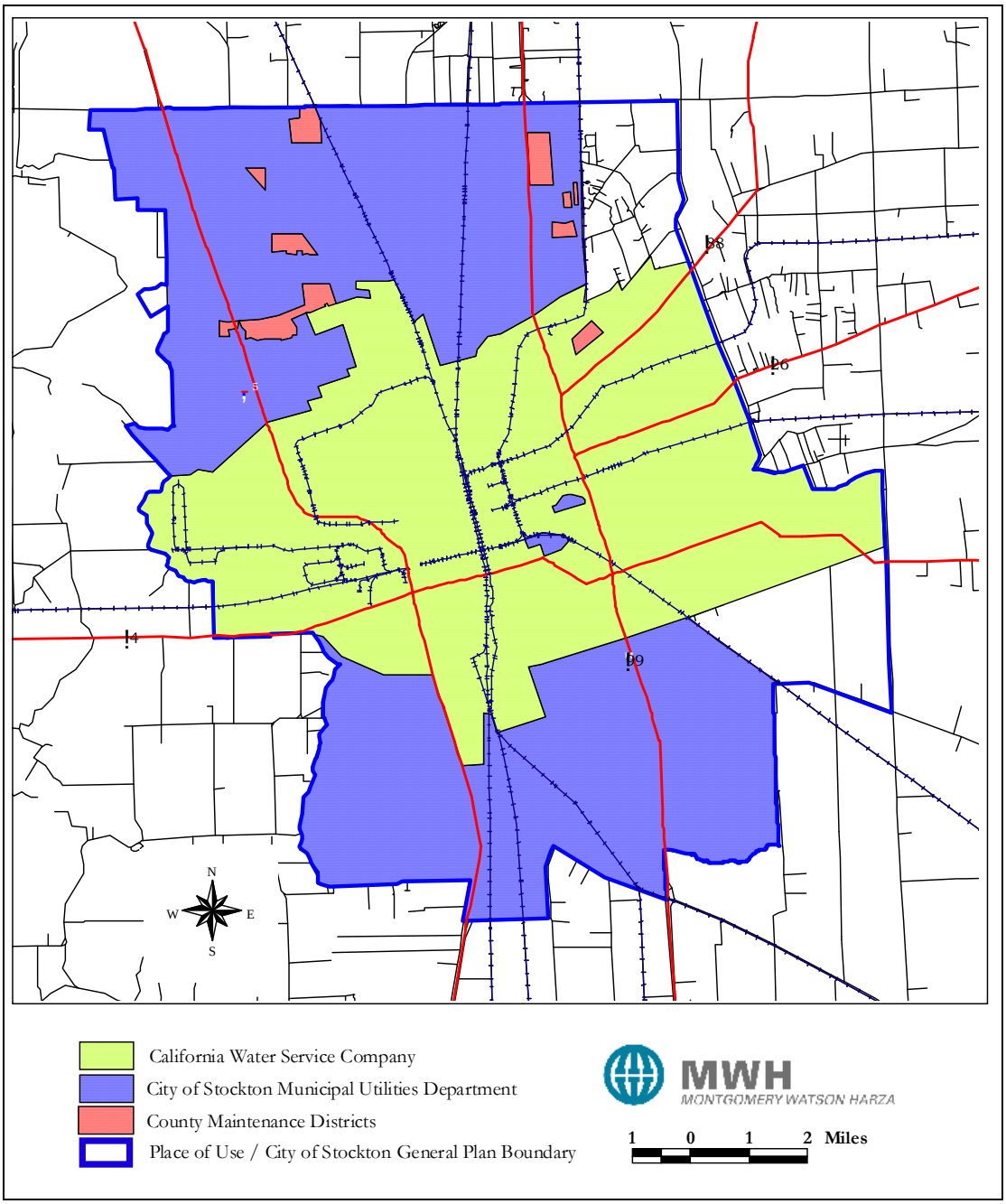
Like many northern California communities, the City of Stockton Metropolitan Area (COSMA) is experiencing substantial population growth and increasing water demands. At the same time, regulatory pressures, increased water usage in neighboring areas, and saline intrusion affecting groundwater supplies are straining the City's already limited water supplies. As a result, the City of Stockton (COS) and its three urban water retailers as shown in **Figure 2** have focused attention on the availability of existing surface water supplies from Stockton East Water District (SEWD) and the need to manage groundwater resources at a sustainable yield. The COS's objective is to achieve a long-term reliable water supply.

Beyond its cooperative participation in SEWD supplies, a product of the COS's effort in obtaining future long term reliable water supplies is a water right application to the State Water Resources Control Board (SWRCB) on January 6, 1996, that requested an increasing amount of surface water from approximately 20,000 acre-feet per year (AF/year) initially, up to 125,900 AF/year in 2050. To divert and deliver this surface water supply, the COS is pursuing the Delta Water Supply Project (DWSP) which will achieve the following three objectives:

- **managing groundwater resources for environmental benefit and to provide a long-term sustainable yield,**
- **satisfying future demands by conjunctively using groundwater and surface water, and**
- **providing the COSMA with the flexibility to control how and from what sources water demands are met.**

On April 22, 2003, Stockton's City Council approved the DWSP Feasibility Report and directed the City of Stockton Municipal Utilities Department (COSMUD) staff

Figure 2. COSMA Water Retail Providers



to complete the necessary environmental studies to comply with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). On November 8, 2005, the Stockton City Council certified the EIR and also authorized the City staff to proceed with the project. The certified document was included as part of the water rights application package submitted to SWRCB, which issued a permit for a Delta diversion for Phase 1 in the amount of 33,600 AF/year on March 8, 2006.

Once construction of the Phase 1 DWSP is completed, the urban water retailers will continue to rely upon existing surface water supplies through SEWD and existing groundwater supplies that underlie the COSMA service area. The reliability of water supply resources for the COSMA will be secure for some time while plans and agreements are secured for optimum use of water supplies for the long term build-out of the COS General Plan. It should be noted that this WSA does not consider the DWSP an existing water supply and will only be included as a future water supply if existing water supplies are insufficient to meet existing water demands plus the Project.

1.4 OVERVIEW of COSMA's Future Water Demands

The water demands associated with new growth in the COSMA were evaluated to 2015 as part of the April 2003 DWSP Feasibility Report and have been evaluated to 2035 as part of a Water Supply Evaluation (WSE) completed in May 2006 (see **"Exhibit B"**) on behalf of the three COS water retail providers (COSMUD, California Water Company (Cal Water), and San Joaquin County (County) in order to provide information relevant to the City's 2035 General Plan. The WSE, which is hereby incorporated by reference herein, has been relied on in this WSA in order to provide information regarding a scenario where growth and water demands are beyond the existing and projected growth contemplated in the required WSA analysis. The WSE was requested by the COS Planning Department for a "proposed" land use scenario for the City of Stockton's General Plan Update and may not reflect the land use plan that is ultimately adopted.

As the WSE itself explains on pages 55 through 59, the WSE reflects the City's most recent and best information regarding the amounts of groundwater on which it can reliably depend, and the amounts of surface water from SEWD on which it can reliably depend. This information supersedes previously available information found in the DWSP Feasibility Study and in other documents, such as the City's Urban Water Management Plan (UWMP), that relied on the Feasibility Study for information regarding the reliability of these supplies. Because the WSE projects water demand through 2035, moreover, the document provides information that more than satisfies the legal requirement that this WSA, like all others, must consider a 20-year planning horizon.

The findings of the DWSP Feasibility Study evaluated current water demands and developed a land use based water demand projection for build-out of the current City General Plan to 2015 and a population based water demand projection to 2050. Water demands within the COS are projected to increase from the present 68,000 Acre-Feet/year (AF/year) in 2005 to 85,330 AF/year by build-out of the current General Plan in 2015. Since land use based water demand projections are generally preferred over population based projections, the General Plan Update projected water demands to 2035 were used in place of the DWSP water demands in the Water Supply Evaluation.

For the period from 2015 to 2035, the WSE increases projected demands from 85,330 AF/year to 156,083 AF/year, respectively, as shown in **Figure 3,** where both population growth (left y axis) and water demands (right y-axis) are shown. As noted above, the WSE is used in this WSA as a supporting document for purposes of providing a glimpse at the future water supply condition and the necessary water supply facilities to meet the projected water demand. Four fundamental elements of the Water Supply Evaluation will be used in this WSA as follows:

1. All existing supplies (i.e., SEWD surface water and available groundwater) will be evaluated for adequacy prior to making water available from the DWSP. The DWSP will not be used unless existing, reasonably foreseeable, and Project water demands exceed the defined thresholds for sustainable groundwater use and the SEWD surface water supplies are being fully utilized.

2. Water supply conditions will be evaluated to 2035 rather than 2026 (the required 20 year projection as required by Water Code Section 10910) and will be based on existing surface water supplies only. Surface water supplies for the DWSP will be included only if the WSA analysis requires the DWSP to be constructed to meet projected water demands. This implies that all existing supplies including SEWD and available groundwater supplies will be exhausted prior to making the DWSP available.

3. Conservative groundwater management strategies defined in the Water Supply Evaluation will be used in this WSA regardless of whether the DWSP is shown to be needed or not.

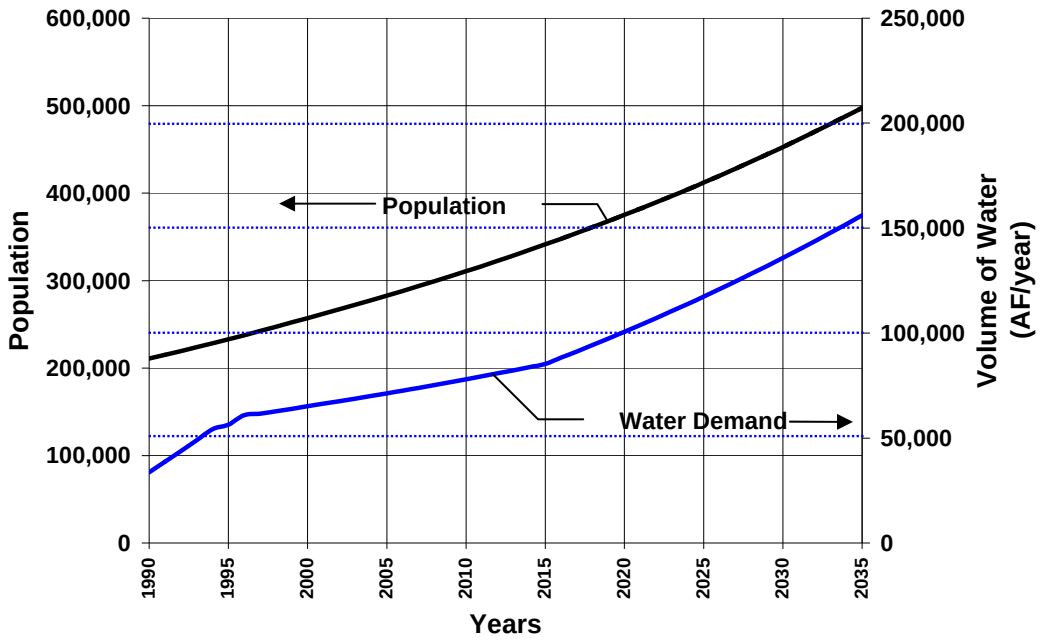
4. Water facility requirements (e.g., size, phasing, and location) will be in accordance with the Water Supply Evaluation to 2035 and the DWSP Feasibility Report to 2050. The Feasibility Report is the only adopted document that contemplates growth and water facility requirements beyond 2035. The growth assumptions and facility phasing contained within Feasibility Report are consistent with the WSE to 2035.

In short, while this WSA did not assume approval of the proposed General Plan update but instead recognizes that the 2015 General Plan remains in place at present, the WSA nevertheless relies on the WSE prepared for the General Plan Update because (i) it includes the best information and projections currently available about (a) the reliability of groundwater supplies, (b) the reliability of SEWD surface supplies, and (c) the length of time that the first phase of the DWSP project will suffice to serve growth that might be approved under the General Plan update, and (ii) provides a 30-year time horizon that more than satisfies the need for a 20-year planning horizon in a WSA.

2.0 ELEMENTS OF A WSA [WATER CODE SECTION 10910]

The format of the WSA is intended to follow Water Code Sections 10910 – 10915 to delineate clearly the specific requirements of a WSA. This WSA is structured according to those requirements. Section 10910 of the Water Code is intended to evaluate if existing supply sources are adequate to meet the Project demands. What follows is a breakdown of the elements of the Water Code that respond to the adequacy of existing supplies. If Section 10910 is satisfied, the WSA can move forward with a positive finding of sufficiency in water supplies.

Figure 3. Population and Water Demand Increase Over Time



2.1 Determine if Project is Subject To CEQA [Section 10910(a)]

The COS Planning Department has made a determination that the Project is subject to CEQA.

2.2 Identify Responsible Public Water System [Section 10910(b)]

The COS Planning Department has identified COSMUD as the responsible public water system purveyor for the Project. The Planning Department possesses information regarding other approved development applications within the COS that may be provided water by one or more of the three water retailers in the COSMA which should be considered in the preparation of this WSA.

2.3 Determine if UWMP Includes Water Demands [Section 10910(c)]

The Project water demands are included in the 2005 UWMP water demand projections to 2015. Projected annual water supplies are included in the UWMP to 2030, and in the General Plan Update Water Supply Evaluation to 2035. The water demand factors adopted by the COS for water supply planning in the DWSP Feasibility Report are shown in **Table 2** and are also included in the UWMP. The weighted average of the urban water demand factor is equivalent to 1.6 AF per acre/year (85,330 AF/year / (82,064 acres within Urban Services Boundary - 27,585 acres of Ag within Urban Services Boundary) = 1.6 AF per acre/year). This factor will be applied to the gross acreage of the Project for estimating water demands. It should be noted that this method of demand calculation is used given that some projects requiring a WSA only have a change from native or agriculture to urban with no defined land use categories (e.g., COS annexation with undetermined land use) or the acreages of the land use categories are still in flux at the time of request. As mentioned previously, if a project warrants a specific demand calculation by having an intensive water use (i.e., large regional parks, recreational lakes, etc), then this method may be abandoned. In cases where land uses are provided, a check is made to see if the calculated water demand falls close to the 1.6 AF/acre/year. In the case of this project, the average demand is **1.64** AF/acre/year based on the land use categories, acreages, and water demands given in **Table 1**.

Table 2. Projected Future Water Demands based on Approved General Plan

General Plan Land Use Designation	Unit Demand Factor (AF/ac/year)	General Plan Urban Services Area at 2015 (Acres)	Future Municipal Water Demands at 2015 (AF/year)
Low-Medium Density Residential	1.5	31,222	47,872
High-Density Residential	3.0	1,368	4,104
Administrative Professional	1.5	841	1,266
Commercial	1.5	3,776	5,749
Performance Industrial/Industrial	1.5	9,582	14,020
Institutional	1.5	6,648	10,235
Park and Recreational	2.0	1,042	2,084
Agricultural/Open Space	-	27,585	-
Total:	-	82,064	85,330

2.4 Identify Existing Water Supplies for the Project [Section 10910(d)]

Section 10910(d)(1)
Section 10910(d)(1) requires identification of existing water supply entitlements, water rights, or water service contracts relevant to the Project and quantification of water obtained by the COS pursuant to those water supply entitlements, water rights, or water service contracts in previous years.

2.4.1 Existing Surface Water Supplies

Stockton East Water District (SEWD) was organized as a public agency on June 7, 1948 under the provisions of the California Water Conservation District Act of 1931. Since 1978, SEWD has been treating and supplying treated surface water up to 45 million gallons per day (mgd) to the region's urban areas through its three urban contractors (water retailer providers): COSMUD, Cal-Water, and the County (see **Figure 2** for location of service areas). The historical water demands from 1994 to 2005 from each of the urban contractors are illustrated in **Figure 4**. Both local indigenous groundwater from portions of the regional aquifer underlying each purveyor (groundwater supplies are discussed in some detail after the surface water section) and surface water from SEWD have satisfied the three water retail provider's water demand during this period of time. The split between the two supplies for each water retail provider is illustrated in **Figure 5**. SEWD also provides surface water to San Joaquin County farmers (this amount is not included or considered in this WSA). SEWD is currently pursuing phased efficiency enhancements to their surface water treatment plant (WTP) to increase capacity by 15 mgd for a rated WTP capacity of 60 mgd by

2009. SEWD's recent enhancements have increased capacity in their WTP from 45 mgd to 50 mgd.

Groundwater extraction capacity within the General Plan Boundary is conservatively sized for a certain level of redundancy to meet maximum day demands and fireflow requirements in the event that curtailments in surface water occur in dry and critical years. Prior to construction of the DWSP (first phase assumed to be operational in 2011), water demands will exceed available surface water treatment capacity necessitating the on-going use of groundwater facilities until the SEWD expansion and/or the DWSP is operational as a future water supply.

2.4.2 Existing SEWD Surface Water Contract Entitlements

The COSMA currently receives surface water supplies (via SEWD) from five sources as shown in **Table 3**. Surface water supplies can come from many sources in the eastern Sierra Nevada foothills as shown in **Figure 6**. Total existing firm supplies for municipal and industrial (M&I) uses are approximated to yield 104.1 TAF/year under wet and above average hydrologic conditions. Their full entitlements including interim and future supply sources could yield approximately 180 TAF/year. This portion of the WSA only considers their existing surface water contracts.

Currently, SEWD's ability to use their full water right amount is constrained by one or more of the following in any given year: 1) the hydrologic year type (i.e., dry year curtailment provisions in surface water contracts and reductions in surface water contracted from other agencies), 2) the COSMA M&I water demand, 3) the raw water delivery system to the SEWD WTP, 4) the rated SEWD WTP capacity, and 5) the treated water conveyance capacity from the WTP.

Figure 4. COSMA Water Demand By Water Retailer

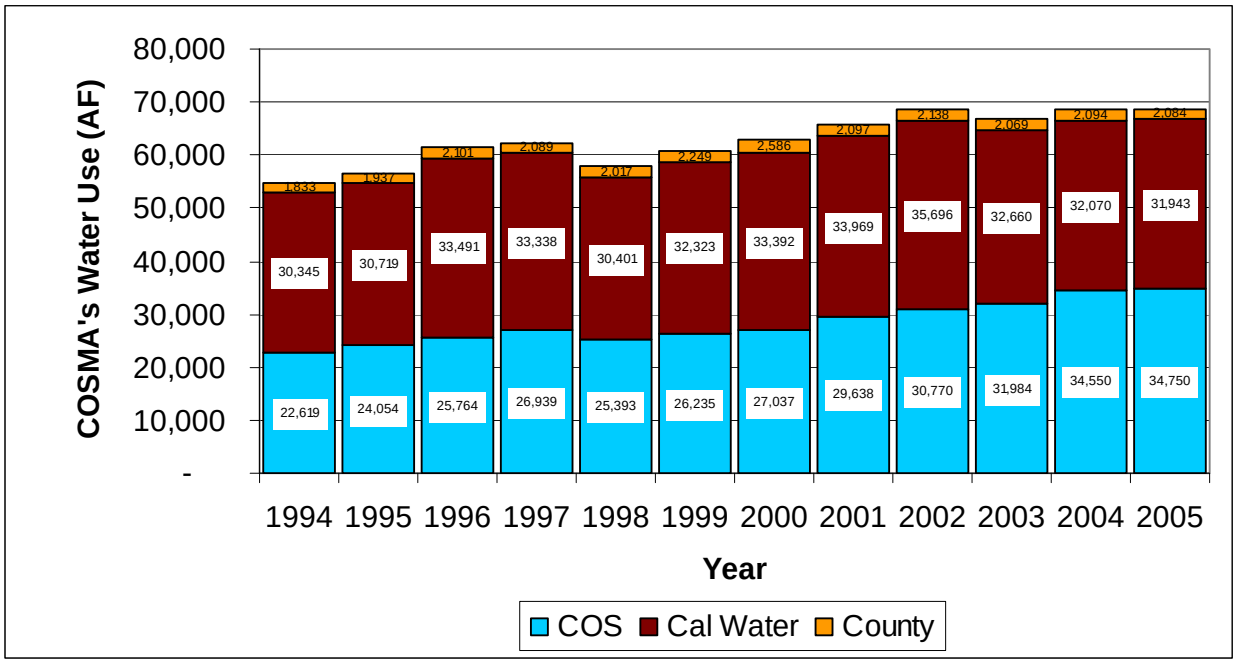
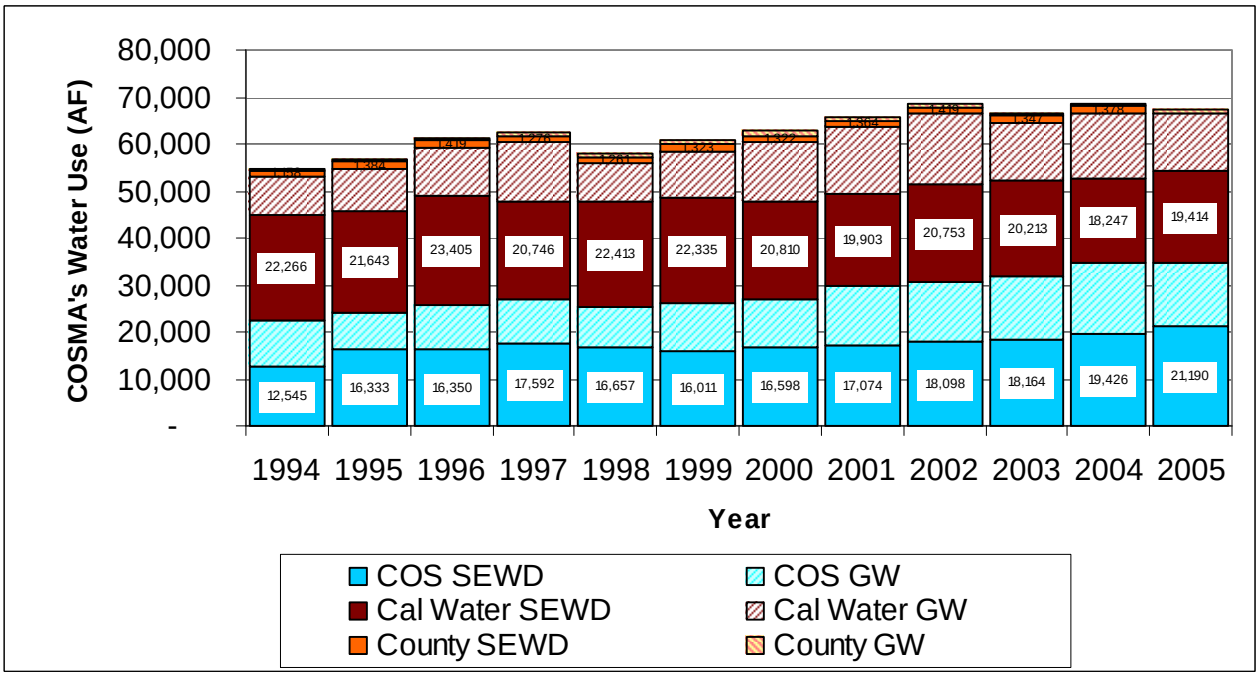


Figure 5. Use of SEWD and Groundwater Supplies by Water Retailer



Existing firm surface water contracts held by SEWD include a Bureau of Reclamation (Reclamation) contract (New Hogan Reservoir) and a Calaveras County Water District (CACWD) contract on the Calaveras River based on appropriative water rights held by CACWD, and a Reclamation Central Valley Project (CVP) contract on the Stanislaus River (New Melones Reservoir). Contract documents, agreements, and applications for these surface water supplies are available for review in **Exhibit "C"**. A full description of each contract is provided below.

Table 3. Current and Future SEWD Water Sources and Critical Year Availability

Source	Annual Contract Amount Thousand Acre-feet (TAF)	Projected "Critical Year" Annual Availability (AF/year)			
		Planning Year			
		2000	2010	2020	2035
Current and Future "Firm" Sources of Supply					
Reclamation – New Hogan Water Supplies, CACWD and SEWD	Total Yield 84.1 TAF [1] SEWD Entitled to M&I or Ag **40.171 TAF**	20,000	12,000	12,000	12,000
CACWD Appropriative Water Rights	Unused CACWD Rights[2] (Currently at Approximately M&I **24 TAF** initially to **10 TAF** at build-out)	20,000	10,000	10,000	10,000
Reclamation – New Melones Interim Water Contract and Section 215 "Spill" Water	Total Contract 75 TAF (M&I **40 TAF**) (Ag & Recharge 20 TAF) (Losses 15 TAF)	Not Available in Dry Years			
SSJID Transfer - Stanislaus River	(Interim M&I **15 TAF**)	4,000	4,000	0	0
OID Transfer - Stanislaus River (includes contract renewal to 2025)	(Interim M&I **15 TAF**)	4,000	4,000	4,000	0
Future Appropriative Water Rights on the Calaveras River	(Not Yet Determined, Assumed to be M&I **50 TAF** in Wet and Above Normal years Only)	Not Available in Dry Years			
Total	**(Firm M&I 104.1 TAF initially to 94.1 TAF at build-out)** **(Approximate Max Future M&I 180 TAF)**	**48,000**	**30,000**	**26,000**	**22,000**

Notes

1. SEWD has a right to 56.5 percent of the yield, and CACWD has rights to the remaining 43.5 percent. CACWD currently uses approximately 3,500 ac-ft of its allocation, and use of their appropriative water rights is 13,000 ac-ft.
2. Based on an agreement between CACWD and SEWD, SEWD currently has use of the unused portion of CACWD's appropriative water rights that currently yields approximately 24 TAF.

Calaveras River Contracts

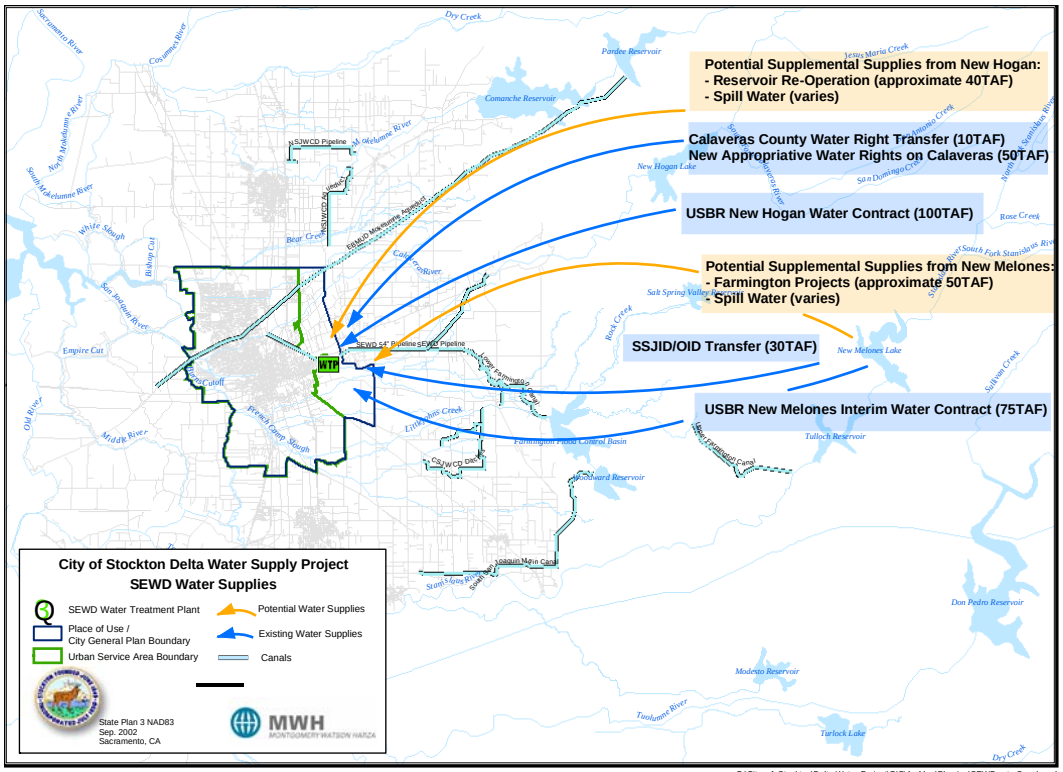
The Reclamation contract for water stored in New Hogan Reservoir is a settlement contract that provides a firm supply of water in all hydrologic year types. The maximum amount available for M&I is approximately 40.171 TAF.

The CACWD contract is also firm due to the contract being senior to most other water contracts on the river. However, as development continues in Calaveras County, less of the CACWD water will be available to SEWD and its customers. This contract currently yields 24 TAF but will diminish over time to 10 TAF.

Stanislaus River Contracts

In 1983, SEWD contracted with the USBR for 75,000 acre feet of surface water supply from the New Melones Project on the Stanislaus River to be delivered at

Figure 6. SEWD Existing, Future, and Potential Surface Water Right



Goodwin Dam. In 1987, SEWD agreed to provide a minimum of 20,000 acre feet of treated water per year to the COS Place of Use in accordance with the contract entitled, "Second Amended Contract Among the Stockton East Water District, 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." This agreement provides for a method of apportionment of the surface water supplies based on the percent of total water demand from each of the retail water purveyors. Currently, approximately 47 percent of SEWD's treated surface water supplies go to Cal-Water with the remaining going to the COSMUD and County Maintenance District service areas.

In 1994, SEWD completed construction of the Farmington Canal Project, connecting Goodwin Dam to SEWD's WTP expanding its raw water capacity. This provided access to SEWD's New Melones CVP Project Supply. However, in the mid 1990's implementation of the Central Valley Project Improvement Act (CVPIA) (P.L. 102-575) and other regulatory actions substantially reduced the volumes of water SEWD could expect to be delivered under its New Melones Project contract, especially in dry years.

Also included on the Stanislaus River are two interim contracts one from OID and the other from SSJID. SEWD and the urban water retailers have arrangements for interim water transfers from OID and SSJID, which hold senior water rights on the Stanislaus River. The OID and SSJID are both renewable contracts. Negotiations for renewal can take place as late as 2009. It should be noted that in the DWSP EIR, the assumption for these contracts used 2009 as a conservative termination date for one of the two contracts and 2019 for the expiration date of the remaining contract. The change in this WSA and also reflected in the General Plan Update Water Supply Evaluation is to have only one contract to 2025 is based on updated information and that one district, OID, in their draft Water Resources Plan, calls for long term transfer agreements (water sales) as a means to fund needed infrastructure improvements in their water delivery system. The projected variability of supply available to SEWD under the OID/SSJID contract is shown in **Table 4**.

Table 4. Availability of Water Under the OID/SSJID Interim Water Contract

Percentage of Years	Volume Available Annually (AF/year)	
	Prior to 2009	After 2009
85%	30,000	15,000
9%	12,500	6,250
6%	8,000	4,000

Other Potential Surface Water Supplies

Other future supplies are anticipated through future appropriative water right permits on the Calaveras and Stanislaus Rivers and Littlejohn's Creeks. None of these potential supplies are accounted for in this portion of the WSA. Other potential water supplies shown in **Figure 6** are also not accounted for as an existing supply in this WSA. These "other potential" sources may be considered if existing water supplies are deemed to be insufficient to meet the Project water demands over the next 20+ years.

2.4.3 Existing Groundwater Supplies

The urban water retailers currently exercise (and will continue to exercise) their rights as overlying groundwater appropriators to extract groundwater from the groundwater basin underlying COSMA for delivery to its customers. Groundwater is an extremely important resource for COSMUD and can be managed for long term sustainability and use through conjunctive use with the surface water supplies described above.

Conjunctive use implies that groundwater will be preserved as the last source of supply that is used if surface water supplies are insufficient to meet demands. Careful planning and study has and will continue to take place to insure that groundwater extraction yields, on average, do not pose any risk of salinity intrusion or undue risk to private domestic or agricultural wells in the City of Stockton area. In wet years, when surface water is more plentiful, the groundwater basin is allowed to recover through in-lieu recharge (i.e., allowing natural recharge to occur from streams and rivers by pumping at lower extraction amounts), and in the dry years, groundwater is extracted at higher amounts to meet the shortfall of surface water supplies in meeting M&I water demands. This WSA recognizes the need to protect this resource that is already threatened by salinity intrusion, and to provide a plan to protect the groundwater resources indefinitely.

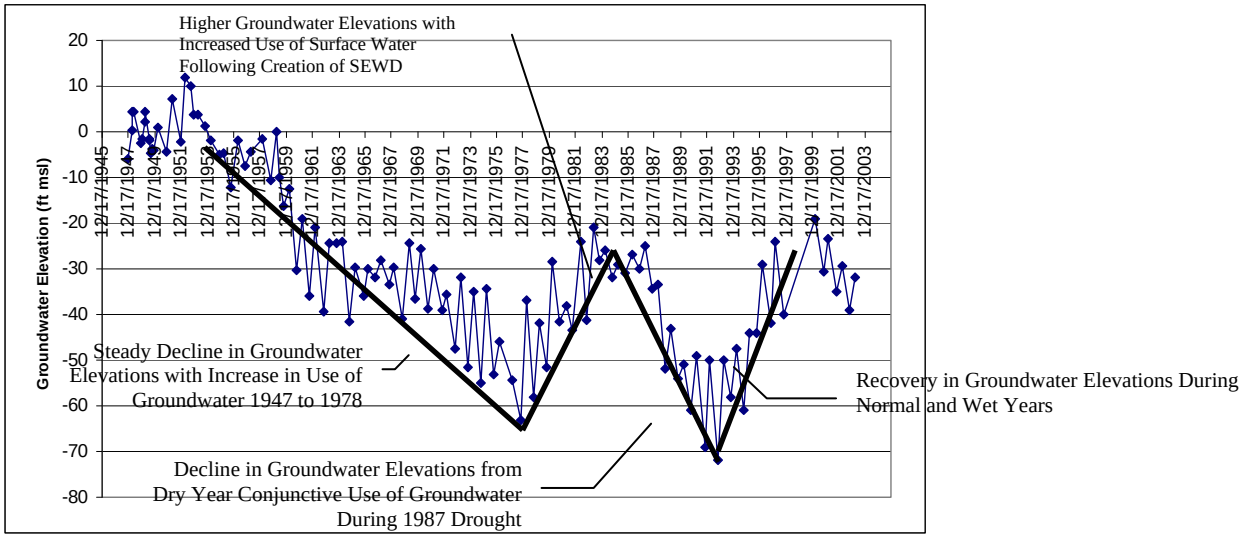
Groundwater use within the broader San Joaquin County region has resulted in a decline of groundwater elevations over the period from 1947 to 2004 as indicated by the three hydrographs shown in **Figure 7.** The figure illustrates groundwater elevations at wells located within and adjacent to the City (see **Figure 8** for well locations and recent groundwater elevations). The short duration fluctuations in **Figure 7** result from the seasonal wet and dry months and irrigation usage within each year. An overall decline in groundwater elevations from 1947 to 1978 is the result of agriculture and urban areas relying entirely on groundwater supplies.

In the late 1970's, SEWD began to provide supplemental supplies of surface water to the Stockton urban water retailers. The use of surface water in the COSMA resulted in an increase in groundwater elevations as shown in the hydrographs in **Figure 7**. Increases in the elevation continued until the drought of the late 1980's and early 1990s. The behavior of the groundwater basin during the drought and subsequent normal year hydrology of the late 1990's indicate that the basin is recovering and is stabilized and operating within a manageable range. The recent stabilization and improvement in groundwater

Figure 7. Groundwater Elevation Hydrographs for Areas Near the City of Stockton

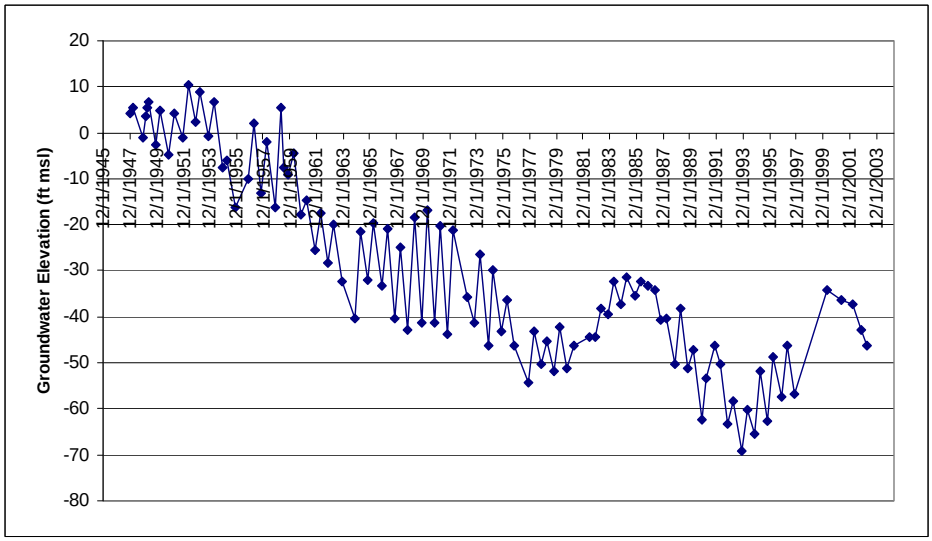
(see Figure 8 for Hydrograph locations)

a) Well 1 (State Well ID No. 02N06E26H001M) Hydrograph from 1947 to 2003



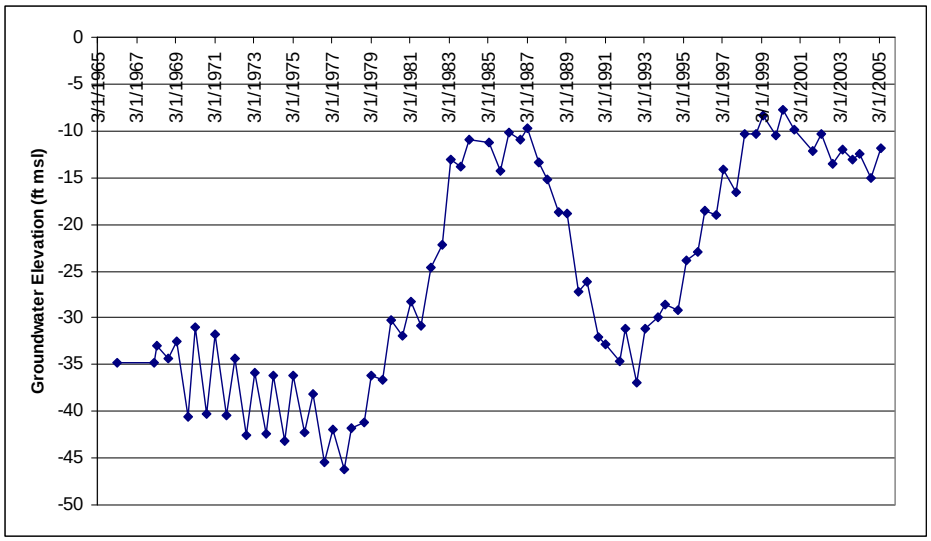
Data Source: State of California DWR State Well Monitoring Program as of November 18, 2005

b) Well 2 (State Well ID No. 02N07E15C001M) Hydrograph from 1947 to 2003



Data Source: State of California DWR State Well Monitoring Program as of November 18, 2005

c) Well 3 (State Well ID No. 01N06E03K001M) Hydrograph from 1947 to 2005



Data Source: State of California DWR State Well Monitoring Program as of November 18, 2005

elevations is the result of wet hydrology, active recharge projects, and increased surface water deliveries in areas historically served by groundwater.

Over the period from 1947 to present, the change in slope of the groundwater surface in western San Joaquin County has created a condition that has allowed saline water to migrate east-northeast into a portion of the COSMA, degrading water quality and rendering it unsuitable for municipal or agricultural use in some areas.

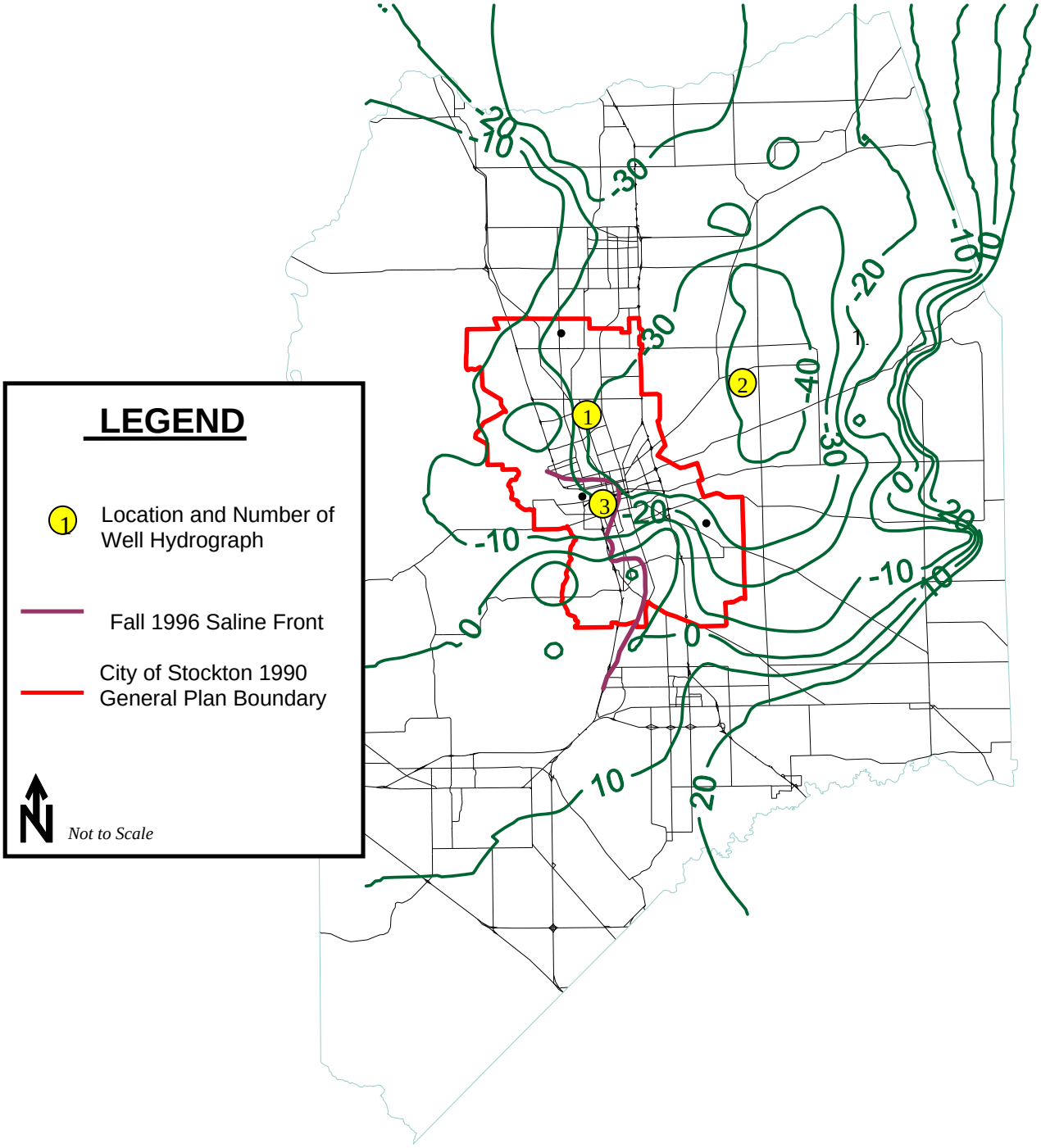
An important constraint on the sustainable yield of the groundwater basin is the change in the rate of movement of the salinity front. Over the years, there have been various estimates of the sustainable long-term yield from the groundwater aquifer. The February 1992 Supplemental Report for Water Supply prepared for the COS Special Planning Area Study states:

> *"about 40,000 acres and an average withdrawal of 0.75 AF/ac/year.*
>
> *…groundwater can provide from 0.75 to 1.0 AF/ac/year on a long term basis."*

Other references to sustainable groundwater yield are included in the COS 1995 Urban Water Management Plan Update, which uses a long term firm yield of 1.0 AF/ac/year, and from the North Stockton Master Plan in which 0.75 AF/ac/year is used. A principal objective of the COSMA urban water retailers is to reduce groundwater overdraft and protect the groundwater basin from further saltwater intrusion and water quality degradation. Thus, it is appropriate to use a reasonable but conservative assumption for groundwater extraction in the urban water retailer's long term water supply planning to insure that the long-term program is protective of the groundwater resources. For analysis based on existing water supplies, a 0.60 AF/ac/year factor is used for purposes of

Figure 8. COSMA Spring 2004 Groundwater Elevation Contours

(Data Source: California State Department of Water Resources)



evaluating the long term average annual target extraction rate, and a 0.75 AF/ac/year factor for purposes of setting a not-to-exceed extraction rate in a single dry year.

2.4.4 Section 10910(d)(2)(B)

This subsection requires a copy of the capital outlay program for financing the delivery of the identified water supply to the Project. The financial program for development of surface and groundwater supplies in the COSMA has been done at a planning level with the DWSP Feasibility Report. This work included both existing and future capital outlays including the DWSP. Under this WSA, only the SEWD WTP efficiency upgrades and raw water conveyance upgrades are needed to meet the Project water demands. The means of financing these capital elements are similar to financing of the DWSP (i.e., the DWSP is not required for meeting the Project water demands).

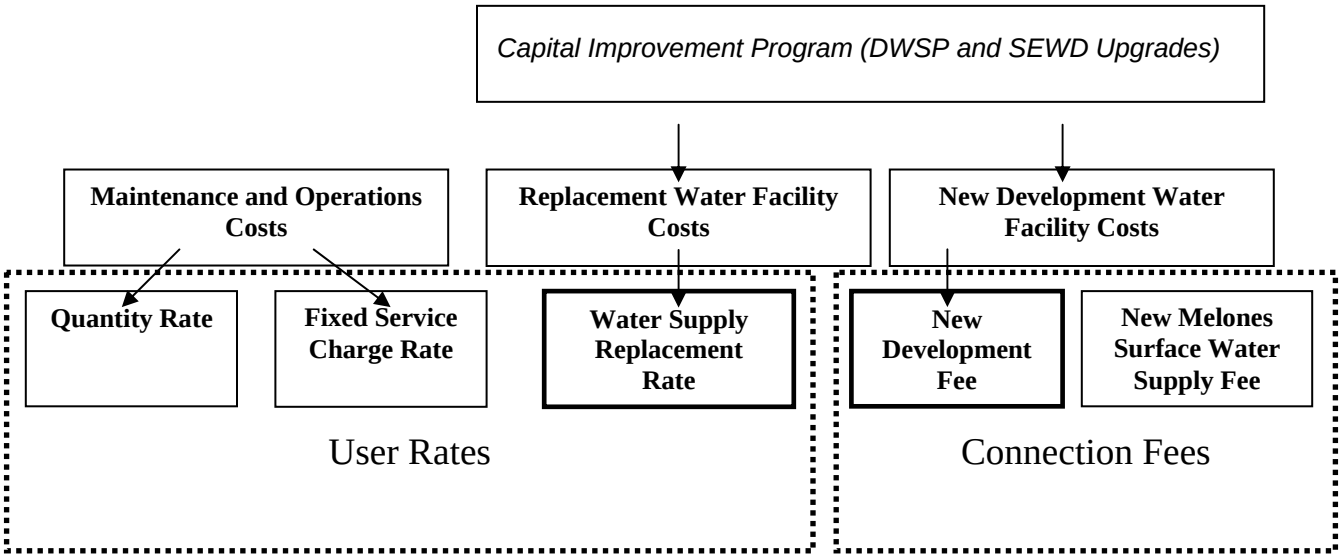
Currently, the three COSMA urban water retailers finance their respective capital costs for new and replacement facilities. Groundwater is provided by each water retailer to its respective service area. Surface water is purchased by COSMUD, Cal Water and the County from SEWD. User fees and connection fees pay for each purveyor's water facilities and for each urban contractor's portion of SEWD facilities, water supply and services.

Cal Water and COSMUD rates are similar with both at approximately $29 per month based on two-thirds of an acre foot per year for a single family home. This analysis assumes that a uniform rate and connection fee are applied over the entire service area to provide for the needed capital improvements.

The current rate structure for COSMUD (see **Figure 9**) assumes that maintenance and operations costs are recovered from revenues generated from quantity and fixed service charge rates. Since replacement water supplies benefit existing customers, an additional fixed water supply replacement rate component is added to pay for facilities needed to replace lost supplies. Since new growth customers will also be paying this component, they will share in the replacement water supply costs. Costs of capacity constructed for new development is borne entirely by new growth through a development fee.

While not a requirement of this WSA, rate studies completed for the DWSP indicate that the construction of the Phase 1 portion of the DWSP will be achieved through debt financing using a combination of user rates and development fees for debt recovery. The COS is also pursuing various federal and state grants to assist in offsetting the cost to existing rate payers. The financial program is not dependent on obtaining those grants.

Figure 9. Conceptual Rate Design of Water Retailers (COSMUD Model)



2.4.5 Section 10910(d)(2)(C)

This subsection requires identification of any federal, state, and local permits required for construction of the facilities identified for delivering the water supply to the project.

Any new wells for the GP Update will be added to each of the water purveyor's California Department of Public Health (DPH) permit to serve potable water supplies. The design of those facilities will require coordination with DPH. Expansion of SEWD WTP capacity will also be done in accordance with DPH requirements. Large SEWD WTP efficiency enhancements may require local permitting and possible CEQA action depending on the extent of new construction. No other regulatory approvals are anticipated for meeting existing demands.

2.4.6 Section 10910(d)(2)(D)

This subsection requires identification of any regulatory approvals required for delivery of the water supply to the project.

The groundwater and surface water facilities to serve the Project will be added to the DPH permit to serve potable water supplies within the COSMUD service area. The design of those facilities will require coordination with DPH. No other regulatory approvals are anticipated.

2.5 Section 10910(e)

This section states:

"If no water has been received in prior years by the public water system,…, under the existing water supply entitlements, water rights, or water service contracts [identified to serve the proposed project], the public water system, … , shall also include in its water supply assessment pursuant to subdivision (c), an identification of the other public water systems or water service contract holders that receive a water supply or have existing water supply entitlements, water rights, or water service contracts, to the same source of water as the public water system, … , has identified as a source of water supply within its water supply assessments."

The intent of this section is to identify any potential conflicts that may arise from the exercise of an existing water supply entitlement, water right, or water service contract to serve a proposed project if such water supply entitlement, water right, or water service contract has not been previously exercised.

Use of Groundwater:

The water demands of the COSMA will be met in part with groundwater. The COSMA urban water retail purveyors have previously exercised their rights as overlying groundwater appropriators to serve the water demands of their customers and will continue to exercise those rights to provide potable water supplies.

Use of Surface Water:

The surface water supplies associated with the conjunctive use program fall into three categories: 1) water supplies derived from the CVP, 2) interim water supply contracts, 3) surplus supplies available on an intermittent basis. Intermittent supplies may be used, if available, but are not considered "firm" and not used in the WSA.

The parties that could most directly be affected by exercise of these water rights are CVP contractors, State Water Project (SWP) contractors, water rights holders subject to Term 91 conditions, and riparian diverters downstream of the points of diversion for each contract.

2.6 Section 10910(f)

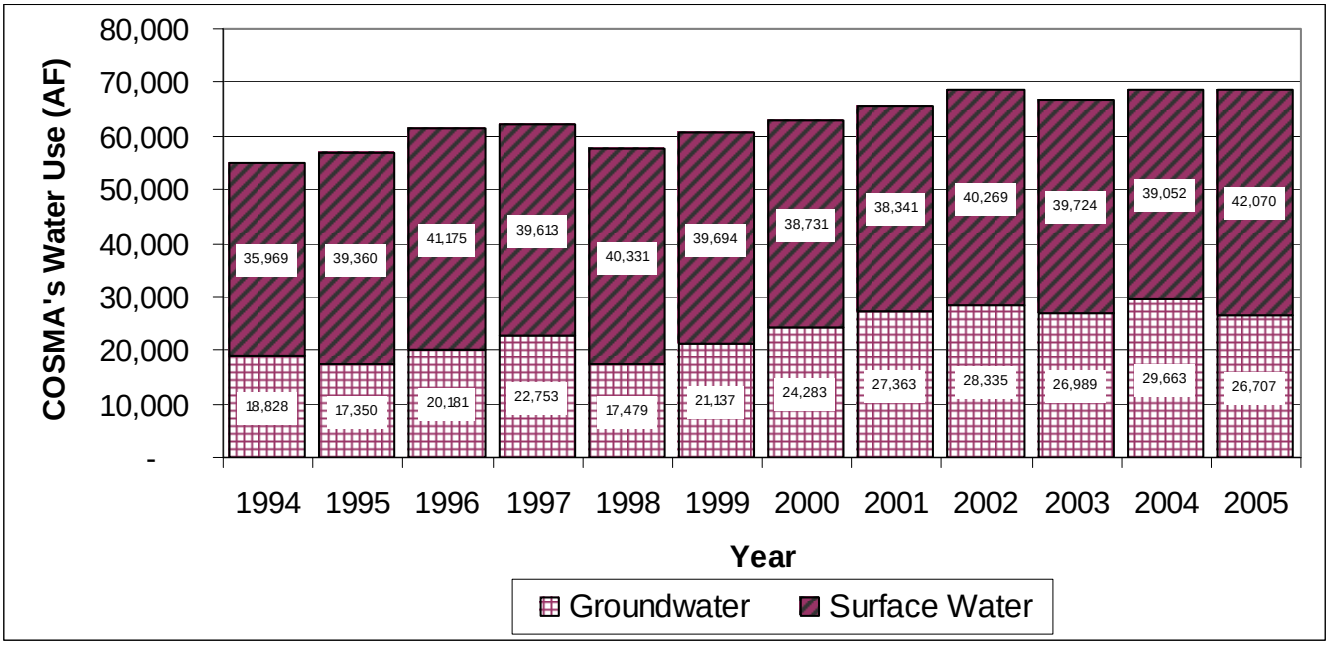
The water demands of the project will be met partially with groundwater. Consequently, Section 10910(f) requires specific additional information.

2.6.1 Section 10910(f)(1)

Section 10910(f)(1) requires a review of groundwater data contained in the UWMP.

The December 2005 UWMP does identify past volumes of groundwater extracted by the COSMA urban water retailers. A graph of historical surface water and groundwater supplies from 1994 to 2005 is provided in **Figure 9**.

Figure 10. COSMA Historical Groundwater and Surface Water Supplies (1994 to 2005)



Reference: City of Stockton Urban Water Management Plan 2005, December 2005 and COSMUD Staff

2.6.2 Section 10910(f)(2)

Section 10910(f)(2) requires a description of the groundwater basin and the efforts being taken to prevent long-term overdraft.

The groundwater basin underlying San Joaquin County is part of the contiguous Central Valley aquifer system, which supplies groundwater to agricultural, domestic, and industrial water users from Redding to Bakersfield. The basin consists of Pre-Tertiary igneous and metamorphic rocks of the Sierra Nevada that continue west beneath the valley floor. Marine sediments, thousands of feet thick, overlie the basement rocks. Continental deposits overlie the marine rocks and act as the primary freshwater aquifer in the study area. In local areas, fresh water may be present in both marine and continental deposits, and saline water may be found in continental deposits.

DWR Bulletin 146 identifies the usable aquifer in the eastern portion of San Joaquin County as the continental deposits of Miocene and younger age. The usable aquifer is present within the boundaries of the county in distinct geologic formations that include the Mehrten Formation, the Laguna Formation, the Victor Formation, flood basin deposits, and alluvial fan and stream channel deposits. The thickness of the usable aquifer ranges from less than 100 feet in the eastern edge of the county to over 3,000 feet in the southwestern edge, and is approximately 1,000 feet beneath Stockton.

Groundwater in the San Joaquin County area moves from sources of recharge to areas of discharge. Most recharge to the aquifer system occurs from the Delta and along active stream channels where extensive sand and gravel deposits exist. Consequently, the highest groundwater elevations typically occur near the Delta, the Stanislaus River, and the San Joaquin River. Other sources of recharge within the project area include subsurface recharge from fractured geologic formations to the east, as well as deep percolation from applied surface water and precipitation.

Municipal and agricultural uses of groundwater within San Joaquin County contribute to an overall average yield of groundwater estimated to be 867,000 AF/Y. Historically, groundwater elevations have declined from 40 to 60 feet. As a result, a regional cone of depression has formed in Eastern San Joaquin County creating a gradient that allows saline water underlying the Delta region to migrate northeast within the southern portions of the City. Groundwater underlying the City generally flows to the east due to the regional cone of depression.

In the past, the groundwater basin underlying San Joaquin County has been classified by DWR as being in overdraft, especially in the northeastern portion of the County. The COSMA, however, has been instrumental through its voluntary participation in funding the existing conjunctive use program for the portion of the basin underlying the COSMA that groundwater elevations have stabilized and no significant declines have been recorded since the late 1980's.

In addition to its historical contributions, the COSMA's long-term plan for preventing overdraft of the groundwater basin are embedded in the objectives of the proposed future DWSP to insure systematic, incremental implementation of the on-going conjunctive use program to provide a benefit to the groundwater basin. This benefit extends beyond the political boundaries of the COS.

2.6.3 Section 10910(f)(3)

Section 10910(f)(3) requires a description of the volume and geographic distribution of groundwater extractions from the basin for the last five years (See **Figure 10**).

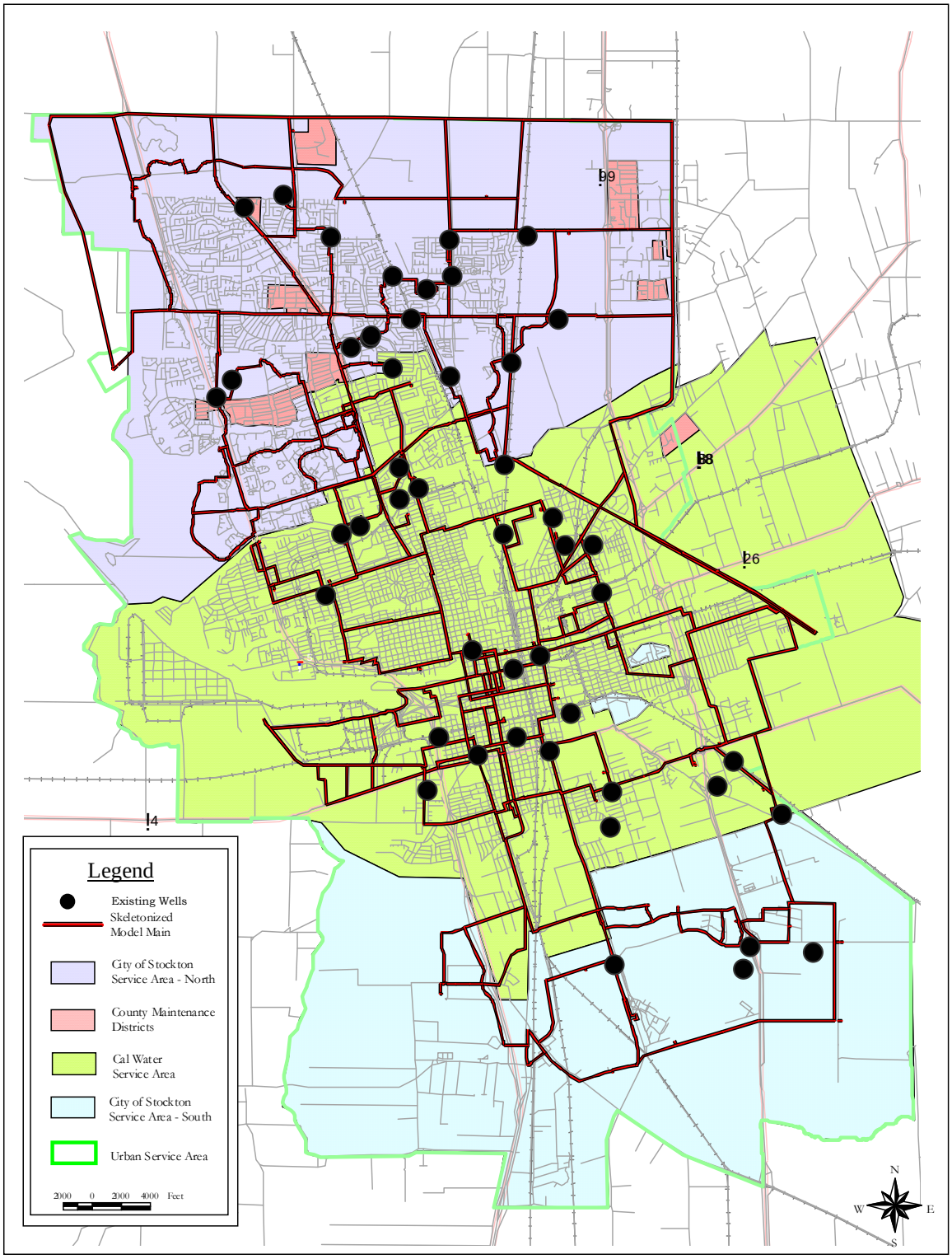
Data for municipal and industrial groundwater usage have been collected and are shown in **Figure 10**. The distribution of groundwater pumping is shown in **Figure**

11 where existing well locations are shown. Historical groundwater demands and location of agriculture and private wells have not been identified, measured, and collated.

2.6.4 Section 10910(f)(4)

Section 10910(f)(4) requires a description of the projected volume and geographic distribution of groundwater extractions from the basin. For the existing supplies, this is presented in Section **10910(d)(1)** above and volume and location of groundwater wells are represented in **Figure 10** and **Figure 11**, respectively.

Figure 11. Existing COSMA Well Locations



2.6.5 Section 10910(f)(5)

Section 10910(f)(5) requires an analysis of the sufficiency of the groundwater basin to meet the demands associated with the project.

A portion of this discussion is presented in **Section 10910(d)(1)** above and starting on **Page 15** under the heading of "Existing Groundwater Supplies". The other aspect of considering the sufficiency of groundwater is evaluating the groundwater basin as a whole for purposes of providing for existing growth, foreseeable growth (i.e., proposed and approved growth), the WSA Project growth and projected growth based on the 2035 General Plan Update.

The general approach taken to determine the adequacy of groundwater from a basin-wide perspective, assuming all existing and future users of the groundwater basin to 2035, is based on using the integrated groundwater surface water model (IGSM) for San Joaquin County that :

- Includes urban water use and groundwater extractions based on the General Plan Update,
- calculates agricultural supply requirements given the various parameters of agricultural crops, irrigation efficiencies, soil conditions, and hydrologic conditions, and
- assumes an empirical-based method for including groundwater extractions occurring from residential private wells.

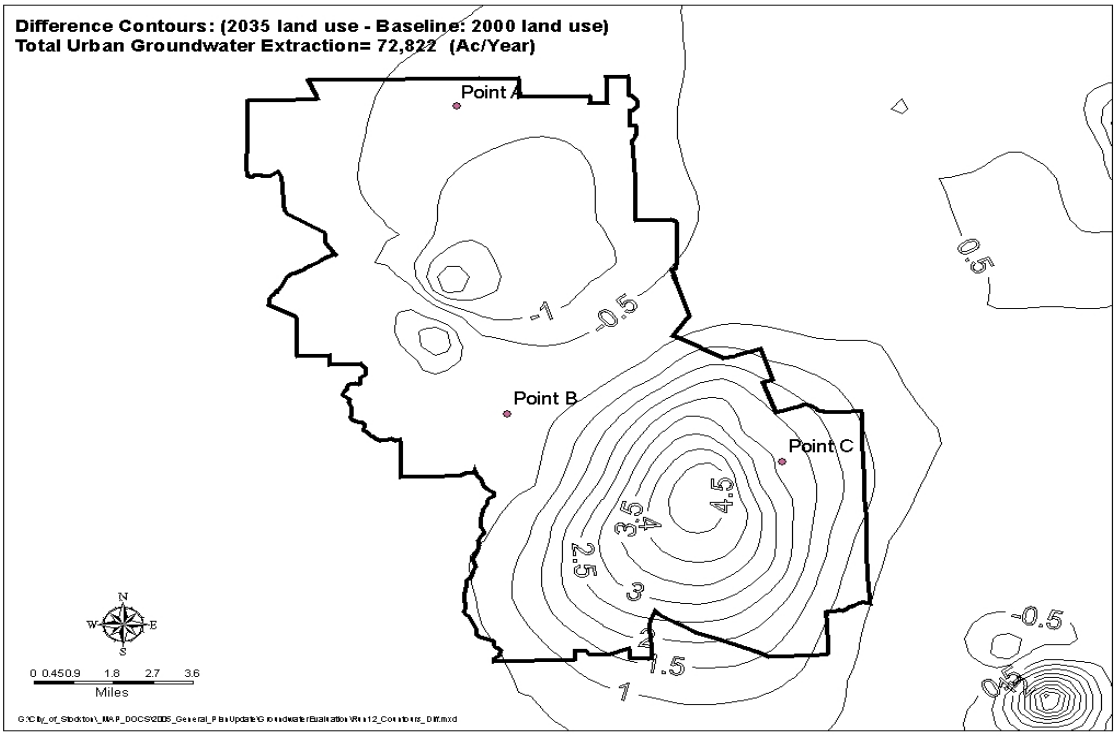
From this information as well as information pertaining to rainfall, runoff, streamflow, urban demands, etc, the IGSM can arrive at a solution regarding where groundwater elevations could be based on the input of the various data in the 70 years of historical hydrology used in the model.

The IGSM was calibrated through the period from 1969 to 1992 and then set up to be able to run the "what if" questions by looking at 2035 land use conditions and running the model through 70 years of historical hydrology. By doing this, the changes in groundwater elevations can be evaluated for 70 years based on the various scenarios to determine if any problem might exist (e.g., drying out of aquifer, dewatering of wells, movement of the salinity front, etc).

Memorialized as Exhibit "F" of the Water Supply Evaluation entitled, "Groundwater Studies Supporting Agricultural Credits," a thorough analysis was performed to consider full build-out conditions of the 2035 General Plan Update and the use of agricultural credits in urban areas where agriculture currently exists and is irrigating crops with groundwater. The results of this study provided a conservative justification that a slight increase can occur in the groundwater factor of 0.75 AF/ac/year used as a "not- to-exceed" limit in groundwater extraction over the urbanized areas of the General Plan Update in any given year

without jeopardizing the groundwater basin. The resulting changes in groundwater elevations at the higher 0.87 AF/ac/year between the 2035 General Plan Update and modeled 2000 groundwater elevations are shown in **Figure 12**. This figure indicates a significant overall improvement in the southeast portion of the 2035 General Plan Update area due to reduced groundwater extractions through retirement of agricultural lands and a slight decrease in groundwater elevations in the central and north areas located in the current urbanized areas of the COSMA. Changes in groundwater elevations in areas outside the COSMA are considered to be small. The points indicated in the figure represent control points used in the General Plan Update study in the determination of the acceptable extraction amount. Readers are referred to the study for more detailed information on how these points were used in developing the acceptable extraction amount.

Figure 12. Regional Change in Groundwater Elevations based on 2035 General Plan Update



The conclusion from the above-described evaluation is that use of groundwater under full build out conditions of the General Plan Update at a level of 0.87 AF/ac/year or lower (i.e., 0.75 AF/ac/year is the maximum set in this WSA) will not impact the larger groundwater basin; therefore the Project's use of groundwater, if held to the same constraint, will not have a negative effect on regional groundwater elevations, water quality, or groundwater quantity.

2.7 Existing Conjunctive Management Program and Model

This section describes how the water supply sources in the COSMA are currently being operated in conjunction with each other to meet its demands. This analysis includes modeling a complete conjunctive management program using all of the existing COSMA water supplies and applying those supplies against existing, reasonably foreseeable, and Project water demands. For purposes of this WSA, reasonably foreseeable is defined as all new development demands that have either been approved or have a completed Water Supply Assessment on file. The analysis addresses the question of whether existing supplies can meet demands created by existing land uses, the Project and reasonably foreseeable land uses over the next 20+ years to 2035. Especially, it addresses the concern if groundwater can sustain existing demands if curtailments in surface water occur in the dry years. Under existing conditions, groundwater extractions are targeted to not go above the long-term operational yield of the basin (0.60 acre-ft/acre/year) and to not go above the not-to-exceed yield of the basin (0.75 acre-ft/acre/year).

For this analysis, it is assumed that SEWD will maintain its existing 50 mgd surface WTP until 2009. SEWD supplies and other groundwater facility supplies will meet maximum day municipal demands. For modeling purposes, it is assumed that SEWD WTP capacity is expanded from 50 mgd to 60 mgd in 2016 (this may occur earlier based on need). A CEQA analysis may be required at the time of expansion but should result in a mitigated negative declaration given that there will only be a change to the footprint of the WTP and the improvements are considered to be efficiency improvements of an existing WTP to provide a higher level of reliability to meet existing water demands. The financing of these improvements will be coordinated in a similar manner as the initial and on-going construction of SEWD capital facilities through state and federal grants, and contributions by COS rate payers as described in **Section 10910(d)(2)(B)** on **Page 19**.

The operation of the conjunctive use model assumes that water demand is met first by SEWD and lastly by groundwater. Additional enhancements to the design and operations of the SEWD WTP are assumed to minimize the impact of scheduled maintenance, and account for the impact of higher turbidity in the raw water supply especially in the wet months of the wet years.

Groundwater extraction capacity within the existing service area boundary is conservatively sized for a certain level of redundancy for service in critical years, to meet maximum day demands, and to meet fireflow requirements. In the event that surface water is curtailed by contract, especially in dry and critical years, groundwater becomes a significant portion of the urban water retailers' water supply. Under these conditions water demands will exceed available surface water treatment capacity necessitating the on-going use of groundwater facilities within the urban retailers' service areas until the SEWD efficiency enhancements are effective.

The timing and amount of water assumed available from each SEWD source is based on conservative estimates of the reliable yield of each source and the probability of the various contracts being renewed.

The SSJID transfer contract is assumed to expire in 2009 and the OID contract in 2025 and not be renewed. In any given year, the OID or SSJID contract water is used first then New Hogan and then the New Melones CVP contracts are used. The New Hogan contract is assumed to be subject to CVP deficiencies which include shortages of up to 40 percent in critical years as well as provisions that make the New Melones CVP contract water available only in the wet years.

This WSA used a 70 year historic model of hydrology to determine the adequacy of the water supplies in any given year type. For instance, in dry years, surface water curtailments are considered, so groundwater and rationing are used to make up the difference. The objective is that over the 70 years, the groundwater use meets the predefined long term average sustainable yield of 0.60 AF/acre/year as described above and does not exceed the 0.75 AF/acre/year in any single dry year.

2.8 Water Supply Assessment as per Section 10910

Given the reliability in surface water and the estimate of firm groundwater yield, the adequacy of water supplies can be evaluated for the existing condition plus the Project.

2.8.1 Sustainable Yield of Groundwater

Table 5 shows the water demand and sustainable groundwater yield calculations for existing development, foreseeable developed and proposed projects, and the WSA Project. Assuming a total of 46,300 acres of existing developed area for 2003, the sustainable yield of groundwater for urban development based on 0.60 AF/ac/year is 27,780 AF/year. It is important to note that historic records and groundwater studies show that at this rate of groundwater extraction, an equivalent volume would be recharged into the regional groundwater basin from deep percolation, streams and rivers, and subsurface recharge. Through this natural induced recharge, the groundwater system will find an equilibrium that is sustainable over the long-term.

Exhibit "D" is a listing of each approved development and their respective acreages as of January 2005. A total of approximately **5,722** acres was approved for development between 2003 and January 2005 and is under construction to various degrees. The COS Planning Department estimates that 70% of the area is included in the existing developed area of 46,300 acres. **Table 5** shows the remaining 30% or **1,613** acres of approved development that is considered to be undeveloped and under this WSA to be in areas where the 0.60 AF/ac/year of groundwater yield is applicable.

One requirement of a WSA is to consider other (proposed) projects for which WSA's have been prepared together with the proposed project. Such projects include:

Cannery Park: 450-acre located southwest of the Eight Mile Road and Highway 99 interchange.

Paradise (a.k.a. Westlake) Villages: 683 acres located west of Interstate 5 and immediately west of the Spanos Park West, south of Eight Mile Road, east of Bishop Cut and north of Disappointment Slough.

Origone Ranch: 394 acres located in the unincorporated area of San Joaquin County south of Eight Mile Road and east of West Road.

North Stockton Phase III: 237 acres located south of Eight Mile Road and Lower Sacramento Road on the east and the Union Pacific Railroad on the west.

Bear Creek West Specific Plan: 1,149 acres located south of Eight Mile Road, west of West Lane, east of Lower Sacramento Road, and north of Sutherland drive.

Bear Creek East: 318 acres located south of Eight Mile Road, east of West Lane, west of the Union Pacific Railroad, and north of the Bear Creek drainage corridor.

Weston Towne Center: 59.68 acres located north of French Camp Road, west of I-5 at the northwest quadrant of the I-5/French Camp Road interchange, and east of McDougald Boulevard and the existing Weston Ranch residential subdivision.

Table 5 shows the total area of new development considered under this WSA as **5,798** acres. The amount of this area supplied by groundwater is entirely from areas where the 0.60 AF/ac/year of groundwater yield is available. The total sustainable yield based on this area is calculated by multiplying 0.60 AF/ac/year by the **5,798** acres to equal **3,479** AF/year plus the **27,780** AF/year to equal **31,259** AF/year.

Table 5. Water Demand and Groundwater Yield Considered in WSA

	Development	Existing and Project Acreage (acres)	Water Demand (AF/year)	Groundwater Yield (AF/ac/year)	Groundwater Supply (AF/year)
Existing	Existing Development	**46,300**	**68,810**	**0.6**	**27,780**
Approved	Approved Development	1,613	2,581	0.6	968
Proposed Projects	Cannery Park	450	720	0.6	270
	Paradise Villages	683	1,093	0.6	410
	Origone Ranch	394	630	0.6	236
	North Stockton Phase III	237	379	0.6	142
	Bear Creek West	1,149	1,838	0.6	689
	Bear Creek East	318.17	509	0.6	191
	Weston Towne Centre	59.68	95	0.6	36
	Tidewater Crossing	894.6	1,431	0.6	537
	Subtotal for Approved and Proposed Projects	**5,798**	**9,278**		**3,479**
	Total COSMA	**52,098**	**78,088**		**31,259**

3.0 CONJUNCTIVE USE MODEL RESULTS

The conjunctive use model estimates the needed average groundwater extractions over the next 20+ years to 2035 based on available surface water supplies and demand management in the dry years. (Note: this evaluation considers water demands based on **Table 5** above and water supplies based on expected availability and reliability of surface water and groundwater to 2035. Consideration of adequacy of water supplies to meet water demands beyond those listed in **Table 5** is provided in the 2035 General Plan Update Water Supply Evaluation.) **Figure 13** is a model depiction of the average use of each surface water source over the period from 2000 to 2035. **Figure 14** is a snapshot at 2025 showing how water demands are met for the differing hydrologic conditions that could occur. As expected, this figure shows higher use of groundwater in the drought years of 1977 and 1987.

Figure 15 is an important output from the model that shows that demands can be met with surface and groundwater supplies to 2035 and not exceed the sustainable yield of the groundwater basin. As indicated by the upper line in **Figure 15**, the WSA build out water demand is reached by 2015 (i.e., build-out year of current General Plan) and is based on the projects currently in for

application including the Project. The upper line in **Figure 15** is the average demand, approximately 96% (or **75,070** AF/year) of the total demand, which reflects rationing in dry years. The next dashed line below the top line indicates the sustainable yield of the groundwater that increases slightly as new urban development occurs. The bottom line of **Figure 15** shows the estimated average groundwater demand over the planning period. In year 2035, the groundwater demand is shown to be at **30,609** AF/year, or an approximate **704** AF/year difference from the long term average sustainable yield goal. Over the model period groundwater use shows to be relatively constant due to increased reliability of SEWD supplies.

Table 6 presents a comparison of normal, dry, and consecutive dry year supplies and demands based on a baseline year of 2035. Supplies are based on the forecasted supplies in 2035.

The average over 70 years of historic hydrology at 2035 conditions is **30,609** AF/year. In dry years, slightly more groundwater is available to replace deficiencies in surface water as part of the existing conjunctive use program. The sustainable yield of groundwater is based on **52,098** acres of existing, foreseeable and Project area using a maximum long-term average groundwater extraction rate of **31,259** AF/year based on the 0.60 AF/ac/year long term average annual factor and **39,074** AF/year not-to-exceed extraction rate in a singly dry year based on the 0.75 AF/ac/year factor. **Table 6** indicates that, over the 70-year period, only **31,474** AF/year of groundwater use takes place on average. The small difference in the long term average extraction rate in **Table 6** and the average illustrated in **Figure 15** is an artifact of the model and how the data is represented in **Table 6**. Regardless, the average extraction rate meets the targeted goal.

The remaining verification of water supply adequacy is looking at the single dry year groundwater extraction over the study period. This is illustrated in **Figure 16** with the top line indicating water demand, the dashed line indicating the not-to-exceed groundwater extraction rate of 0.75 AF/ac/year, and the bottom line being the highest groundwater use in each year based on the 70 years of historical hydrology. In no year does the maximum groundwater use exceed the not-to-exceed groundwater extraction rate. This along with **Table 6** showing that supplies meet water demands under dry year conditions using 2035 water supply conditions provide the conclusion that existing supplies meet existing water demands plus the Project without exceeding the targeted sustainable groundwater yield and the not-to-exceed groundwater yield of the aquifer underlying the COSMA.

In addition, the need to consider future supply sources (i.e., Phase 1 DWSP and associated water rights) is not necessary based on the results of this WSA. The 2035 General Plan Update Water Supply Evaluation does consider future supplies when evaluating water demands representative of 2035 levels of growth. Readers are referred to that document for more details.

Figure 13. Projected Average Surface Water Contract Use from 2000 to 2035 Based on Existing Supplies and Existing Water Demands Plus Project

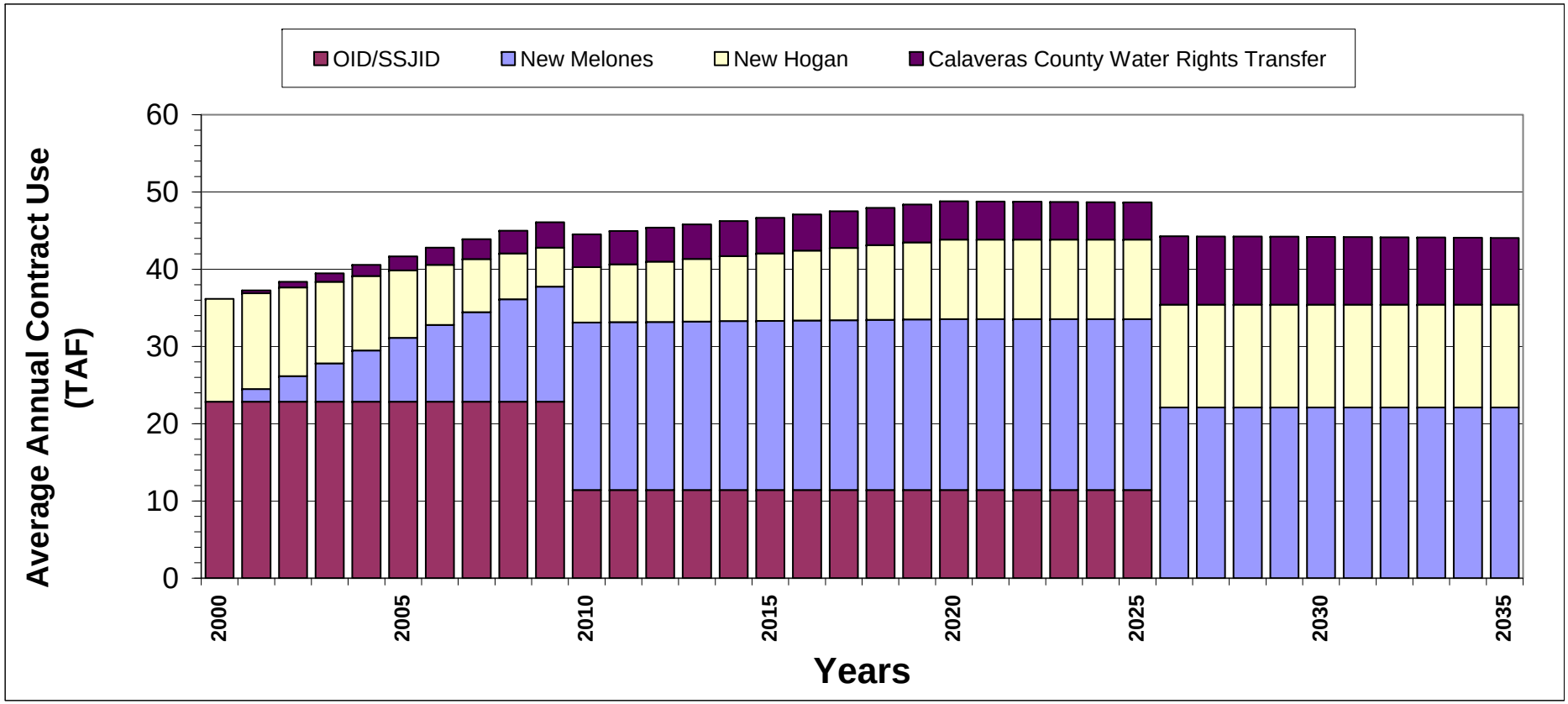


Figure 14. 70-year Historic Hydrologic Period Using Existing Water Demands Plus Project and Existing Water Supply Conditions at 2035

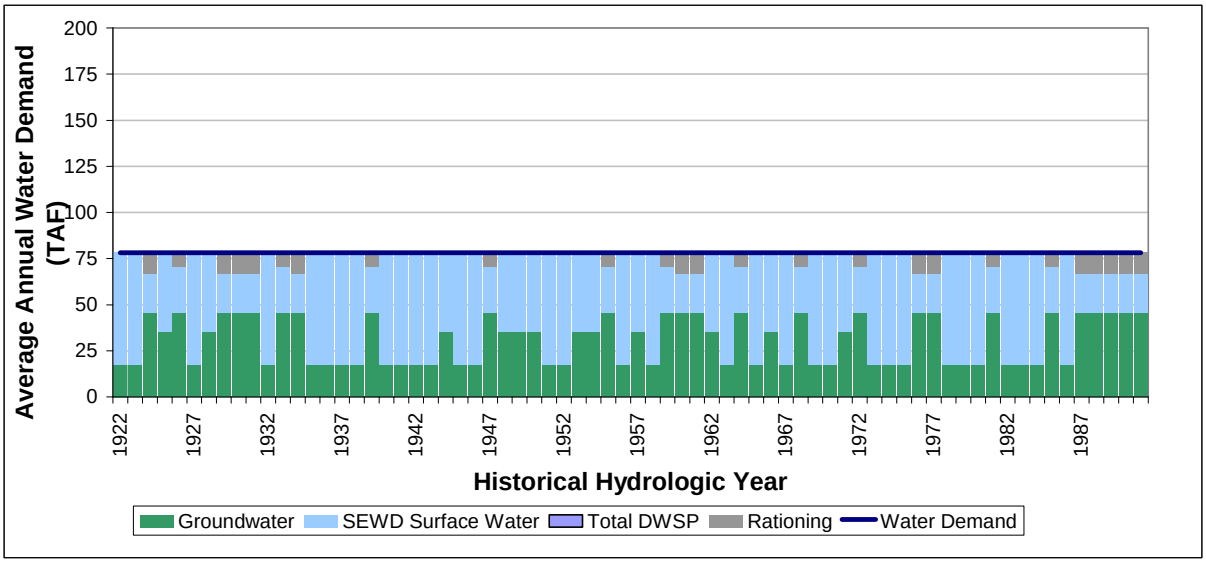


Figure 15. Average Groundwater Use vs. Existing Demand Plus Project From 2000 to 2035 Using 0.75 AF/ac/year Groundwater Sustainable Yield

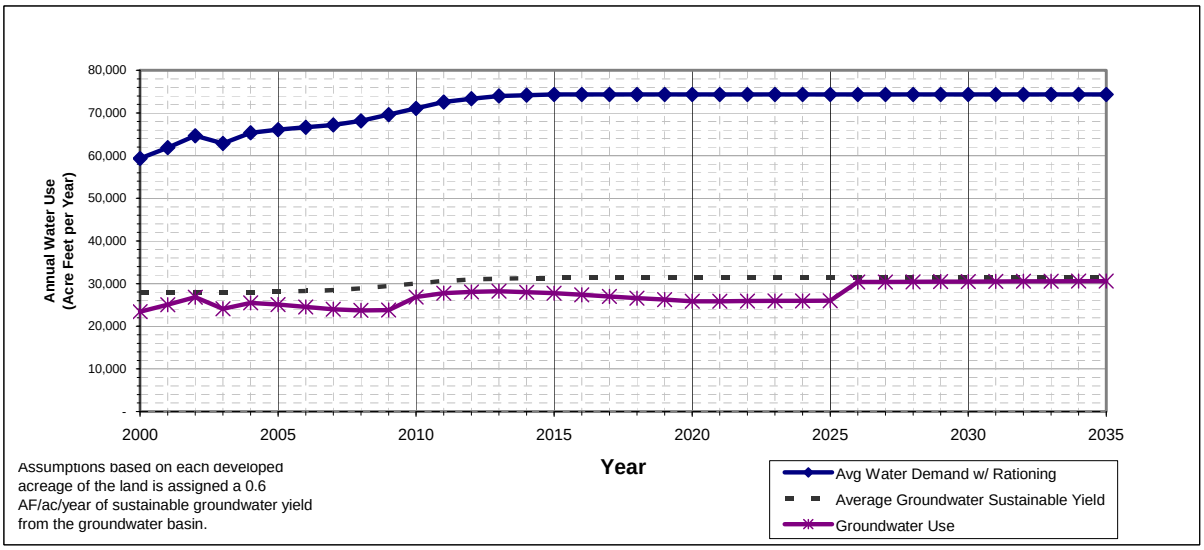


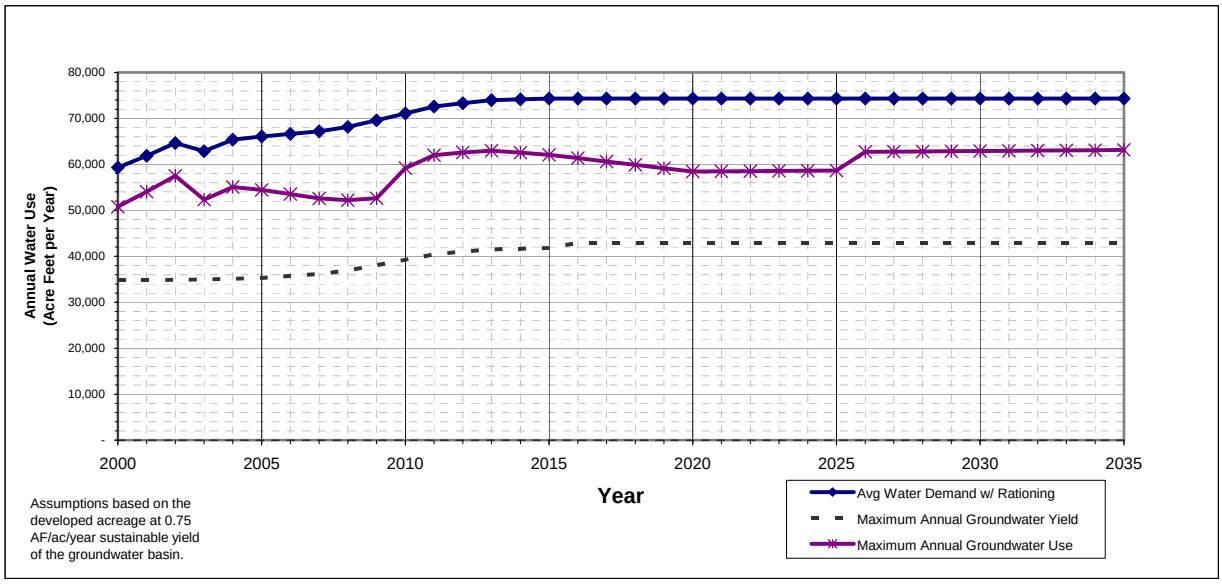
Table 6. Existing (2004), Proposed, and Project Water Supplies and Water Demands for the COSMA by Retail Service Provider

Hydrologic Year Type	Retail Service Provider	Level of Rationing	Existing (2004) (AF/year)			Foreseeable (AF/year)			Project (AF/year)			Total (AF/year)			Total Water Demand (AF/year)
			Surface Water	Groundwater	Total Water Supply	Surface Water	Groundwater	Total Water Supply	Surface Water	Groundwater	Total Water Supply	Surface Water	Groundwater	Total Water Supply	
Normal	COSMUD	0%	19,426	15,124	34,550	19,041	(10,763)	8,279	425	820	1,245	38,893	5,181	44,074	44,074
	Cal-Water	0%	18,247	13,823	32,070	-	-	-	-	-	-	18,247	13,823	32,070	32,070
	County	0%	1,378	716	2,094	-	-	-	-	-	-	1,378	716	2,094	2,094
	Total	**0%**	**39,052**	**29,663**	**68,715**	**19,041**	**(10,763)**	**8,279**	**425**	**820**	**1,245**	**58,518**	**19,720**	**78,238**	**78,238**
Single Dry	COSMUD	15%	16,512	12,855	29,368	(10,910)	17,947	7,037	-	1,058	1,058	5,603	31,860	37,463	37,463
	Cal-Water	15%	15,510	11,749	27,260	-	-	-	-	-	-	15,510	11,749	27,260	27,260
	County	15%	1,171	609	1,780	-	-	-	-	-	-	1,171	609	1,780	1,780
	Total	**15%**	**33,194**	**25,213**	**58,407**	**(10,910)**	**17,947**	**7,037**	**-**	**1,058**	**1,058**	**22,284**	**44,219**	**66,503**	**66,503**
Multiple Dry (Hypothetical 3-year Drought Period into the Future(using 1977 to 1980 Drought Sequence))	COSMUD	0%	19,426	15,124	34,550	19,041	(10,763)	8,279	425	820	1,245	38,893	5,181	44,074	44,074
	Cal-Water	0%	18,247	13,823	32,070	-	-	-	-	-	-	18,247	13,823	32,070	32,070
	County	0%	1,378	716	2,094	-	-	-	-	-	-	1,378	716	2,094	2,094
	Total	**0%**	**39,052**	**29,663**	**68,715**	**19,041**	**(10,763)**	**8,279**	**425**	**820**	**1,245**	**58,518**	**19,720**	**78,238**	**78,238**
	COSMUD	10%	17,484	13,612	31,095	(12,609)	16,656	4,048	-	1,058	1,058	4,875	31,326	36,202	36,202
	Cal-Water	10%	16,423	12,441	28,863	-	-	-	-	-	-	16,423	12,441	28,863	28,863
	County	10%	1,240	644	1,885	-	-	-	-	-	-	1,240	644	1,885	1,885
	Total	**10%**	**35,146**	**26,697**	**61,843**	**(12,609)**	**16,656**	**4,048**	**-**	**1,058**	**1,058**	**22,538**	**44,411**	**66,949**	**66,949**
	COSMUD	10%	17,484	13,612	31,095	(12,609)	16,656	4,048	-	1,058	1,058	4,875	31,326	36,202	36,202
	Cal-Water	10%	16,423	12,441	28,863	-	-	-	-	-	-	16,423	12,441	28,863	28,863
	County	10%	1,240	644	1,885	-	-	-	-	-	-	1,240	644	1,885	1,885
	Total	**10%**	**35,146**	**26,697**	**61,843**	**(12,609)**	**16,656**	**4,048**	**-**	**1,058**	**1,058**	**22,538**	**44,411**	**66,949**	**66,949**
Average over 70-Years	COSMUD	5%	19,426	15,124	34,550	4,344	823	5,167	201	988	1,188	23,971	16,935	40,906	40,906
	Cal-Water	5%	18,247	13,823	32,070	-	-	-	-	-	-	18,247	13,823	32,070	32,070
	County	5%	1,378	716	2,094	-	-	-	-	-	-	1,378	716	2,094	2,094
	Total	**5%**	**39,052**	**29,663**	**68,715**	**4,344**	**823**	**5,167**	**201**	**988**	**1,188**	**43,596**	**31,474**	**75,070**	**75,070**

Reference: City of Stockton Urban Water Management Plan 2005, December 2005

Notes:
1.) Existing is actual 2004 calendar year usage of surface water and groundwater. The assumption is that 2004 depicts a normal year hydrologic and water supply availability condition.
2.) Dry year surface water amounts assume SEWD's New Hogan Central Valley Project water with deficiencies, and Oakdale Irrigation District and South San Joaquin Irrigation District deficiencies as stipulated in the contract for these water supplies.
3.) Normal year surface water deliveries are restricted to the projected availability of SEWD conveyance and treatment plant capacity (not to exceed 60 mgd).
4.) Foreseeable includes all projects that have been approved or have a WSA as of the date of this WSA.
5.) Negative values imply a decrease in the amount of surface water or groundwater based on the use of both supplies in 2004.

Figure 16. Maximum Single Year Groundwater Use vs. Demand From 2000 to 2035



4.0 DETERMINATION OF SUFFICIENCY

The COSMUD determines that it has sufficient water supplies to meet the water demands of the Project.

The COSMUD makes this determination based on the information provided in this WSA and on the following specific facts:

- The existing near-term and long-term reliable supplies of SEWD surface water supplies and indigenous groundwater supplies can deliver a sustainable reliable water supply without impacting environmental values and/or impacting the current stabilization of the groundwater basin underlying the COSMA.
- The existing conjunctive use program of using SEWD surface water and COSMA groundwater supplies shows that sufficient water rights and available groundwater supplies exist for the Project.
- The project will be served by water supplies made available through the existing COS conjunctive use program within the COSMA.
- The COSMA has a conjunctive use water supply program that can meet water demands beyond the WSA demand level to 2035 based on the results of the 2035 General Plan Update Water Supply Evaluation.

It should be noted that the determination of sufficiency for this project only represents the assessment of water supplies at this time and does not constitute a reservation of supply to serve this project. This Water Supply Assessment will remain valid for 24 months from the date of transmittal to the Community Development Department.

EXHIBIT "A"

Project Location Map

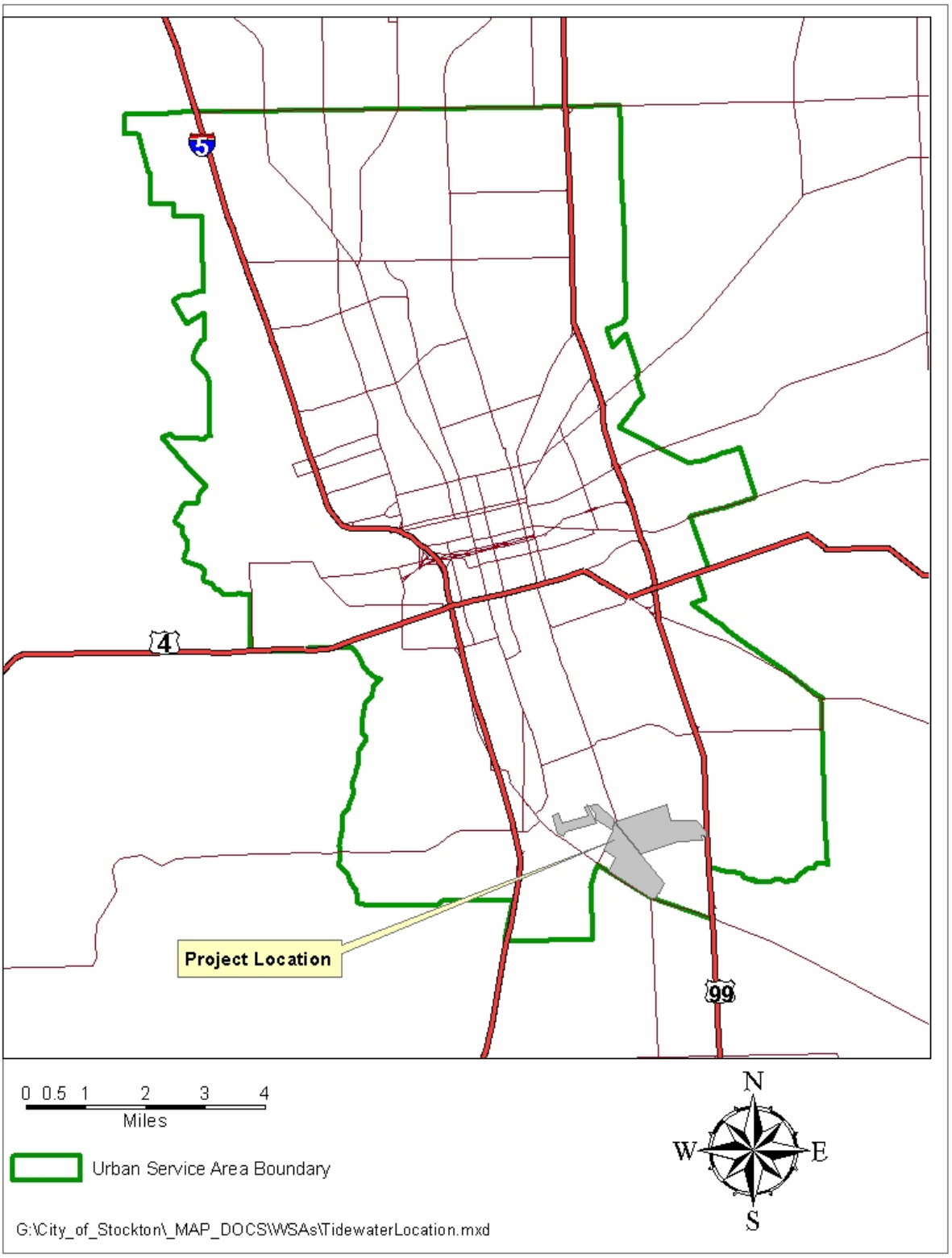


EXHIBIT “B”

City of Stockton General Plan Update Water Supply Evaluation

Water Supply Evaluation
for the
General Plan Update Preferred Alternative

Completed for City of Stockton Municipal Utilities Department
and
California Water Service Company

December 30, 2005
Amended May 12, 2006

MWH
MONTGOMERY WATSON HARZA

Table of Contents

INTRODUCTION **1**
BACKGROUND **3**
PROJECT DESCRIPTION **3**
CURRENT WATER SUPPLY CONDITION **4**
OVERVIEW OF COSMA'S FUTURE WATER DEMANDS **7**
Elements of a WSA 12
DETERMINE IF PROJECT IS SUBJECT TO CEQA [SECTION 10910(A)] **12**
Identify Responsible Public Water System [Section 10910(b)] 12
Determine if UWMP Includes Water Demands [Section 10910(c)] 12
Identify Existing Water Supplies for the GP Update [Section 10910(d)] 12
Existing Water Supply System Capacity 22
On-going Conjunctive Management Program 23
Existing Water Supply Assessment 26
IF EXISTING WATER SUPPLIES ARE INSUFFICIENT TO MEET PROJECT DEMANDS [SECTION 10911(A)] **38**
How Will GP Update Demands be Met? 39
Implementation of the DWSP 39
Financing of DWSP 42
Regulatory Permitting for DWSP 42
Necessary SEWD Water Right Permits/Contracts 42
Summary of Surface Water Utilization for the GP Update 42
Future Conjunctive Management 46
Conjunctive Use Model Results 48
Groundwater Exceedence in Any One Year 49
Summary of Conjunctive Use Model Findings 51
Description of Change in DWSP Phasing 55
DETERMINATION OF SUFFICIENCY **60**

List of Figures

Figure 1. City of Stockton Water Retail Purveyors 2
Figure 2. Preferred General Plan Update Alternative Land Use Diagram (May 2005 Version) 5
Figure 3. Population and Water Demand Increase Over Time 9
Figure 4. Demand Growth by Retail Service Provider 10
Figure 5. Monthly Multipliers for Annual Average Water Demand 11
Figure 6. Historical COSMA Water Supply from Groundwater and Surface Water 13
Figure 7. Historical Use of Water Supplies by Water Retailer 13
Figure 8. Historical Use of SEWD and Groundwater Supplies by Water Retailer 14
Figure 9. SEWD Existing, Future, and Potential Surface Water Right 16

Figure 10. Groundwater Elevation Hydrographs for Areas Near the City of Stockton 19
Figure 11. COSMA Spring 2004 Groundwater Elevation Contours 21
Figure 12. Projected Average Surface Water Contract Use from 2000 to 2035 Based on Existing Supplies and Water Demands 27
Figure 13. 70-year Historic Hydrologic Period Using Existing and Foreseeable Water Demands and Existing Water Supply Conditions 28
Figure 14. Average Groundwater Use vs. Existing Demand From 2000 to 2035 Using Average 0.75 AF/ac/year Groundwater Sustainable Yield 29
Figure 15. Conceptual Rate Design of Water Retailers (COSMUD Model) 33
Figure 16. Existing COSMA Well Locations 37
Figure 17. Average Groundwater Use vs. GP Update Demand From 2000 to 2035 Using 0.75 AF/ac/year Groundwater Sustainable Yield and Existing Water Supplies 39
Figure 18. COSMA DWSP and SEWD WTPs 40
Figure 19. 70-year Historic Hydrologic Period Using 2035 Water Demand and Supply Condition. 48
Figure 20. Average Groundwater Use vs. Demand From 2000 to GP Update Build Out Using 0.60 AF/ac/year Groundwater Sustainable Yield 49
Figure 21. Maximum Single Year Groundwater Use vs. Demand From 2000 to GP Update Build Out 50
Figure 22. Maximum Groundwater Use vs. Demand From 2000 to GP Update Build Out Using Ag Credit 50
Figure 23. Projected Average Surface Water Contract Use from 2000 to 2035 52
Figure 24. SEWD Water Supplies (Weighted Average of Hydrologic Period) 57
Figure 25. DWSP Feasibility Report Phasing Diagram 59
Figure 26. GP Update WSE Phasing Diagram 59

List of Tables

Table 1. GP Update Build-out Water Demand Determination 9
Table 2. Past, Current, and Projected Water Demands by Retail Service Provider 10
Table 3. Current and Future SEWD Water Sources and Critical Year Availability 15
Table 4. Availability of Water Under the OID/SSJID Interim Water Contract 17
Table 5. Water System Capacity for Existing and Foreseeable Water Demands by Retail Water Service Provider 23
Table 6. Existing, Approved Development and Proposed Projects Acreages and Water Demands 24

Table 7. Existing (2004) and Foreseeable Water Supplies and Demands for the COSMA by Retail Service Provider 30

Table 8. Verification of Maximum Month Water Facility Capacity by Water Retail Service Provider 31

Table 9. Phasing of COSMA Water Supply Facilities Based on 1990 General Plan 44

Table 10. Existing (2004), Foreseeable, and General Plan Update Water Supplies and Demands for the COSMA by Retail Water Service Provider 53

Table 11. Verification of Maximum Month Water Facility Capacity by Water Retail Service Provider 54

Table 12. Feasibility Report Existing SEWD Water Sources and Critical Year Availability 56

Exhibits

Exhibit "A" – October 25, 2005 Memo From COSMUD to City of Stockton Community Development Department Director

Exhibit "B" – Preferred General Plan Update Map

Exhibit "C" – City of Stockton Delta Water Rights Permit

Exhibit "D" – Existing Firm and Interim Surface Water and SEWD Wheeling Contracts for the Urban Water Retailers

Exhibit "E" – Results of 70 Year Historical Hydrology Model Runs from 2005 to 2035 in Five Year Increments

Exhibit "F" – Groundwater Studies Supporting Agricultural Credits

Exhibit "G" – SEWD Comment Letter for North Stockton Water Supply Assessment

List of Acronyms

AF – Acre-feet

AF/ac/year – Acre-feet per acre per year

Cal-Water – California Water Service Company

CEQA – California Environmental Quality Act

COS – City of Stockton

COSMUD – City of Stockton Municipal Utilities Department

COSMA – City of Stockton Metropolitan Area

CVP – Central Valley Project

DHS – California Department of Health Services

DWR – California State Department of Water Resources

DWSP – Delta Water Supply Project

ESA – Endangered Species Act

GP Update – General Plan Update

GIS – Geographic Information System

IGSM – Integrated Groundwater Surface Water Model

M&I – Municipal and Industrial Uses

mgd – million gallons per day

msl – mean sea level

NEPA – National Environmental Policy Act

OID – Oakdale Irrigation District

SEWD – Stockton East Water District

SOI – General Plan Sphere of Influence

SSJID – South San Joaquin Irrigation District

SWP – State Water Project

TAF – Thousands of Acre-feet

TAF/year – Thousands of Acre-feet per Year

USBR – United States Bureau of Reclamation

UWMP – Urban Water Management Plan

WSE – Water Supply Evaluation

WSA – Water Supply Assessment (as defined by SB610)

WTP – Water Treatment Plant

Introduction

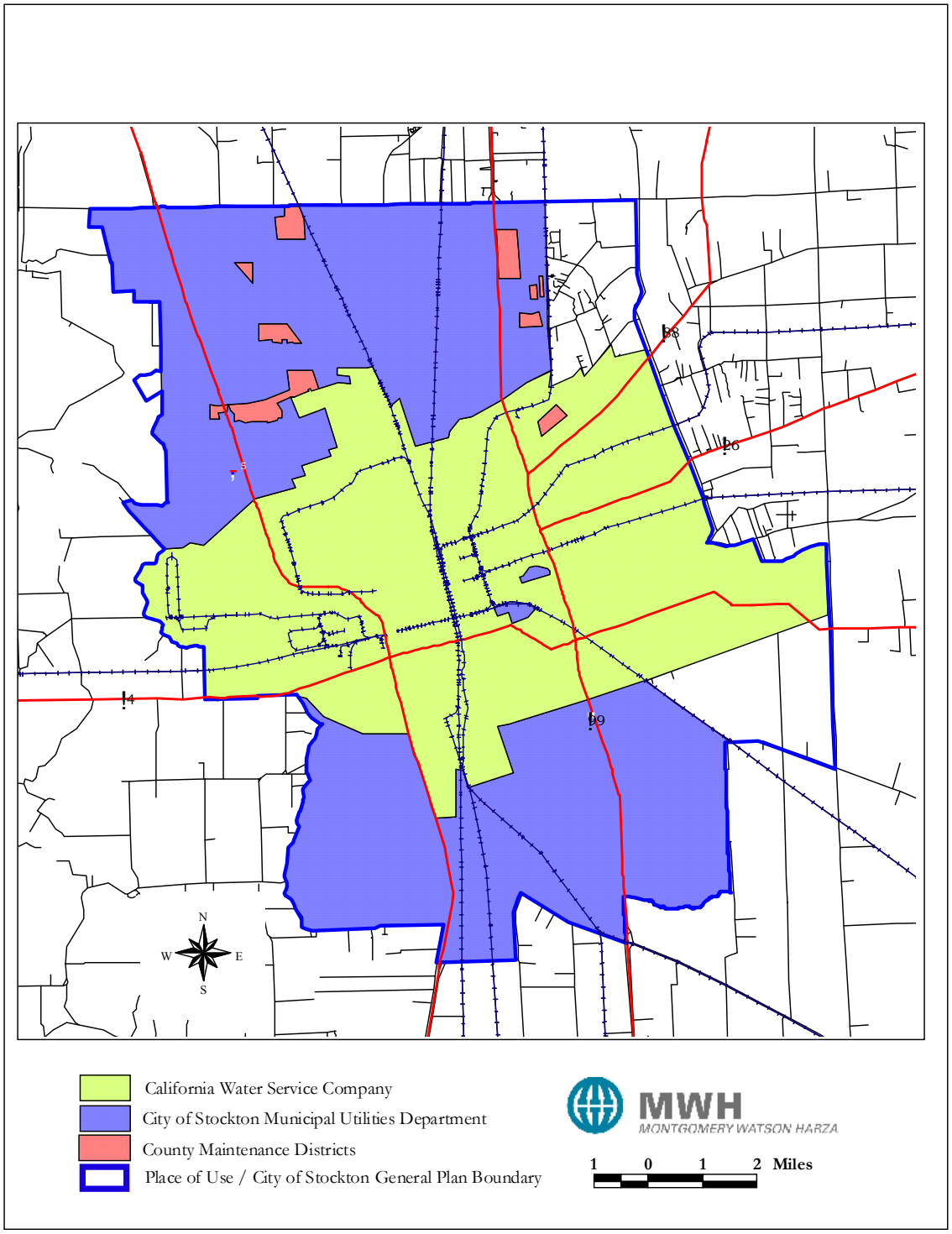
The City of Stockton (COS)[1] is currently in the process of updating its General Plan (GP Update) as required by state law in the preparation and maintenance of all planning documents that serve as blueprints for a community's land use and resource conservation decisions. As part of this process, the City of Stockton Planning Department has requested a study to determine the adequacy of water supply resources to serve the preferred land use plan that will supersede the current adopted 1990 General Plan.

To initiate the evaluation of the adequacy of water supplies, the City of Stockton Planning Department formally requested the City of Stockton Municipal Utilities Department (COSMUD) and the California Water Service Company (Cal Water) to prepare assessments of the extent to which existing and anticipated future water supplies will suffice to serve levels of growth contemplated under the proposed updated General Plan. This request reflected the fact that the retail purveyors' respective service areas lie entirely or partially within the GP Update boundaries. San Joaquin County has service areas within the planning boundary but was not formally notified by the Planning Department of this request because County service areas within the COS are developed to their maximum build-out and will not be affected by changes in land use proposed under the GP Update. However, supply and demands for the County service areas will be accounted for in the evaluation. **Figure 1** shows the current boundaries of the service areas relative to the current General Plan boundaries.

As municipal water purveyors that provide retail water service to the COS, the notification of the need for a determination of water supply sufficiency invokes a response from each agency. This response is intended to provide the kind of information required of a formal "water supply assessment" required by Water Code section 10910 et seq. (commonly known as SB 610), even though the purveyors do not believe that SB 610 actually applies to a comprehensive general plan update. Rather, SB 610 applies to categories of "projects" subsidiary to city-wide general plan updates (e.g., specific plans or general plan amendments contemplating the construction of more than 500 dwelling units). The limited application of these Water Code requirements was very clear in the predecessor to SB 610, known as SB 901 (see former Water Code sections 10910, subd (a) and 10913.) When SB 901 was in effect (1996 through 2001), it was clearly intended to complement the requirements of Government Code sections 65352, subdivision (b)(7), and 65352.5, which remain in effect and require cities and counties, in updating their general plans, to consult with "public water agencies" and to receive from them detailed information regarding water supply availability.

[1] COS is used in when referring to the political entity of the City of Stockton; whereas, the City of Stockton Metropolitan Area (COSMA) is used to refer to the geographic area that is or will be the service areas of the urban water retailers.

Figure 1. City of Stockton Water Retail Purveyors



Even though the purveyors believe that SB 610 was not intended to change the approach that was in effect during the lifetime of SB 901, the purveyors, in the spirit of cooperation, have nevertheless undertaken preparation of this document with the intent of having it function as a de facto water supply assessment, despite the general nature of the project at issue and the inevitably of the somewhat general nature of discussion included herein. It is important to acknowledge that this document is not a substitute for the formal consultation required by Government Code sections 65352 and 65352.5. See **Exhibit "A"** for response memo from COSMUD to the City of Stockton Community Development Department regarding the purpose of this WSE and the manner in which this WSE fulfills their request for a water supply assessment.

Background

The water supply resources serving the City of Stockton Metropolitan Area (COSMA), as it is defined by the GP Update, and the manner in which the water supply resources are conveyed, treated, and distributed to various customer sectors currently and into the future require some knowledge of the agreements and programs that are currently moving forward with a high level of certainty and those that are needed and being planned for on the path to full build-out of the GP Update.

The intent of the California Water Code 10910 - 10915 (inclusive) is to provide a means for coordination between land use lead agencies and public water purveyors. The purpose of this coordination is to ensure that prudent water supply planning has been conducted, and that planned water supplies are adequate to meet existing and anticipated demands.

Water Code Sections 10910 - 10915 (inclusive) require land use lead agencies: 1) to identify the responsible public water purveyor for a proposed development project, and 2) to request from the responsible purveyor, a "Water Supply Assessment" (WSA). The purpose of the WSA is to demonstrate the sufficiency of the purveyors' water supplies to satisfy the water demands of the proposed development project, while still meeting the current and projected water demands of existing customers. Although, as explained in the Introduction, the purveyors do not believe that a formal water supply assessment is required for a general plan update, this document has nevertheless been prepared with the intent of including all of the contents required of a formal WSA. This is so despite the title of the document being a Water Supply Evaluation (WSE) rather than a WSA.

Project Description

The City of Stockton is located near the center of San Joaquin County immediately south of the community of Lodi and north of the community of Manteca. The City serves as the County seat and is located 83 miles east of the San Francisco Bay area and 40 miles south of the City of Sacramento. Interstate

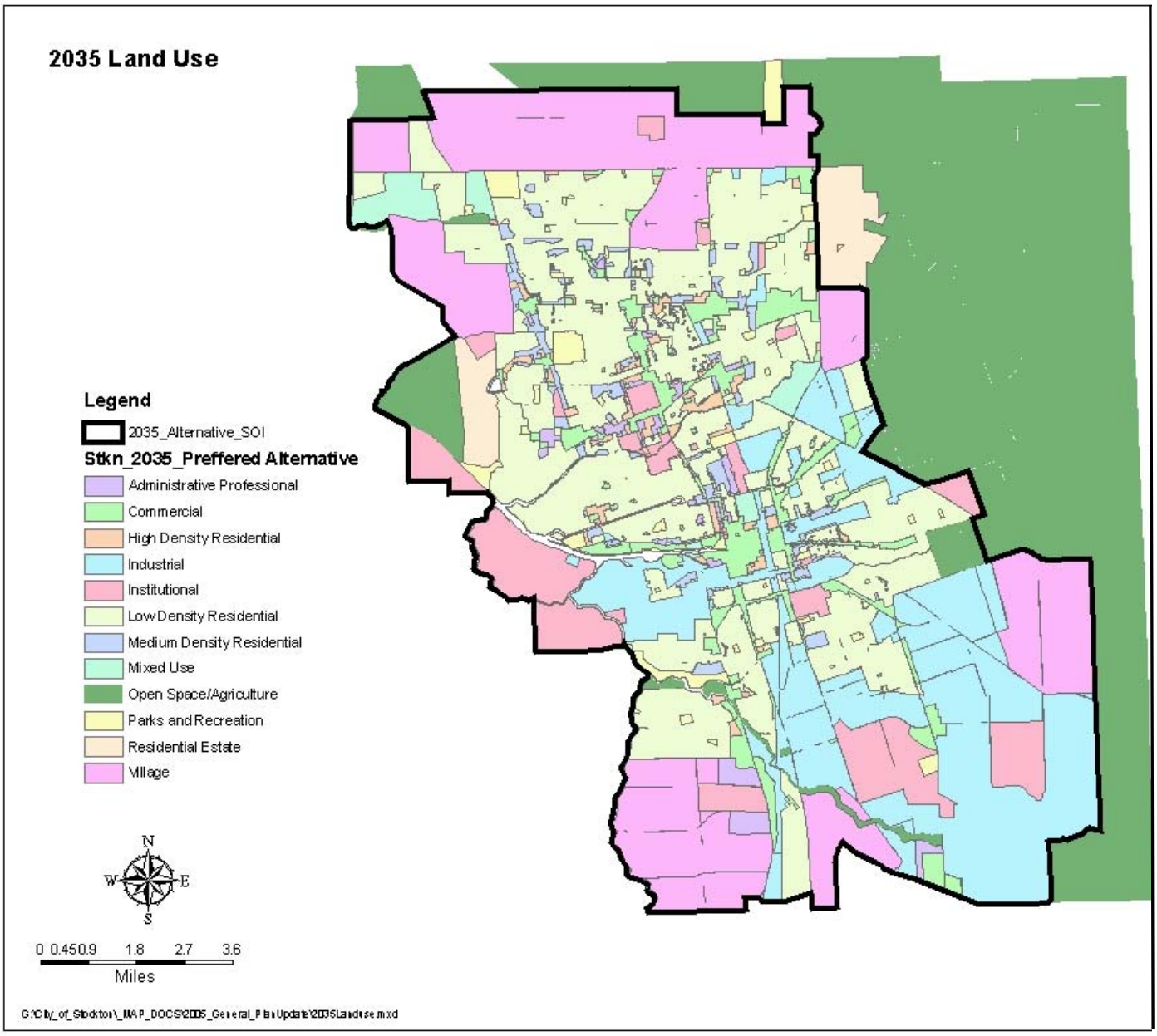
5 runs north-south near the western border of the City and State Route 99 runs north-south near the eastern border of the City. The primary zone of the Delta is located to the west of the City. Much of the City is located within the primary and secondary zone of the Delta.

The preferred land use alternative or GP Update encompasses all of the area inside the City Limits, the existing SOI Area, and additional unincorporated land areas that may influence future planning efforts. See **Figure 2** for location and extent of GP Update (based on GIS shape files) and **Exhibit "B"** for latest preferred land use diagram submitted by planning with the WSE request. These current boundaries extend to Armstrong Road and Live Oak Road on the north; portions of State Route 99 and the Stockton Diverting Canal, and Jack Tone Road to the east; and Roth Road on the south. The western boundary is formed by several features including a portion of the San Joaquin River, State Route 4, Burns Cutoff and Bishop Cut.

Current Water Supply Condition

Like many northern California communities, the City of Stockton Metropolitan Area (COSMA, see footnote 1) is experiencing substantial population growth and increasing water demands. At the same time, regulatory pressures, increased water usage in neighboring areas, and saline intrusion affecting groundwater supplies are straining the City's already limited water supplies. As a result, the COS has focused attention on the availability of existing surface water supplies from Stockton East Water District (SEWD), obtaining new surface water supplies from a new Delta diversion, demand management through water conservation practices, and the need to manage groundwater resources at a sustainable yield. The objective is to achieve a long-term reliable water supply for existing and future customers.

Figure 2. Preferred General Plan Update Alternative Land Use Diagram (May 2005 Version)



A product of the effort in obtaining new surface water supplies from the Delta is a water right application[2] to the State Water Resources Control Board (SWRCB) on January 6, 1996, that requested an increasing amount of surface water from approximately 20,000 acre-feet per year (AF/year) initially, up to 125,900 AF/year in 2050. To divert and deliver this surface water supply, COSMUD (on behalf of the City, Cal-Water, and San Joaquin County) is pursuing the Delta Water Supply Project (DWSP) which will achieve the following three objectives:

- To replace declining and unreliable surface water supplies.
- To protect and restore groundwater resources.
- To provide adequate water supplies to accommodate planned growth.

The DWSP is a multi-phased surface water project that is viewed as having two distinct phases. Phase 1 is the critical phase of the DWSP that has undergone CEQA evaluation and is depicted in all studies at the project level. Phase 1 achieves the following: 1) meets existing water demands that are threatened by reductions in existing surface water and groundwater supplies, 2) meets flexible and consistent groundwater management of the groundwater basin underlying the COS, and 3) meets growing water demands from new development in the COS from present to build-out of the 1990 General Plan. Phase 2 is viewed as the next increment of DWSP capacity when it is needed based on water demands and supplies beyond the 1990 General Plan and has been evaluated in the planning documents at the programmatic level only. The City will prepare a new and complete CEQA environmental review prior to seeking additional water rights from the SWRCB for water in addition to that provided pursuant to Water Code Section 1485.

On April 22, 2003, Stockton's City Council approved the DWSP Feasibility Report and directed the Municipal Utilities Department (COSMUD) staff to complete the necessary environmental studies to comply with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). An environmental impact report ("EIR") was prepared to satisfy CEQA with respect to the DWSP. On November 8, 2005, the Stockton City Council certified the EIR and also authorized the City staff to proceed with the project. The certified document was included as part of the water rights application package submitted to SWRCB, which issued a permit for a Delta diversion for Phase 1 in the amount of 33,600 AF/year on March 8, 2006 (See Exhibit "C").

With certification of the EIR and SWRCB issuance of the water right permit, the City will proceed with design and construction of Phase 1 of the DWSP. Upon start up of the Phase 1 DWSP, the urban water retailers will have a third source of supply in addition to the existing treated surface water supply from the SEWD

[2] The application claims two separate, cumulative water rights: a right pursuant to California Water Code Section 1485, and a right pursuant to the "watershed of origin" provisions of California Water Code Section 11460 and the Delta Protection Act, California Water Code Section 12200 et seq. These water rights are discussed in-depth starting on **Page 41** under the Section titled, "Necessary DWSP Water Right Permits"

treatment plant and existing groundwater supply from wells located throughout the COSMA service area. The reliability of water supply resources for the COSMA will be greatly enhanced for the next 20 years while plans and agreements are secured for increased water supplies for the long-term build-out of the COS GP Update. Phase 2 DWSP will be pursued only when water demands and supplies require the additional supply capacity. As mentioned above, a separate approval process for Phase 2 will take place at that time.

Overview of COSMA's Future Water Demands

Determination of Water Demand for the GP Update

The water demands associated with new growth in the COSMA have been evaluated as part of the DWSP Feasibility Report. The findings of the DWSP report have been incorporated into the City of Stockton's 2005 Urban Water Management Plan (UWMP)[3]. The DWSP report evaluated current water demands and developed a land-use based water demand projection for build-out of the current City General Plan and then developed a population based demand for expected growth beyond General Plan build-out which was projected to be 2015.

Population and land use based water demand forecasting are two widely accepted methods of calculating water demands. Population methods use per capita water demand factors. Estimated per capita demands are generated through use of total water production records and census population data for the service area. One weakness of population-based projection methods is that the water demands are uniformly distributed over the service area, not accounting for land uses that have wide variations in demands. Another disadvantage is that it does not accurately reflect changes in the mix of residential and non-residential water demands over time. Using a water demand growth rate based on historic population growth rates is most appropriate for addressing water demands that extend beyond the planning horizon of the General Plan.

Because it reflects land uses planned for by a community and it better accounts for spatial demand variations, land-use based projections are typically preferred. Land-use based projections can be used when land uses and water demand data are available for specific land-use categories. Estimating a water demand factor for a land use category requires meter data specific to the category and a sample population of significant size. Land use based water demand factors are developed on an acre-feet per acre per year (AF/ac/year) basis.

Compliance with SB 610 is simplified greatly by utilizing the land use based methodology. In requesting assurance of a reliable water supply, development projects can be tracked by the General Plan land use map to determine if the lands were included in the water supply analysis and at what levels of assumed

[3] The information from the December 2005 UWMP must be included in the Conservation Element of the General Plan. See Government Code Section 65302(d).

water demand. For purposes of the DWSP Feasibility Report, land use based water demand factors were determined and applied to the current 1990 General Plan. This application of land-based unit demand factors totaled approximately 85,330 AF/year of water demand by 2015. The COSMA is currently producing 68,000 AF/year. The same factors are applied to the GP Update to consider the build-out water demand as shown in **Table 1** showing a build-out water demand of 156,083 AF/year in 2035.

The next level of analysis of water demand is the temporal buildup of demand. Both the water right application and the DWSP report assumed a constant population growth to 2050. The rate of growth increases slightly from both of these studies due to the expanded Sphere of Influence (SOI) of the GP Update. For consistency with these two documents, the same assumption will be made in this WSE. **Figure 3** provides both the population growth and water demand over the period from 1990 to 2000 (latest census data), and then to 2035 (build-out of the GP Update). Population is on the left y-axis and water demand is on right y-axis.

Based on **Figure 3**, water demands within the COSMA are projected to increase from the present 68,000 AF/year in 2004, to 85,330 AF/year in 2015 (build-out of 1990 General Plan) to156,083 AF/year by build-out of the GP Update. **Figure 3** is used to determine, describe, and evaluate the needed water supply resources to meet growth from 2005 to 2035. This figure indicates a total population at 2035 of 592,000 people assuming an average 2.4% growth rate, roughly equating to 235 gallons of water per day per capita.

The DWSP Feasibility Report used a 1.9 percent growth rate at an average of 241 gallons per capita per day. The growth rate and projected per capita water demand can be adjusted as General Plan information becomes available through customer usage and production data and information compiled as part of future updates to the UWMP. Regardless of either of the population growth or the per capita water usage, the water demand land use factors are the determining numbers used for calculating the water demand at build-out of the GP Update and will be used for this WSE.

Table 1. GP Update Build-out Water Demand Determination

Designated Land Use	Planning Area Acreage (acres)	Unit Water Demand Factor (AF/ac/year)	Water Demand AF/year
Residential Estate	2,460	1.5	3,690
Low Density Residential	26,220	1.5	39,330
Medium Density Residential	1,970	1.5	2,955
High Density Residential	1,150	3.0	3,450
Village	18,430	3.0	55,290
Administrative Professional	1,050	1.5	1,575
Commercial	4,780	1.5	7,170
Mixed Use	1,420	1.9	2,698
Industrial	17,070	1.5	25,605
Institutional	7,160	1.5	10,740
Parks and Recreation	1,790	2.0	3,580
Open Space/Agriculture	38,560	-	-
Total	**122,060**		**156,083**

Source: NOP of Draft EIR, May 2005 Table 2. Designated Land Uses…

Figure 3. Population and Water Demand Increase Over Time

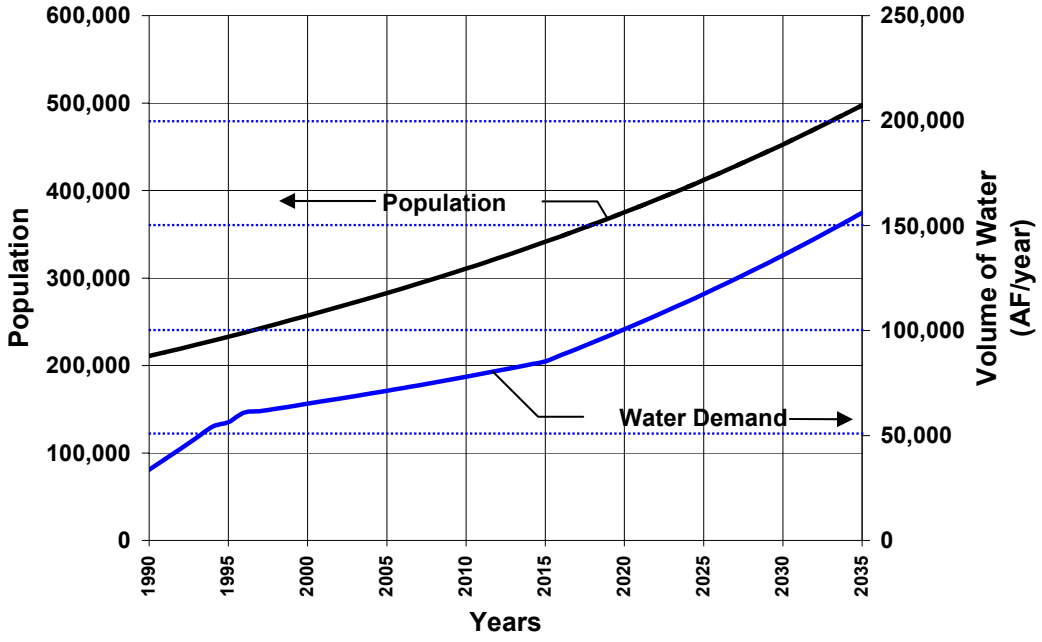
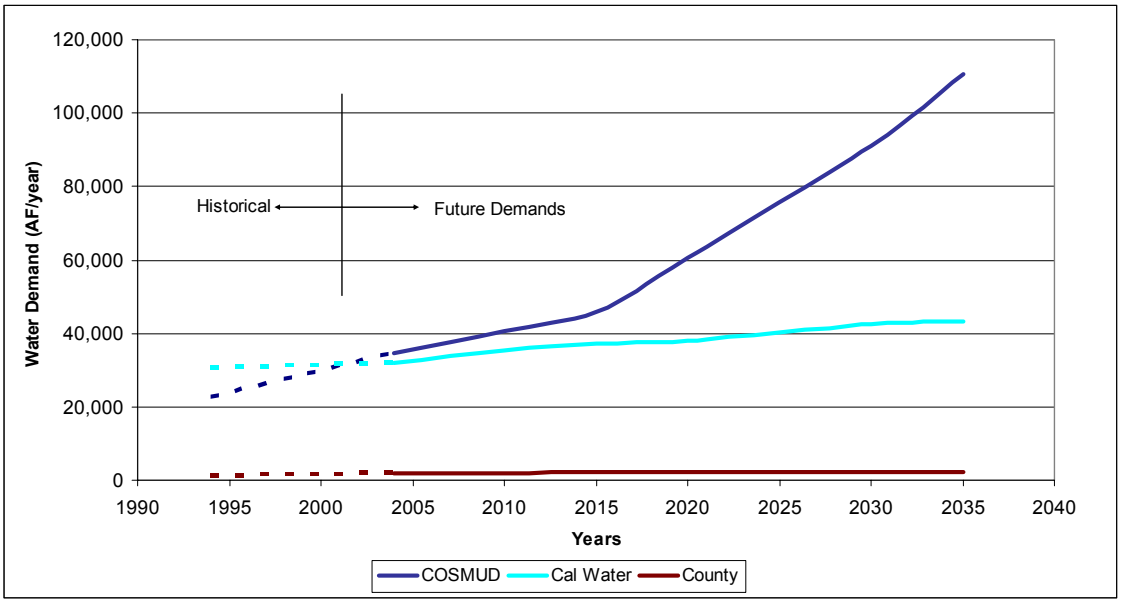


Table 2 and **Figure 4** show the past, current, and estimated projected demand to 2035 within the expanded Sphere of Influence (SOI) of the GP Update for each of the water retailers: COSMUD, Cal Water and San Joaquin County. The COSMUD is expected to experience the greatest increase in demand since most development will occur in its designated service areas. Cal Water's demand increase is projected to grow at a lower rate because much of its service area is developed. New development will either occur as infill or in areas east of Cal Water's existing service area which is not growing as rapidly as the areas in the northern and southern portions of COSMA (i.e., COSMUD service areas). Build-out of Cal-Water is assumed to occur by 2030. The County's demand is expected to be relatively static since the areas it serves are fully developed. Increases in demand would likely be due to redevelopment.

Table 2. Past, Current, and Projected Water Demands by Retail Service Provider

Year	Total Demand (AF/year)	COSMUD		Cal Water		County	
		Demand (AF/year)	Percent of Total Demand	Demand (AF/year)	Percent of Total Demand	Demand (AF/year)	Percent of Total Demand
1994	**54,204**	22,619	41.70%	30,345	55.90%	1,296	2.40%
2004	**68,714**	34,550	50.30%	32,070	46.70%	2,094	3.00%
2010	**81,250**	42,170	51.90%	36,940	45.50%	2,140	2.60%
2015	**85,330**	46,078	54.00%	37,076	43.45%	2,176	2.55%
2020	**106,250**	64,030	60.30%	40,000	37.60%	2,220	2.10%
2030	**137,500**	92,200	67.00%	43,000	31.30%	2,300	1.70%
2035	**156,083**	110,663	70.90%	43,079	27.60%	2,341	1.50%

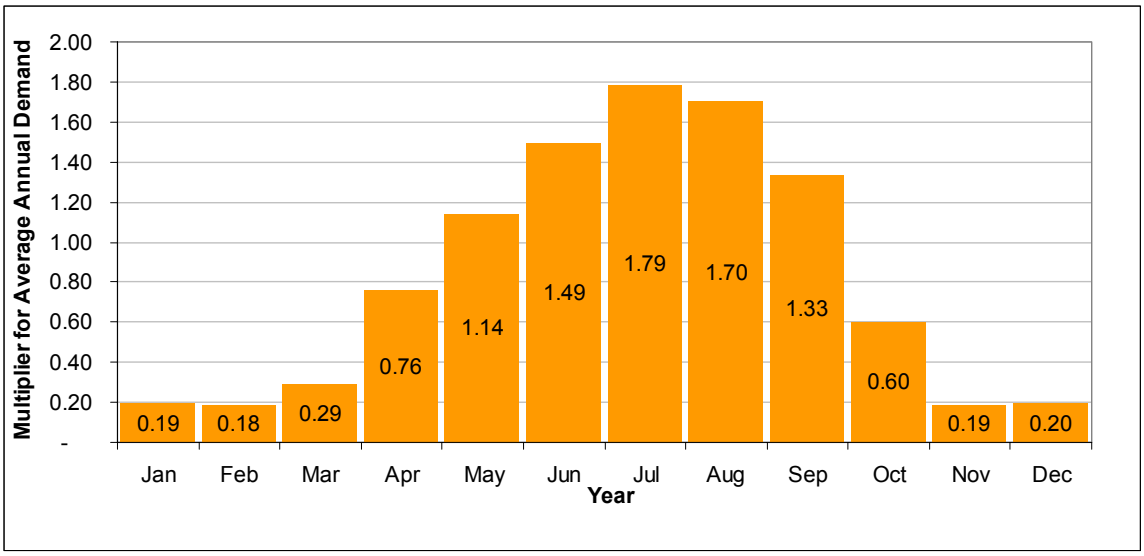
Figure 4. Demand Growth by Retail Service Provider



The above water demand projections are all based on an annual average volume of water expressed in AF/year. The use of an annual average is needed for the planning of water supply sources (e.g., surface water contracts, groundwater extraction yields, etc.) but does not address the facility side of whether the water supply facility capacity is available to convey raw surface water, extract groundwater, and treat water supplies, if necessary.

To arrive at the monthly variation in water demand, a multiplier is determined based on historical use of water in the region. For the Stockton area **Figure 5** presents the monthly multipliers that, when applied to the average annual water demand, results in the corresponding monthly water demand and needed water supply facility capacity. The month of July represents the highest water demand with a 1.79 multiplier. In million gallons per day (mgd), this results in a minimum total system capacity of 250 mgd at build-out of the GP Update. In addition, since surface water serves as the base supply, the peaking factor for surface water facilities is slightly different than for groundwater facilities. For instance, the surface water facility multiplier is 1.25 and the groundwater 1.43. When these two are multiplied together the 1.79 total system multiplier is obtained. Peak hour water facility capacity (highest water use) is met through in-system storage and is not evaluated in this WSE. Average annual sufficiency of supplies and maximum month sufficiency in water facility capacity are both evaluated in this WSE. In addition, since the COSMA is served through a conjunctive use system, there is some redundancy in system capacity to account for the dry years when surface water capacity may not be fully utilized due to supply constraints.

Figure 5. Monthly Multipliers for Annual Average Water Demand



Elements of a WSA

As mentioned in the introduction, it is the intent of this WSE to use Water Code Sections 10910 – 10915 as a template to address the elements of water supply that are of the utmost concern. This WSE is structured according to the same requirements of a WSA.

Determine if Project is Subject To CEQA [Section 10910(a)]

The City of Stockton Planning Department has made a determination that the Project is subject to CEQA.

Identify Responsible Public Water System [Section 10910(b)]

The City of Stockton Planning Department has identified COSMUD and Cal-Water as the responsible public water system purveyors for the GP Update. The Planning Department possesses information regarding existing development and other approved development applications within the GP Update SOI which should be considered in the preparation of this WSE.

Determine if UWMP Includes Water Demands [Section 10910(c)]

Projected annual water demands beyond the year 2020 are not specifically included in COSMUD's current UWMP. In Cal Water's UWMP, water demand forecasts based on population growth, not land use, are made to 2030. Although not specifically identified as such, the water demand factors adopted by the COS for water supply planning in the DWSP Feasibility Report are shown in **Table 1** in the column titled "Unit Water Demand Factor".

Identify Existing Water Supplies for the GP Update [Section 10910(d)]

Section 10910(d)(1)

Section 10910(d)(1) requires identification of existing water supply entitlements, water rights, or water service contracts and quantification of water obtained by the water purveyors pursuant to those water supply entitlements, water rights, or water service contracts in previous years.

Existing Surface Water Supplies

Stockton East Water District (SEWD) was organized as a public agency on June 7, 1948, under the provisions of the California Water Conservation District Act of 1931. Since 1978, SEWD has been treating and supplying treated surface water up to 45 mgd to the region's urban areas through its three urban contractors (water retailer providers or urban contractors): COSMUD, Cal-Water, and San Joaquin County. The historical water demands from 1994 to 2005 from each of the urban contractors are illustrated in **Figure 6, Figure 7** and **Figure 8**. The 2004 conditions are used as a baseline in this WSE because the hydrology and water use for 2004 are said to depict normal year conditions.

Figure 6. Historical COSMA Water Supply from Groundwater and Surface Water

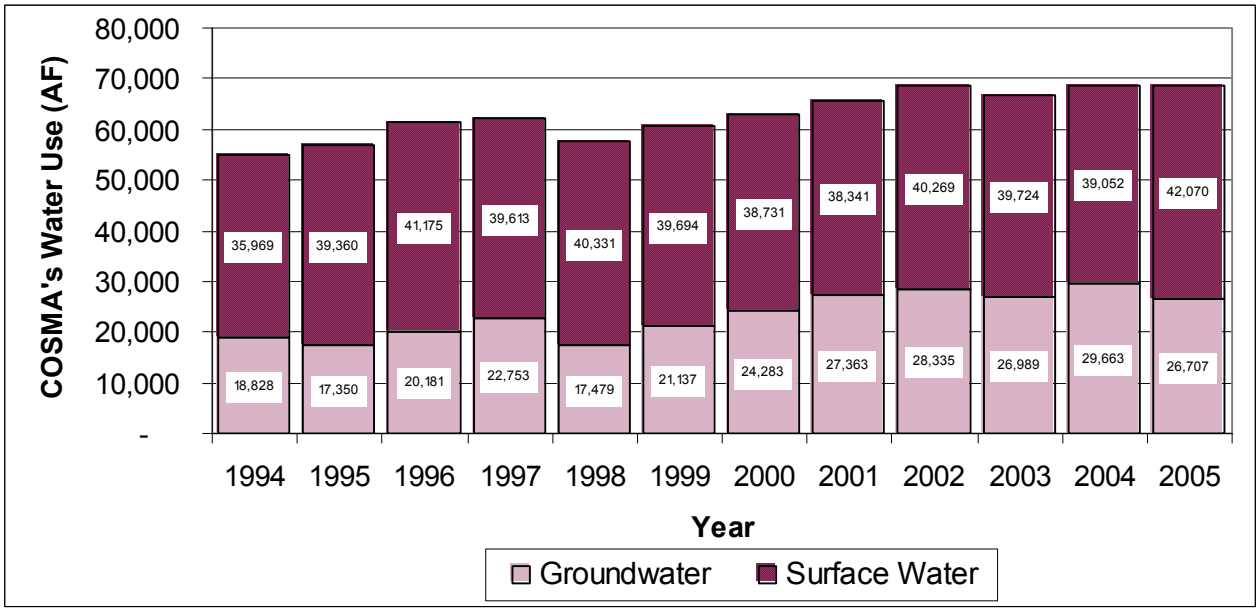


Figure 7. Historical Use of Water Supplies by Water Retailer

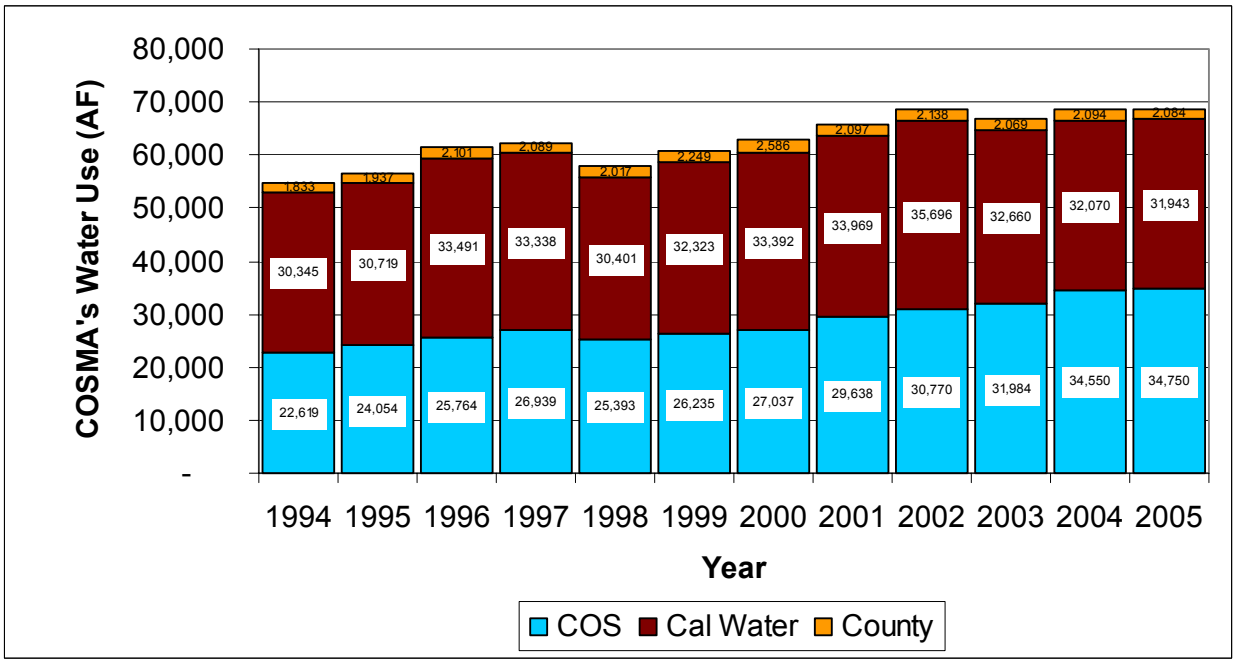
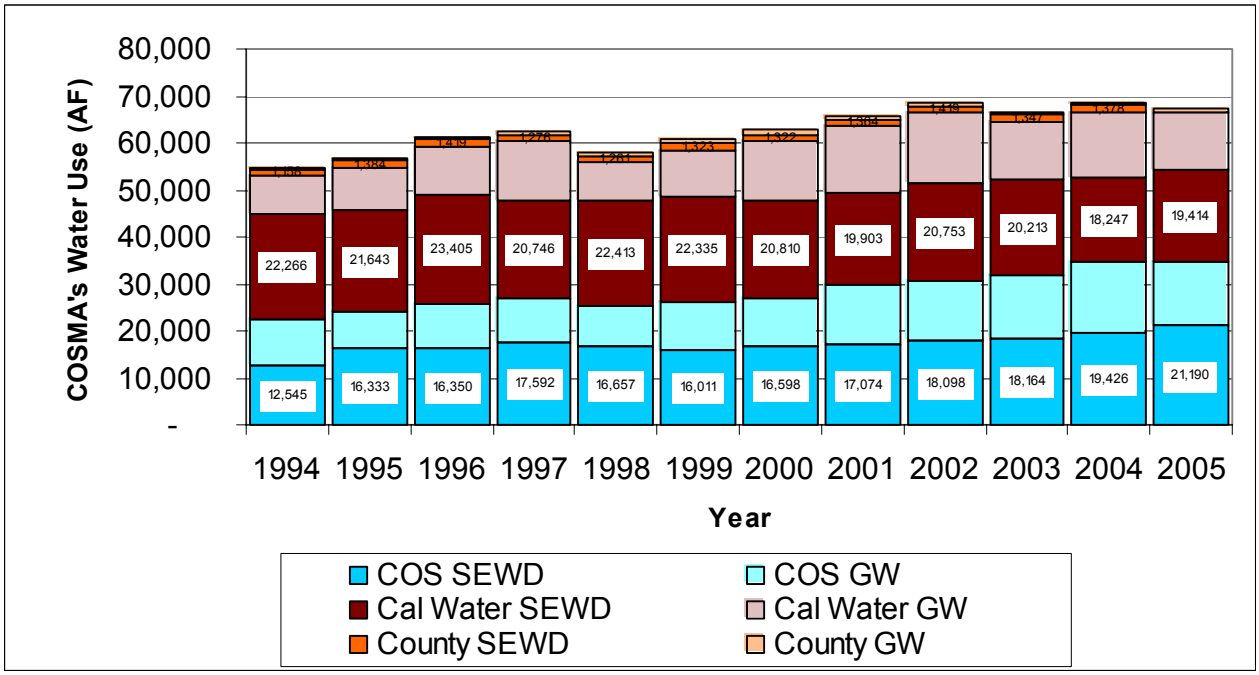


Figure 8. Historical Use of SEWD and Groundwater Supplies by Water Retailer



The existing (2004) water demand is approximately 68,714 AF/year. Both local groundwater in the urban contractors' service area and treated surface water from SEWD have met the urban contractors' water demands during this period.

The use of water by water retail provider is shown in **Figure 7** and the split between the two supplies (SEWD and groundwater) for each water retailer is illustrated in **Figure 8**. SEWD also provides surface water for agricultural irrigation to farmers within its District. This water is not considered in this WSE. Construction of improvements to the SEWD water treatment plant (WTP) are currently being made to increase plant flow capacity by 5 mgd for a rated WTP capacity of 50 mgd.

Groundwater extraction capacity within the General Plan Boundary has been designed to meet maximum day demands for COS, Cal Water and the County in the event that little or no treated surface water is available from SEWD in dry and critical years. Prior to construction of the DWSP (first phase assumed to be completed in 2010), water demands will exceed available surface water treatment capacity necessitating the construction of additional interim groundwater facilities until additional treated surface water capacity (SEWD expansion and DWSP construction) is brought on-line.

SEWD Surface Water Contract Entitlements

The COSMA currently receives surface water supplies (via SEWD) from five sources as shown in **Table 3**. Surface water supplies can come from many sources in the eastern Sierra Nevada foothills as shown in **Figure 9**. Total existing firm supplies for municipal and industrial (M&I) uses are approximated to

yield 104.1 thousand AF/year (TAF/year) under wet and above average hydrologic conditions. Their full entitlements including interim and future supply sources could yield 180 TAF/year. Currently, SEWD's ability to use its full water right amount is constrained by one or more of the following in any given year: 1) the hydrologic year type (i.e., dry year curtailment provisions in surface water contracts and reductions in surface water contracted from other agencies), 2) the COSMA M&I water demand, 3) the raw water delivery system to the SEWD WTP, 4) the rated SEWD WTP capacity, and 5) the treated water conveyance capacity from the WTP.

Existing firm surface water contracts held by SEWD include a Bureau of Reclamation (Reclamation) contract (New Hogan Reservoir) and a Calaveras County Water District (CACWD) contract on the Calaveras River based on appropriative water rights held by CACWD, and a Reclamation Central Valley Project (CVP) contract on the Stanislaus River (New Melones Reservoir). Contract documents, agreements, and applications for these surface water supplies are available for review in **Exhibit "D"**. A full description of each contract is provided below.

Table 3. Current and Future SEWD Water Sources and Critical Year Availability

Source	**Annual Contract Amount Thousand Acre-feet (TAF)**	**Projected "Critical Year" Annual Availability (AF/year)**			
		Planning Year			
		2000	**2010**	**2020**	**2035**
Current and Future "Firm" Sources of Supply					
Reclamation – New Hogan Water Supplies, CACWD and SEWD	Total Yield 84.1 TAF [1] SEWD Entitled to M&I or Ag **40.171 TAF**	20,000	12,000	12,000	12,000
CACWD Appropriative Water Rights	Unused CACWD Rights[2] (Currently at Approximately M&I **24 TAF** initially to **10 TAF** at build-out)	20,000	10,000	10,000	10,000
Reclamation – New Melones Interim Water Contract and Section 215 "Spill" Water	Total Contract 75 TAF (M&I **40 TAF**) (Ag & Recharge 20 TAF) (Losses 15 TAF)	Not Available in Dry Years			
SSJID Transfer - Stanislaus River	(Interim M&I **15 TAF**)	4,000	4,000	0	0
OID Transfer - Stanislaus River (includes contract renewal to 2025)	(Interim M&I **15 TAF**)	4,000	4,000	4,000	0
Future Appropriative Water Rights on the Calaveras River	(Not Yet Determined, Assumed to be M&I **50 TAF** in Wet and Above Normal years Only)	Not Available in Dry Years			
Total	**(Firm M&I 104.1 TAF initially to 94.1 TAF at build-out)** **(Approximate Max Future M&I 180 TAF)**	**48,000**	**30,000**	**26,000**	**22,000**

Notes:
1. SEWD has a right to 56.5 percent of the yield, and CACWD has rights to the remaining 43.5 percent. CACWD currently uses approximately 3,500 ac-ft of its allocation, and use of their appropriative water rights is 13,000 ac-ft.
2. Based on an agreement between CACWD and SEWD, SEWD currently has use of the unused portion of CACWD's appropriative water rights that yields approximately 24TAF.

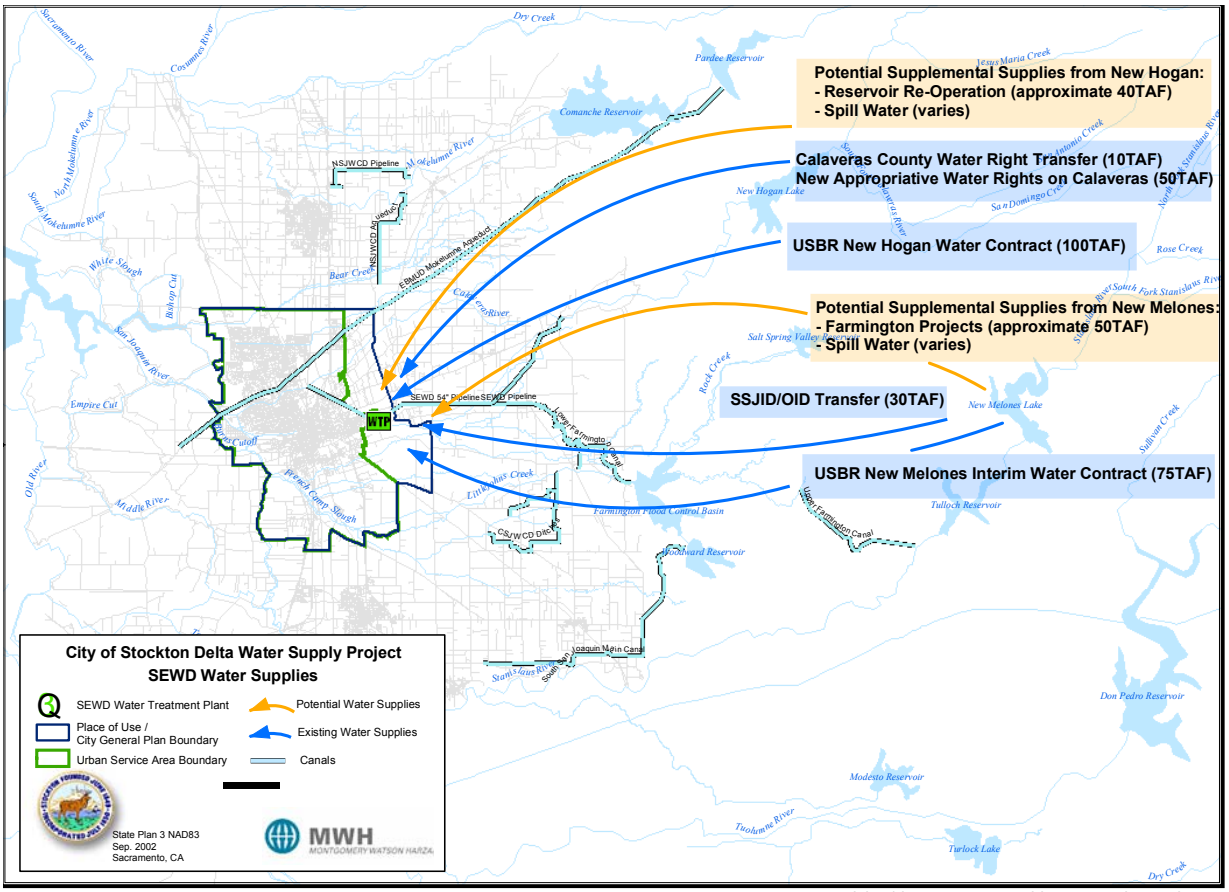
Calaveras River Contracts

The Reclamation contract for water stored in New Hogan Reservoir is a settlement contract that provides a firm supply of water in all hydrologic year types. The maximum amount available for M&I is approximately 40.171 TAF. The CACWD contract is also firm due to the contract being senior to most other water contracts on the river. However, as development continues in Calaveras County, less of the CACWD water will be available to SEWD and its customers. This contract currently yields 24 TAF and will ultimately be decreased to 10 TAF at build-out.

Stanislaus River Contracts

In 1983, SEWD contracted with the USBR for 75,000 acre-feet of surface water supply from the New Melones Project on the Stanislaus River to be delivered at Goodwin Dam. In 1987, SEWD agreed to provide a minimum of 20,000 acre-feet of treated water per year to the COS Place of Use in accordance with the contract entitled, "Second Amended Contract Among the Stockton East Water

Figure 9. SEWD Existing, Future, and Potential Surface Water Right



District, 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." For the coming year, this agreement allocates the quantity of treated surface water from the SEWD WTP that each urban water contractor (COS, Cal Water and the County) is to receive based on its percentage of total water used in the Stockton Metropolitan area during the previous year. In 2004-2005, SEWD WTP production was allocated as follows: COS – 49.75%, Cal Water – 46.72% and County – 3.53%. Because of COS' much more rapid growth in population and hence water demand during the past five years, its percentage of SEWD WTP output has increased by 6.9% from 2000 – 2001 while Cal Water's has declined by 7.0 % during the same period. The County's share has increased slightly from 3.41% to 3.53% during the same five-year period.

In 1994, SEWD completed construction of the Farmington Canal Project, connecting Goodwin Dam to SEWD's WTP expanding its raw water capacity. This provided access to SEWD's New Melones CVP Project Supply. However, in the mid 1990's implementation of the Central Valley Project Improvement Act (CVPIA) (P.L. 102-575) and other regulatory actions substantially reduced the volumes of water SEWD could expect to be delivered under its New Melones Project contract, especially in dry years.

Also included on the Stanislaus River are two interim contracts one from OID and the other from SSJID. SEWD and the urban water retailers have arrangements for interim water transfers from Oakdale Irrigation District (OID) and South San Joaquin Irrigation District (SSJID), which hold senior water rights on the Stanislaus River. The OID/SSJID water transfer contract includes an option to renew for a minimum of a ten-year period upon expiration in 2009, subject to mutually agreeable conditions. The OID/SSJID contract is currently for up to 30,000 AF/year, 15,000 AF/yr from each district. For the purposes of this WSE, it is assumed that mutually agreeable conditions will result in only one of the irrigation districts renewing to 2025. The projected variability of supply available to SEWD under the OID/SSJID contract is shown in **Table 4**.

Table 4. Availability of Water Under the OID/SSJID Interim Water Contract

Percentage of Years	Volume Available Annually (AF/year)	
	Prior to 2009	After 2009
85%	30,000	15,000
9%	12,500	6,250
6%	8,000	4,000

Existing Groundwater Supplies

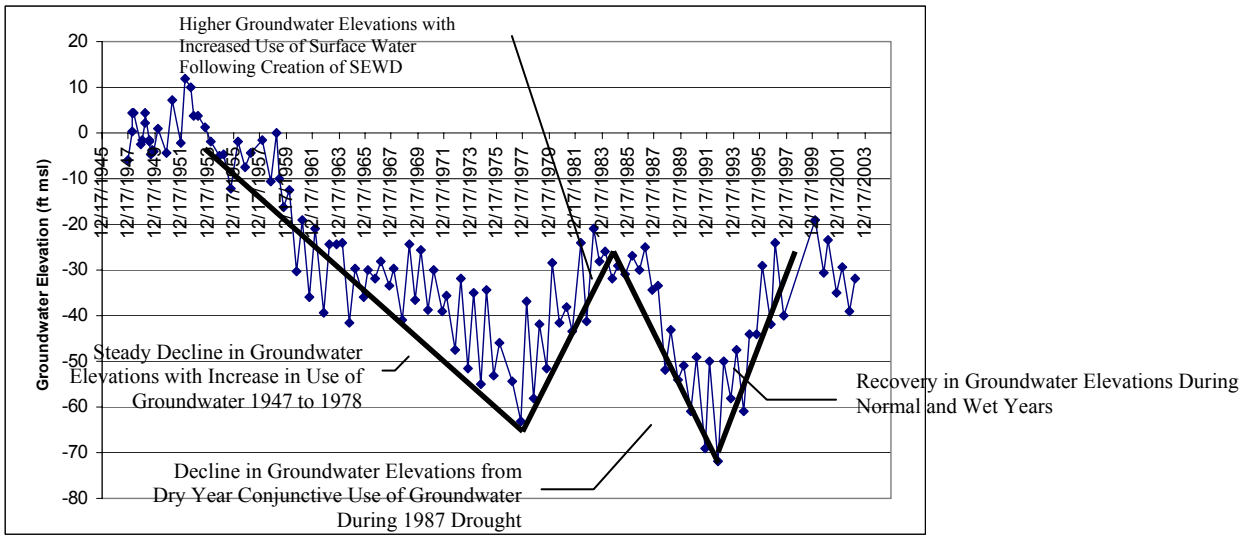
The urban water retailers currently exercise (and will continue to exercise) their rights as overlying groundwater appropriators to extract groundwater from the groundwater basin underlying COSMA for delivery to its customers. Groundwater is an extremely important resource for the urban water retailers and can be managed for long term sustainability and use through conjunctive use with the surface water supplies described above.

Conjunctive use implies that groundwater will be preserved as the last source of supply that is used if surface water supplies are insufficient to meet demands. Careful planning and study has taken place to insure that groundwater extraction yields, on average, do not pose any risk of salinity intrusion or undue risk to private domestic or agricultural wells in the City of Stockton area. In wet years, when surface water is more plentiful, the groundwater basin is allowed to recover through in-lieu recharge (i.e., allowing natural recharge to occur from streams and rivers and not pumping), and in the dry years, groundwater is extracted to meet the shortfall of surface water supplies in meeting M&I water demands. This WSE recognizes the need to protect this resource that is already threatened by salinity intrusion, and to provide a plan to protect the groundwater resources indefinitely. Groundwater use within the broader San Joaquin County region has resulted in a decline of groundwater elevations over the period from 1947 to 2004 as indicated by the three hydrographs shown in **Figure 10.** The figure illustrates groundwater elevations at wells located within and adjacent to the City (see **Figure 11** for well locations and recent groundwater elevations). The short duration fluctuations in **Figure 10** result from the seasonal wet and dry months and irrigation usage within each year. An overall decline in groundwater elevations from 1947 to 1978 is the result of agriculture and urban areas relying entirely on groundwater supplies.

Figure 10. Groundwater Elevation Hydrographs for Areas Near the City of Stockton

(See Figure 11 for Hydrograph locations)

a) Well 1 (State Well ID No. 02N06E26H001M) Hydrograph from 1947 to 2003

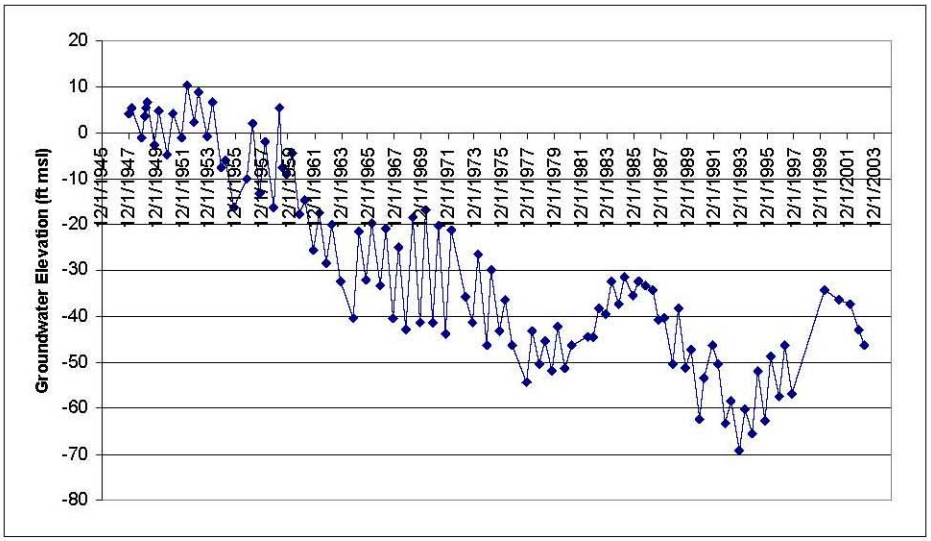


Data Source: State of California DWR State Well Monitoring Program as of November 18, 2005

In the late 1970's, SEWD began to provide supplemental supplies of surface water to the Stockton urban water retailers. The use of surface water in the COSMA resulted in an increase in groundwater elevations as shown in the hydrographs in **Figure 10**. Increases in the elevation continued until the drought of the late 1980's and early 1990s. The behavior of the groundwater basin during the drought and subsequent normal year hydrology of the late 1990's indicate that the basin is recovering and is stabilized and operating within a manageable range. The recent stabilization and improvement in groundwater elevations is the result of wet hydrology, active recharge projects, and increased surface water deliveries in areas historically served by groundwater.

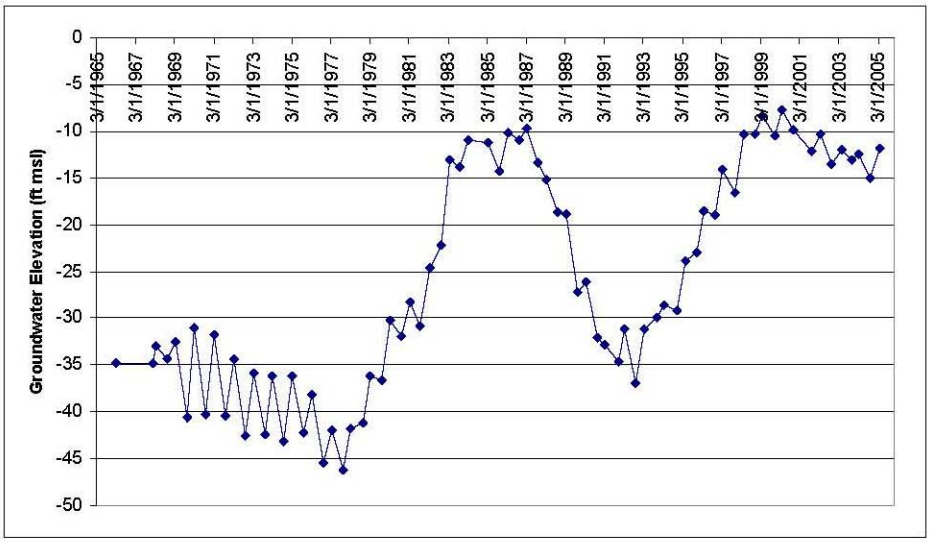
Over the period from 1947 to present, the change in slope of the groundwater surface in western San Joaquin County has created a condition that has allowed saline water to migrate east-northeast into a portion of the COSMA, degrading water quality and rendering it unsuitable for municipal or agricultural use in some areas.

b) Well 2 (State Well ID No. 02N07E15C001M) Hydrograph from 1947 to 2003



Data Source: State of California DWR State Well Monitoring Program as of November 18, 2005

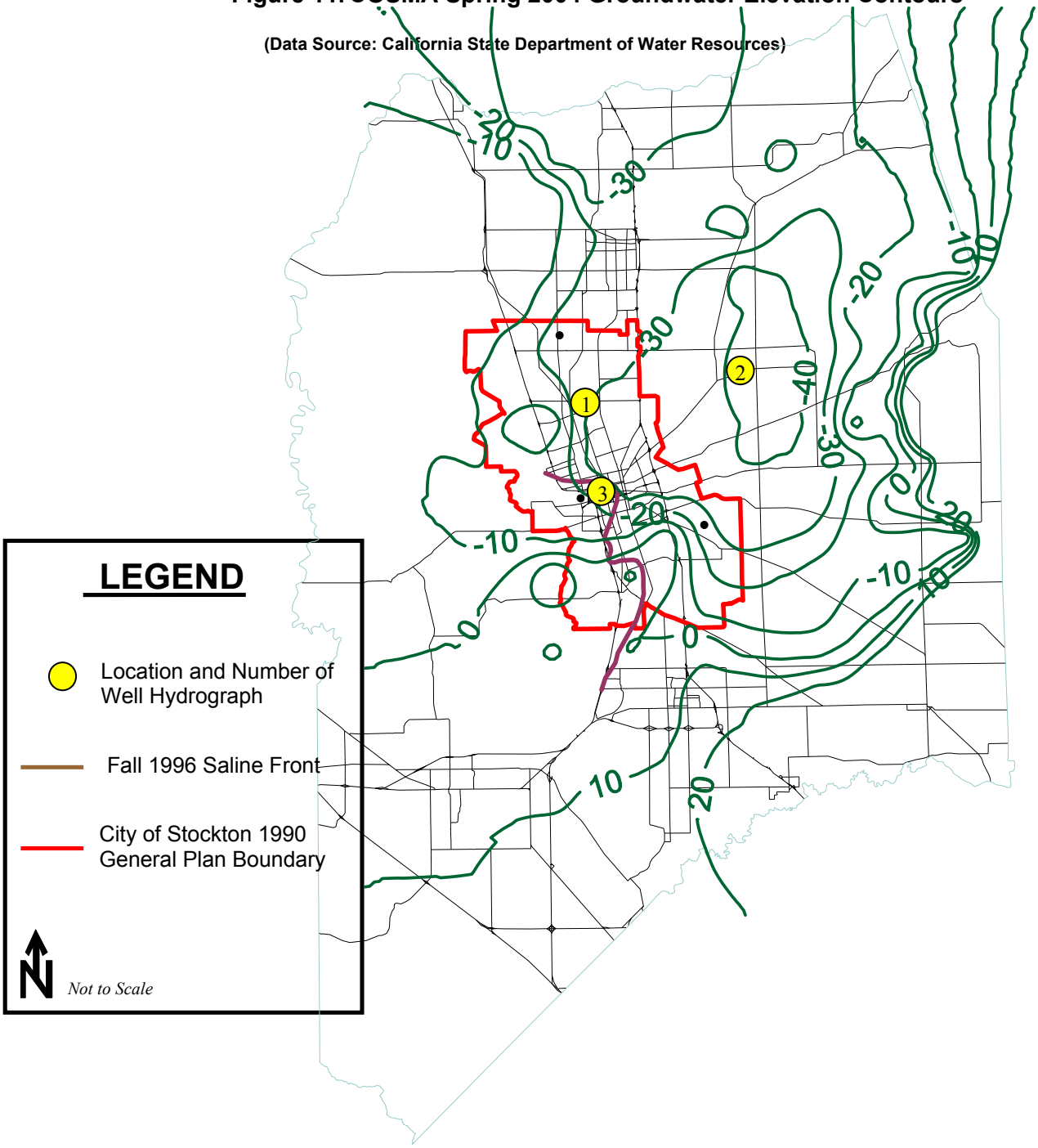
c) Well 3 (State Well ID No. 01N06E03K001M) Hydrograph from 1947 to 2005



Data Source: State of California DWR State Well Monitoring Program as of November 18, 2005

Figure 11. COSMA Spring 2004 Groundwater Elevation Contours

(Data Source: California State Department of Water Resources)



The sustainable yield of the groundwater basin is based on changes in the rate of movement of the salinity front. Over the years, there have been various estimates of the sustainable long-term yield from the groundwater aquifer. The February 1992 Supplemental Report for Water Supply prepared for the COS Special Planning Area Study states:

" *about 40,000 acres and an average withdrawal of 0.75 AF/ac/year. …groundwater can provide from 0.75 to 1.0 AF/ac/year on a long term basis."*

Other references to sustainable groundwater yield are included in the COS 1995 Urban Water Management Plan Update, which uses a long term firm yield of 1.0 AF/ac/year, and from the North Stockton Master Plan in which 0.75 AF/ac/year is used. A principal objective of the COSMA urban water retailers is to reduce groundwater overdraft and protect the groundwater basin from further saltwater intrusion and water quality degradation. Thus, it is appropriate to use a reasonable but conservative assumption for groundwater extraction in the urban water retailer's long term water supply planning to insure that the long-term program is protective of the groundwater resources.

Existing Water Supply System Capacity

As shown in **Figure 1**, the City is separated into three distinct service areas. These service areas or water systems are described below and are based on 2004 conditions.

California Water Service Company System. The Cal Water service area is comprised of the older downtown portions of the City and makes up the middle one-third of the Planning Area. The existing distribution network is reflective of a groundwater-only system where multiple well sources have reduced the need for large transmission facilities. A single backbone transmission main originating from the east side of the Cal Water service area is used to convey treated surface water from the SEWD WTP. Cal Water currently has a maximum day demand of 64 mgd served by 58 wells, and 26.4 mgd of SEWD surface water capacity.

COSMUD North System. The COSMUD north system is bounded by Eight Mile Road on the North, the City Boundary on the east and west, and the large shipping channel and Cal Water Boundary on the south. Like Cal Water, the existing network is reflective of a groundwater-only system that has been upgraded with a series of backbone transmission mains to convey surface water from the SEWD WTP. The COSMUD north system currently has a maximum day demand of 39.8 mgd served by 23 wells, and 18.6 mgd of SEWD surface water capacity.

COSMUD South System. The COSMUD south system comprises the southern one-third of the Planning Area bounded by Cal Water on the north and the Urban Service Area Boundary on the east, west, and south. As of November 2005, the COSMUD south system had a maximum day demand of 9.5 mgd served by 6 wells. A pipeline project called the South Stockton Aqueduct was constructed in 2005 bringing treated surface water from the SEWD WTP to the COSMUD south system providing surface water capacity that could accommodate full build-out water demands of the service area. Currently and until operational experience is gained throughout the coming years, the amount of SEWD WTP capacity available to the system is uncertain and would likely require that less SEWD surface water be used by the COSMUD north system.

In addition to the three water systems above, there are small pockets within the COSMUD north system that are operated and maintained by San Joaquin County through the Lincoln and Colonial Hills Maintenance Districts. These service areas receive groundwater through wells located in both the maintenance districts and from the COSMUD north system. These areas also receive some surface water from SEWD conveyed through the COSMUD north system. The three water systems and their respective capacities of groundwater and surface water are provided in **Table 5** below. The total system capacity as of 2004 is approximately 160 mgd.

Table 5. Water System Capacity for Existing and Foreseeable Water Demands by Retail Water Service Provider

	Water System Capacity as of 2004 (mgd)			
	SEWD WTP	**DWSP WTP**	**Groundwater**	**Total Supply**
COSMUD North System	19		40	58
COSMUD South System	-		10	10
Cal-Water	26		64	90
County	-		2	2
Total	**45**	**-**	**115**	**160**

Notes:
1.) County service areas do receive surface water and groundwater wholesaled and wheeled by either COSMUD or Cal-Water. The amount of groundwater capacity shown is what is believed to exist within their service area. This number has not been confirmed with the County.

The total existing 2004 water demand is approximately 93 mgd (68,714 AF/year of existing demand converted to maximum day demand in mgd). The apparent oversizing of water facility capacity is due to much of the COS depending on groundwater prior to the SEWD WTP and more currently the need to operate the water system based on a conjunctive management program that accounts for dry year curtailments in surface water supplies treated at the SEWD WTP.

On-going Conjunctive Management Program

This section describes how the water supply sources in the COSMA are currently being operated in conjunction with each other to meet its demands. This

analysis includes modeling a complete conjunctive management program using all of the existing COSMA water supplies and applying those supplies against existing and reasonably foreseeable water demands.

For purposes of this WSE, reasonably foreseeable is defined as existing water demands plus all new development demands that have either been approved or have a completed Water Supply Assessment on file. The total existing water demand is calculated to be **77,965** AF/year as shown in **Table 6**. This table includes existing development, development under construction, approved tentative maps, and planning applications with completed WSAs on file with COSMUD. The analysis addresses the question of whether existing supplies can meet existing demands over the next 30 years. Especially, it addresses the concern if groundwater can sustain existing demands if curtailments in surface water occur in the dry years. Under existing conditions, groundwater extractions are targeted to not go above the long-term operational yield of the basin (0.75 acre-ft/acre/year).

Table 6. Existing, Approved Development and Proposed Projects Acreages and Water Demands

	Development	Existing, Approved Development and Proposed Projects Acreage	Water Demand (AF/year)
Existing	Existing Development[1]	46,300	68,810
Approved	Approved Development	1,613	2,581
Proposed Projects	Cannery Park	450	720
	Paradise Villages	683	1,093
	Origone Ranch	394	630
	North Stockton Phase III	237	379
	Bear Creek West	1,149	1,838
	Bear Creek East	318.17	509
	Tidewater Crossing	877.82	1,405
	Subtotal for Existing, Approved Development, and Proposed Projects	**5,722**	**9,155**
	Total COSMA	**52,022**	**77,965**

Notes: 1. Existing demands vary slightly from other references based on the value being normalized to hydrologic conditions considered for modeling purposes.

SEWD supplies and other groundwater facility supplies will meet average annual and maximum day municipal water demands. For this analysis, it is assumed that SEWD will maintain the current 50 mgd[4] surface WTP capacity until 2010. For modeling purposes, it is assumed that SEWD WTP capacity is expanded to

[4] The rated WTP capacity is based on the reliable output of the WTP under wet weather conditions with higher turbidity in the raw water supply. SEWD representatives have stated that the WTP can provide 64 mgd of maximum day output during the summer months if water supplies are available. For modeling purposes, the 50 mgd output is used.

60 mgd in 2016. CEQA environmental documentation will be needed for the SEWD WTP efficiency and upgrade work; however, it will most likely result in a negative declaration or a mitigated negative declaration due to all activities likely taking place within the existing WTP site. The financing of these improvements will be coordinated in a similar manner as the initial and on-going construction of SEWD capital facilities through state and federal grants, and contributions by COS rate payers.

The operation of the conjunctive use model assumes that water demand is met first by SEWD and lastly by groundwater. Additional enhancements to the design and operations of the SEWD WTP are assumed to minimize the impact of scheduled maintenance, and account for the impact of higher turbidity in the raw water supply especially in the wet months of the wet years.

Groundwater extraction capacity within the existing service area boundary is conservatively sized for a certain level of redundancy for service in critical years, to meet maximum day demands, and to meet fire flow requirements. In the event that surface water is curtailed by contract, especially in dry and critical years, groundwater will be a more significant portion of the urban water retailers' water supply. Under these conditions water demands will exceed available surface water treatment capacity output necessitating the on-going use of groundwater until normal levels of SEWD WTP production are restored.

The timing and amount of water assumed available from each SEWD source is based on conservative estimates of the reliable yield of each source and the probability of the various contracts being renewed (See **Figure 12** for 35 year projection of average surface water supplies and their sources).

The OID and SSJID are both renewable contracts. Negotiations for renewal can take place as late as 2009. It should be noted that in the DWSP EIR, the assumption for these contracts used 2009 as a conservative termination date for one of the two contracts and 2019 for the expiration date of the remaining contract. The change in this WSE to only one contract to 2025 is based on updated information and that one district, OID, in their draft Water Resources Plan, calls for long term transfer agreements (water sales) as a means to fund needed infrastructure improvements in their water delivery system.

After expiration of the OID contract water in 2025, it is assumed that additional and higher use of other SEWD supplies takes place because of a need for supply replacement and available capacity in the SEWD WTP. The supplies would come from the higher utilization of the New Hogan and New Melones CVP contracts. The New Hogan contract is assumed to be subject to CVP deficiencies which include shortages of up to 40 percent in critical years as well as provisions that make the New Melones CVP contract water available only in the wet years. Appropriative water rights on the Calaveras River are not assumed to be available in the existing scenario because the water right has not been obtained.

To simulate the variability of water supplies for differing hydrologic conditions, a 70 year historic model of hydrology was used to determine the adequacy of the sum total of water supplies in any given hydrologic year type. For instance, in dry years, surface water curtailments are considered, so groundwater and rationing are used to make up the difference. The objective is that over the 70 years, the groundwater use does not exceed the predefined sustainable yield of 0.75 AF/acre/year as described above. **Figure 13** shows the results at 2035 on how water demands are met from the above mentioned sources. This figure shows that, in even the driest historical hydrologic periods (say 1976 to 1978 or 1987 to 1992) there is sufficient water supply to meet existing water demands with 2035 surface water supply availability and use of groundwater.

Figure 14 shows the build-up of water demand as the top line, the safe sustainable yield as the dashed line and the modeled average yield as the bottom line. From this figure, it shows that during no time does the groundwater yield approach the safe sustainable yield of based on the 0.75 AF/ac/year.

Existing Water Supply Assessment

Given the reliability in surface water and the estimate of firm groundwater yield, the adequacy of water supplies can be evaluated for the existing condition and foreseeable projects. **Table 7** presents a comparison of normal, dry, and consecutive dry year supplies and demands based on a baseline year of 2004 for existing supplies and 2015 for foreseeable projects into the future. Water supplies and their availability are based on the forecasted conditions in 2035.

The average groundwater extraction yield over 70 years of historic hydrology at 2035 conditions is 30,394 AF/year. In dry years, slightly more groundwater is available to replace deficiencies in surface water as part of the existing conjunctive use program. The sustainable yield of groundwater is based on the amount of urban developed acreage. This developed area of 51,203 acres of existing and foreseeable acreage results in a maximum long-term average groundwater extraction rate of 40,609 AF/year based on the 0.75 AF/ac/year factor.

Table 7 presents the various water supply sources, the retail water providers and the two levels of water demand, existing and foreseeable. The table indicates that, over the 70-year period, average water supplies in 2035 meet existing water demands without exceeding the sustainable groundwater yield.

Figure 12. Projected Average Surface Water Contract Use from 2000 to 2035 Based on Existing Supplies and Water Demands

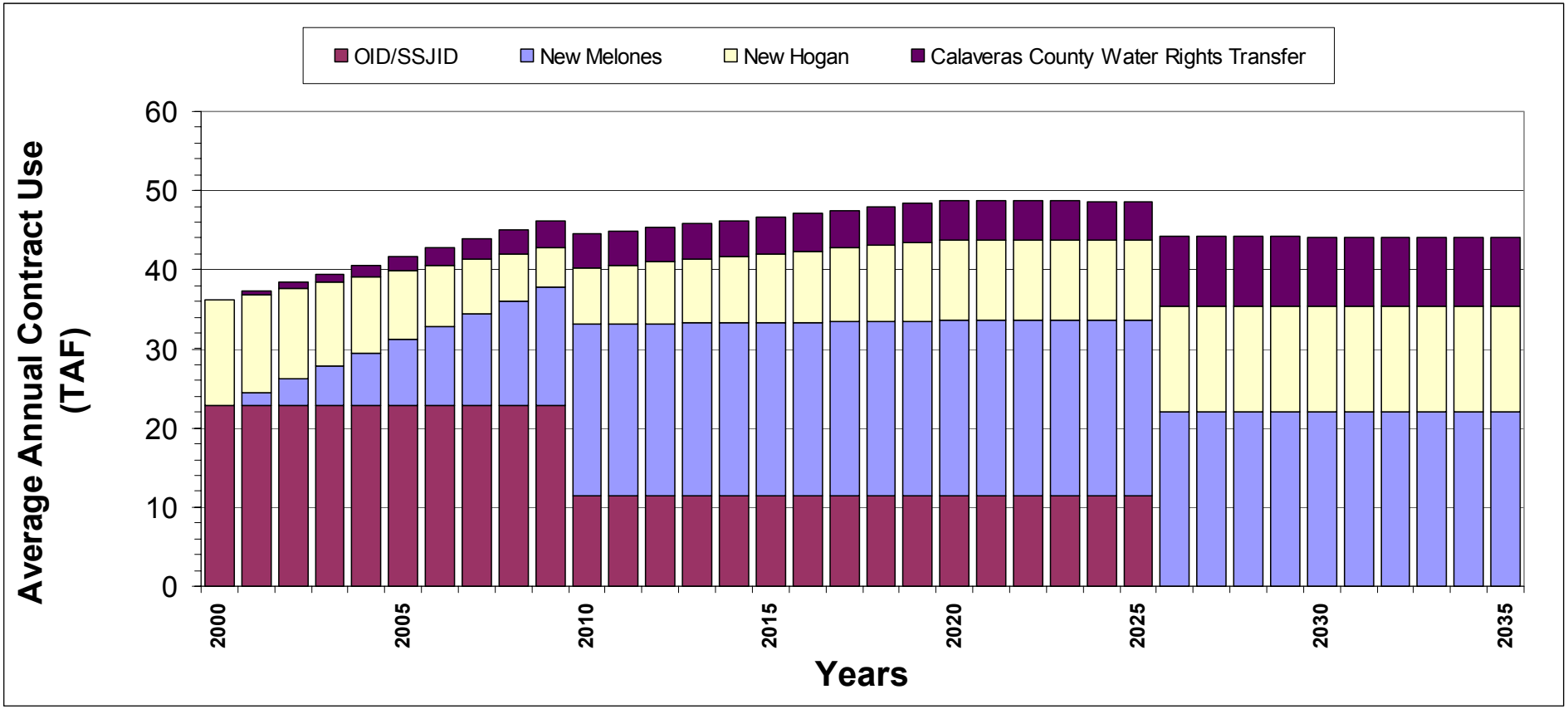


Figure 13. 70-year Historic Hydrologic Period Using Existing and Foreseeable Water Demands and Existing Water Supply Conditions

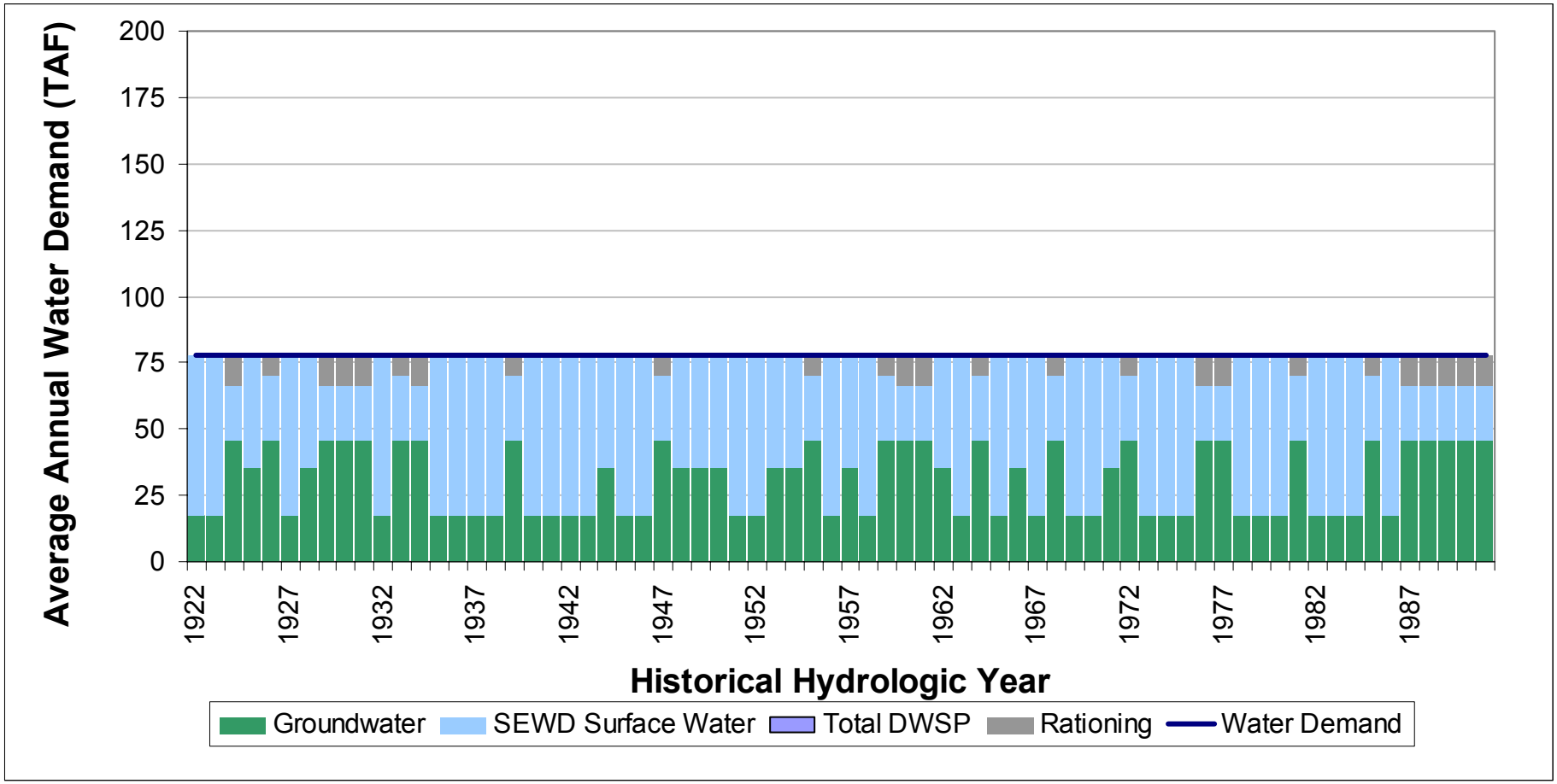


Figure 14. Average Groundwater Use vs. Existing Demand From 2000 to 2035 Using Average 0.75 AF/ac/year Groundwater Sustainable Yield

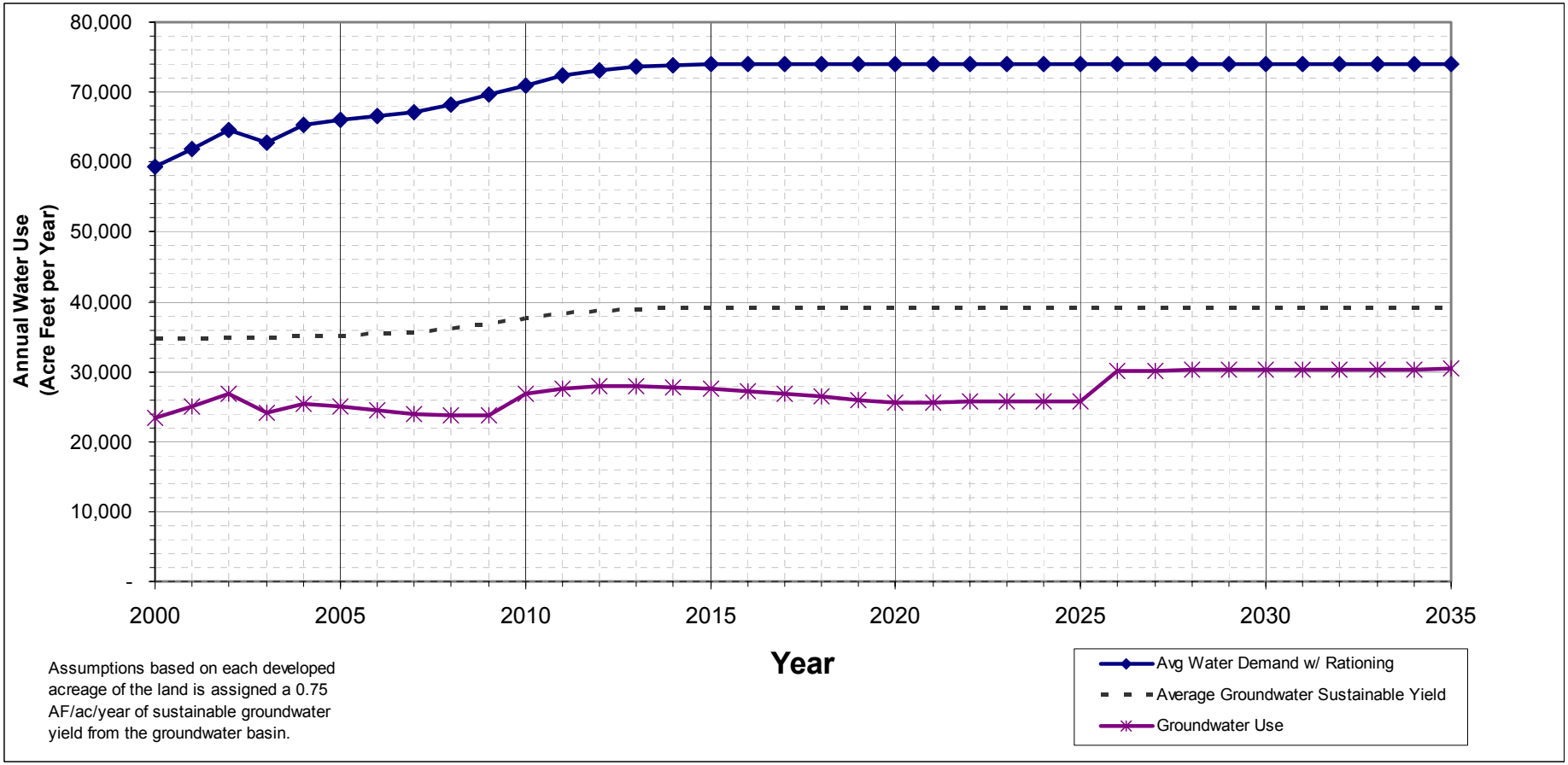


Table 7. Existing (2004) and Foreseeable Water Supplies and Demands for the COSMA by Retail Service Provider

Year Type		Demand Reduction	Existing (2004) (See Note 1)			Foreseeable (See Table 6 and Note 4, 5)			Total Existing (2004) and Foreseeable			Existing (2004) and Foreseeable Demands
			Surface Water (AF/year)	Groundwater (AF/year)	Total (AF/year)	Surface Water (AF/year)	Groundwater (AF/year)	Total (AF/year)	Surface Water (AF/year)	Groundwater (AF/year)	Total (AF/year)	(AF/year)
Normal (See Note 3)	COSMUD	0%	19,426	15,124	34,550	19,952	(11,488)	8,464	39,378	3,636	43,014	43,014
	Cal-Water		18,247	13,823	32,070	1,853	(1,067)	786	20,101	12,756	32,856	32,856
	County		1,378	716	2,094	-	-	-	1,378	716	2,094	2,094
	Total		**39,052**	**29,663**	**68,715**	**21,805**	**(12,555)**	**9,250**	**60,857**	**17,108**	**77,965**	**77,965**
Single Dry (See Note 4)	COSMUD	15%	16,512	12,855	29,368	(11,474)	18,668	7,194	5,038	31,524	36,562	36,562
	Cal-Water		15,510	11,749	27,260	(1,066)	1,734	668	14,444	13,484	27,928	27,928
	County		1,171	609	1,780	-	-	-	1,171	609	1,780	1,780
	Total		**33,194**	**25,213**	**58,407**	**(12,540)**	**20,403**	**7,863**	**20,654**	**45,616**	**66,270**	**66,270**
Multiple Dry (Hypothetical 3-year Drought Period into the Future(using 1977 to 1980 Drought Sequence))	COSMUD	0% (1st Year)	19,426	15,124	34,550	19,952	(11,488)	8,464	39,378	3,636	43,014	43,014
	Cal-Water		18,247	13,823	32,070	1,853	(1,067)	786	20,101	12,756	32,856	32,856
	County		1,378	716	2,094	-	-	-	1,378	716	2,094	2,094
	Total		**39,052**	**29,663**	**68,715**	**21,805**	**(12,555)**	**9,250**	**60,857**	**17,108**	**77,965**	**77,965**
	COSMUD	10% (2nd Year)	17,484	13,612	31,095	(13,261)	17,311	4,051	4,223	30,923	35,146	35,146
	Cal-Water		16,423	12,441	28,863	(1,232)	1,608	376	15,191	14,049	29,239	29,239
	County		1,240	644	1,885	-	-	-	1,240	644	1,885	1,885
	Total		**35,146**	**26,697**	**61,843**	**(14,493)**	**18,919**	**4,427**	**20,654**	**45,616**	**66,270**	**66,270**
	COSMUD	10% (3rd Year)	17,484	13,612	31,095	(13,261)	17,311	4,051	4,223	30,923	35,146	35,146
	Cal-Water		16,423	12,441	28,863	(1,232)	1,608	376	15,191	14,049	29,239	29,239
	County		1,240	644	1,885	-	-	-	1,240	644	1,885	1,885
	Total		**35,146**	**26,697**	**61,843**	**(14,493)**	**18,919**	**4,427**	**20,654**	**45,616**	**66,270**	**66,270**
Average over 70-Years	COSMUD	**5%**	19,426	15,124	34,550	4,534	669	5,203	23,960	15,793	39,753	39,753
	Cal-Water		18,247	13,823	32,070	421	62	483	18,668	13,885	32,553	32,553
	County		1,378	716	2,094	-	-	-	1,378	716	2,094	2,094
	Total		**39,052**	**29,663**	**68,715**	**4,955**	**731**	**5,686**	**44,007**	**30,394**	**74,400**	**74,400**

Reference: City of Stockton Urban Water Management Plan 2000 Update, December 2000

Notes:
1.) Existing is actual 2004 calendar year usage of surface water and groundwater. The assumption is that 2004 depicts a normal year hydrologic and water supply availability condition.
2.) Dry year surface water amounts assume SEWD's New Hogan Central Valley Project water with deficiencies, and Oakdale Irrigation District and South San Joaquin Irrigation District deficiencies as stipulated in the contract for these water supplies.
3.) Normal year surface water deliveries are restricted to the projected availability of SEWD conveyance and treatment plant capacity (not to exceed 60 mgd).
4.) Foreseeable includes all projects that have been approved or have a WSA as of the date of this WSE.
5.) Negative values imply a decrease in the amount of surface water or groundwater based on the use of both supplies in 2004.

Table 7 presents the average annual quantities of surface water and groundwater to make a positive determination of water supply availability. The facility capacity verification is needed to compare water supplies with their respective water facilities (e.g., can SEWD WTP deliver the volume of SEWD surface water and can it meet maximum month demand conditions in conjunction with groundwater?). This check is made based on maximum month demands or a multiplier of 1.51 times the average annual water demand. This verification is made in **Table 8.** The "Needed Capacity" is based on the maximum volume of surface water or groundwater converted to an equivalent maximum month demand shown in the given scenarios of hydrologic conditions shown in **Table 7**. This table shows insufficient SEWD water facility capacity for COSMUD but excess groundwater capacity makes up the difference so actual capacity exceeds needed capacity. Cal-Water and the County both have sufficient supply capacity to provide for existing and foreseeable water demands.

Table 8. Verification of Maximum Month Water Facility Capacity by Water Retail Service Provider

	SEWD WTP (mgd)		DWSP WTP (mgd)		Total Surface Water (mgd)		Groundwater (mgd)		Total Water Facility Capacity (mgd)	
	Needed Capacity	Actual Capacity	Needed Capacity	Actual Capacity	Needed Capacity	Actual Capacity	Needed Capacity	Actual Capacity	Needed Capacity	Actual Capacity
COSMUD	26.7	16.2	-	-	26.7	16.2	22.7	49.3	**49.4**	**65.5**
Cal-Water	26.9	26.9	-	-	26.9	26.9	15.2	64.0	**42.0**	**90.9**
County	1.9	1.9	-	-	1.9	1.9	1.9	2.0	**3.8**	**3.9**
Total	55.5	45.0	-	-	55.5	45.0	39.8	115.3	**95.3**	**160.3**

Notes:
1.) The actual capacities shown are based on 2004 conditions.
2.) SEWD WTP capacity assumes that surface water is used first and continuously throughout the year and has a maximum month peaking factor of 1.27; whereas groundwater is used for primarily for peaking and has a maximum month peaking factor of 1.43. The combined maximum month peaking factor is 1.80.

Section 10910(d)(2)(B)

This subsection requires a copy of the capital outlay program for financing the delivery of the identified water supply to the GP Update area. The financial program for development of surface and groundwater supplies in the COSMA has been done at a planning level with the DWSP Feasibility Report. This work included both existing and future capital outlays including the DWSP.

Currently, the three COSMA urban water retailers finance their respective capital costs for new and replacement facilities. Groundwater is provided by each water retailer to its respective service area. Surface water is purchased by COSMUD,

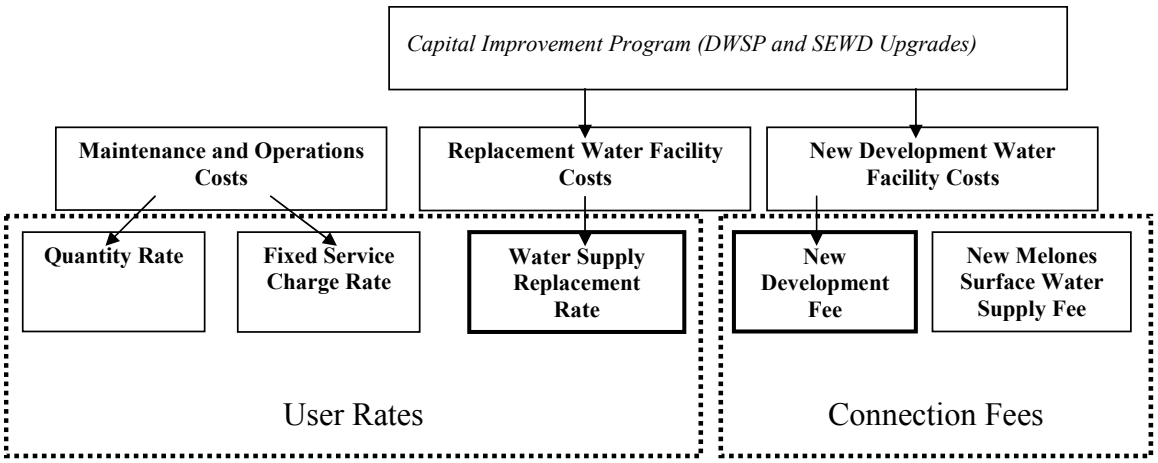
Cal Water and the County from SEWD. User fees and connection fees pay for each purveyor's water facilities and for each urban contractor's portion of SEWD facilities, water supply and services.

Cal Water and COSMUD rates are similar with both at approximately $29 per month based on two-thirds of an acre foot per year for a single family home. This analysis assumes that a uniform rate and connection fee are applied over the entire service area to provide for the needed capital improvements.

The current rate structure for COSMUD (see **Figure 15**) assumes that maintenance and operations costs are recovered from revenues generated from quantity and fixed service charge rates. Since replacement water supplies benefit existing customers, an additional fixed water supply replacement rate component is added to pay for facilities needed to replace lost supplies. Since new growth customers will also be paying this component, they will share in the replacement water supply costs. Costs of capacity constructed for new development is borne entirely by new growth through a development fee.

Rate studies completed for the DWSP indicate that the construction of the Phase 1 portion of the DWSP will be achieved through debt financing using a combination of user rates and development fees for debt recovery. The COS is also pursuing various federal and state grants to assist in offsetting the cost to existing rate payers. The financial program is not dependent on obtaining those grants.

Figure 15. Conceptual Rate Design of Water Retailers (COSMUD Model)



Section 10910(d)(2)(C)

This subsection requires identification of any federal, state, and local permits required for construction of the facilities identified for delivering the water supply to the project.

Any new wells for the GP Update will be added to each of the water purveyor's California Department of Health Services (DHS) permit to serve potable water supplies. The design of those facilities will require coordination with DHS. No other regulatory approvals are anticipated for meeting existing demands.

Section 10910(d)(2)(D)

This subsection requires identification of any regulatory approvals required for delivery of the water supply to the project.

The groundwater and surface water facilities to serve the areas of the GP Update not currently developed will be added to the DHS permit to serve potable water supplies in each of the urban water retailers' service areas. The design of those facilities will require coordination with DHS. No other regulatory approvals are anticipated.

Section 10910(e) states:

"If no water has been received in prior years by the public water system,…, under the existing water supply entitlements, water rights, or water service contracts [identified to serve the proposed project], the public water system, … , shall also include in its water supply assessment pursuant to subdivision (c), an identification of the other public water systems or water service contract holders that receive a water supply or have existing water supply entitlements, water rights, or water service contracts, to the same source of water as the public water system, … , has identified as a source of water supply within its water supply assessments."

The intent of this section is to identify any potential conflicts that may arise from the exercise of an existing water supply entitlement, water right, or water service contract to serve a proposed project if such water supply entitlement, water right, or water service contract has not been previously exercised.

Use of Groundwater:
The water demands of the COSMA will be met in part with groundwater. The COSMA urban water retail purveyors have previously exercised their rights as groundwater appropriators to serve the water demands of their customers and will continue to exercise those rights to provide treated water supplies.

Use of Surface Water:
The surface water supplies associated with the conjunctive use program fall into three categories: 1) water supplies derived from the CVP, 2) interim water supply contracts, 3) surplus supplies available on an intermittent basis.

The parties that could most directly be affected by exercise of these water rights are CVP contractors, State Water Project (SWP) contractors, water rights holders subject to Term 91 conditions, and riparian diverters downstream of the points of diversion for each contract.

Section 10910(f)

The water demands of the project will be met partially with groundwater. Consequently, Section 10910(f) requires specific additional information.

Section 10910(f)(1)

Section 10910(f)(1) requires a review of groundwater data contained in the UWMP.

The COSMUD December 2005 UWMP does identify past volumes of groundwater extracted by the COSMA urban water retailers. A graph of historical surface water and groundwater supplies from 1994 to 2005 is provided in Figure 6. The Cal Water September 2003 UWMP provides data on groundwater use from 1980 to 2002.

Section 10910(f)(2)

Section 10910(f)(2) requires a description of the groundwater basin and the efforts being taken to prevent long-term overdraft.

The groundwater basin underlying San Joaquin County is part of the contiguous Central Valley aquifer system, which supplies groundwater to agricultural, domestic, and industrial water users from Redding to Bakersfield. The basin consists of Pre-Tertiary igneous and metamorphic rocks of the Sierra Nevada that continue west beneath the valley floor. Marine sediments, thousands of feet thick, overlie the basement rocks. Continental deposits overlie the marine rocks and act as the primary freshwater aquifer in the study area. In local areas, fresh

water may be present in both marine and continental deposits, and saline water may be found in continental deposits.

DWR Bulletin 146 identifies the usable aquifer in the eastern portion of San Joaquin County as the continental deposits of Miocene and younger age. The usable aquifer is present within the boundaries of the county in distinct geologic formations that include the Mehrten Formation, the Laguna Formation, the Victor Formation, flood basin deposits, and alluvial fan and stream channel deposits. The thickness of the usable aquifer ranges from less than 100 feet in the eastern edge of the county to over 3,000 feet in the southwestern edge, and is approximately 1000 feet beneath Stockton.

Groundwater in the San Joaquin County area moves from sources of recharge to areas of discharge. Most recharge to the aquifer system occurs from the Delta and along active stream channels where extensive sand and gravel deposits exist. Consequently, the highest groundwater elevations typically occur near the Delta, the Stanislaus River, and the San Joaquin River. Other sources of recharge within the project area include subsurface recharge from fractured geologic formations to the east, as well as deep percolation from applied surface water and precipitation.

Municipal and agricultural uses of groundwater within San Joaquin County contribute to an overall average yield of groundwater estimated to be 867,000 AF/Y. Historically, groundwater elevations have declined from 40 to 60 feet. As a result, a regional cone of depression has formed in Eastern San Joaquin County creating a gradient that allows saline water underlying the Delta region to migrate northeast within the southern portions of the City. Groundwater underlying the City generally flows to the east due to the regional cone of depression.

In the past, the groundwater basin underlying San Joaquin County has been classified by DWR as being in overdraft, especially in the northeastern portion of the County. The COSMA, however, has been instrumental through its voluntary participation in funding the existing conjunctive use program for the portion of the basin underlying the COSMA that groundwater elevations have stabilized and no significant declines have been recorded since the late 1980's.

In addition to its historical contributions, the COSMA's long-term plan for preventing overdraft of the groundwater basin are embedded in the objectives of the proposed future DWSP to insure systematic, incremental implementation of the on-going conjunctive use program to provide a benefit to the groundwater basin. This benefit extends beyond the political boundaries of the COS.

Section 10910(f)(3)

Section 10910(f)(3) requires a description of the volume and geographic distribution of groundwater extractions from the basin for the last five years.

Data for municipal and industrial groundwater usage have been collected and are shown in **Figure 6, Figure 7** and **Figure 8**. The distribution of groundwater pumping is shown in **Figure 16** where existing well locations are shown. Historical groundwater demands and location of agriculture and private wells have not been identified, measured, and collated.

Section 10910(f)(4)

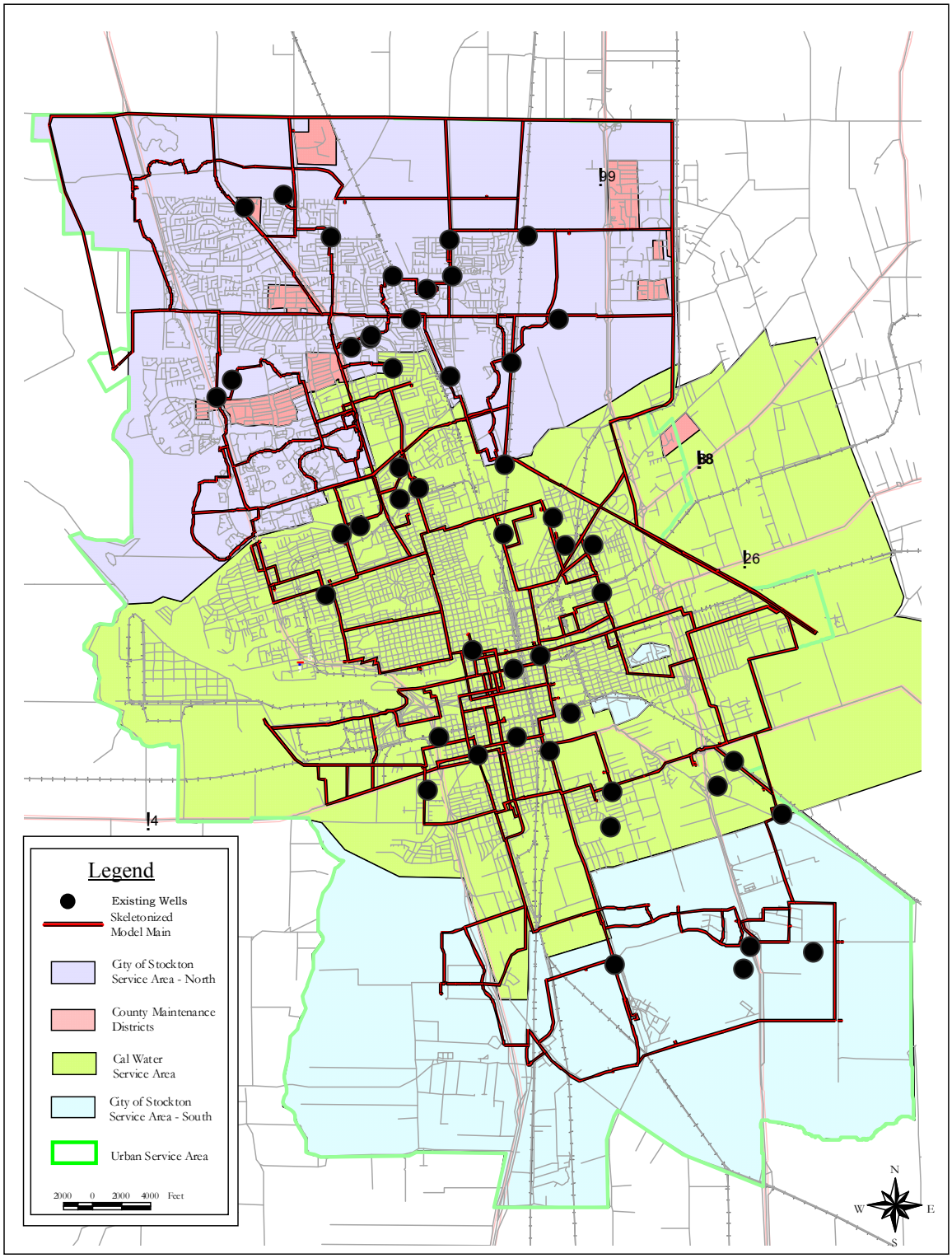
Section 10910(f)(4) requires a description of the projected volume and geographic distribution of groundwater extractions from the basin. For the existing supplies, this is presented in Section **10910(d)(1)** above and volume and location of groundwater wells are represented in **Figure 6** and **Figure 16**, respectively.

Section 10910(f)(5)

Section 10910(f)(5) requires an analysis of the sufficiency of the groundwater basin to meet the demands associated with the project.

This is presented in Section **10910(d)(1)** above and starting on **Page 18** under the heading of “Existing Groundwater Supplies”.

Figure 16. Existing COSMA Well Locations



If Existing Water Supplies are Insufficient to Meet Project Demands [Section 10911(a)]

Section 10911(a)

Section 10911(a) requires that if existing water supplies are insufficient, the public water system shall provide to the city or county its plans for acquiring additional water supplies. In describing the plans, Section 10911(a) states

"…*the public water system shall provide to the city or county its plans for acquiring additional water supplies setting forth the measures that are being undertaken to acquire and develop those water supplies. If the city or county, if either is required to comply with this part pursuant to subdivision (b), concludes as a result of its assessment, that water supplies are, or will be, insufficient, the city or county shall include in its water supply assessment its plans for acquiring additional water supplies, setting forth the measures that are being undertaken to acquire and develop those water supplies. Those plans may include, but are not limited to, information concerning all of the following:*

(1) The estimated total costs, and the proposed method of financing the costs, associated with acquiring the additional water supplies.

(2) All federal, state, and local permits, approvals, or entitlements that are anticipated to be required in order to acquire and develop the additional water supplies.

(3) Based on the considerations set forth in paragraphs (1) and (2), the estimated timeframes within which the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), expects to be able to acquire additional water supplies.

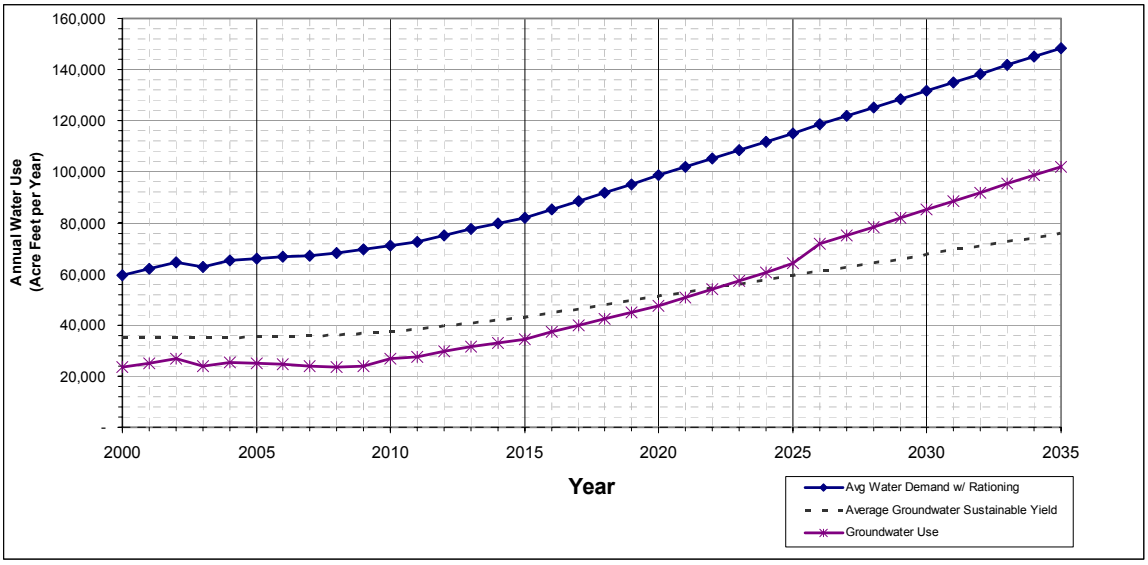
(b) The city or county shall include the water supply assessment provided pursuant to Section 10910, and any information provided pursuant to subdivision (a), in any environmental document prepared for the project pursuant to Division 13 (commencing with Section 21000) of the Public Resources Code.

(c) The city or county may include in any environmental document an evaluation of any information included in that environmental document provided pursuant to subdivision (b). The city or county shall determine, based on the entire record, whether projected water supplies will be sufficient to satisfy the demands of the project, in addition to existing and planned future uses. If the city or county determines that water supplies will not be sufficient, the city or county shall include that determination in its findings for the project.

How Will GP Update Demands be Met?

When the GP Update demands are added to the existing water supply condition model, it becomes obvious as shown in **Figure 17** that existing supplies are inadequate to meet the expected water demand from the GP Update of **156,083** AF/year (equates to an average of **146,945** AF/year with mandatory rationing as explained in Summary of Conjunctive Use Model Findings Section on **Page 51**) at build-out without exceeding the sustainable groundwater yield. The increase in sustainable yield shown in **Figure 17** is a result of the increase in developed acreage; however, starting in year 2025, the need for groundwater exceeds sustainable yield. This finding makes it necessary to show some future supply source other than groundwater becoming available prior to 2025. The planned future water supply sources and future conjunctive use program is described in detail below. The significant underlying assumption is that under this WSE both the SEWD WTP and the DWSP WTP will be available for treatment of the various surface water entitlements by 2010.

Figure 17. Average Groundwater Use vs. GP Update Demand From 2000 to 2035 Using 0.75 AF/ac/year Groundwater Sustainable Yield and Existing Water Supplies



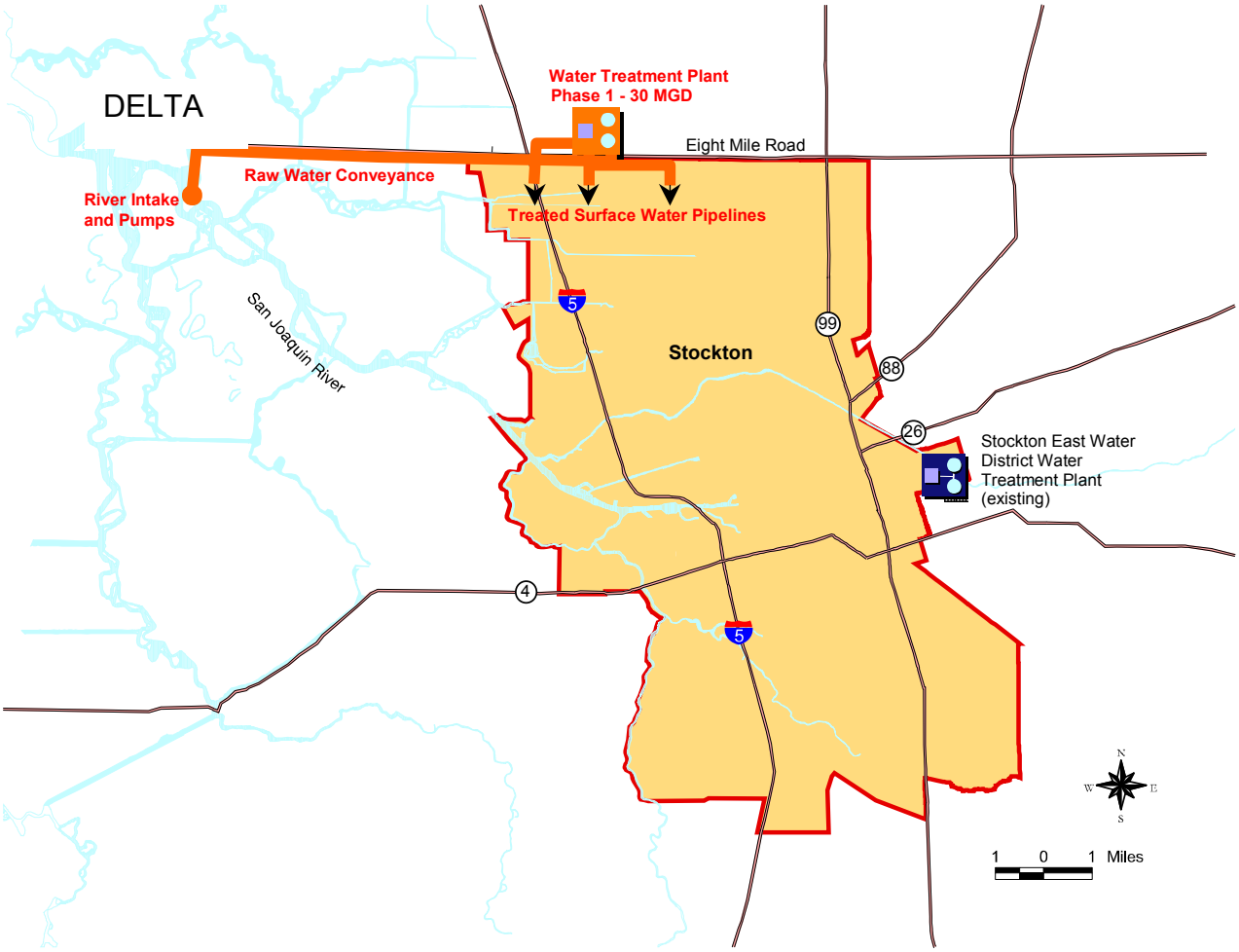
Implementation of the DWSP

Implementation of the DWSP will require a large diversion structure in the Delta and large raw and treated water conveyance facilities (surface water pipelines) to

convey water to the DWSP WTP and then to the distribution systems of the urban water retailers and ultimately to the retail customer. The size and location of the large surface water pipelines are based on serving the area defined by the Urban Service Area of the 1990 General Plan and beyond in terms of water demand. The size and location of the DWSP surface water pipelines are based on the ability to use as much of the existing treated water conveyance capacity as possible.

Figure 18 depicts the approximate location of the preferred DWSP site with the pipelines needed for the first 30 mgd phase and the existing location of the SEWD WTP. In order to achieve the required level of service, additional connections between the Cal Water and COSMUD north and south water systems will be made to move surface water from both SEWD and the DWSP WTPs among the three retail service areas.

Figure 18. COSMA DWSP and SEWD WTPs



Because portions of the COSMA fall within the legally-defined Delta and the area of origin, the City has rights to Delta water. To access water for the DWSP, the City has filed an application for the appropriation of surplus water in the Delta, plus water the City is entitled to pursuant to Water Code Sections 1485 and 11460-11465. Only Section 1485 water is required for the Phase 1 DWSP; whereas, both "Area of Origin" and Section 1485 water rights are necessary beyond Phase 1 DWSP.

Necessary DWSP Water Right Permits

Section 1485 Water Rights

California Water Code Section 1485 can be summarized as follows: any municipality disposing of treated wastewater into the San Joaquin River may seek a water right to divert a like amount of water, less losses, from the river or Delta downstream of the point of wastewater discharge.

Water losses associated with these discharges once they enter the river system can result from seepage, evaporation, or transpiration between the Regional Wastewater Control Facility and the diversion. The San Joaquin River (River) and associated Delta channels are in balance with the connected groundwater systems, therefore, seepage losses can be estimated at zero. Also, the incremental flow added at the Regional Wastewater Control Facility has no measurable effect on the top width of the River; therefore evaporation from the River surface is not increased. Similarly, transpiration is not measurably affected by the incremental flow since the top width of the water surface is not increased. Therefore, it is assumed that the volume of water loss between the wastewater plant and any diversion point downstream is negligible.

Area of Origin Water Rights

The California Water Code contains a number of sections addressing certain benefits and obligations of areas in which water originates. The "Area of Origin" provisions have not yet been thoroughly interpreted by the courts, so their operation and effect remain unclear.

For purposes of planning for a Delta surface supply, it is assumed that the ability to divert water under the California Water Code Sections 11460 et seq. may be limited by conditions similar to those contained in Water Right Standard Permit Term 91. California Water Code Section 11460 et seq. allows a water user within a watershed or other area of origin to appropriate water that otherwise would be exported and receive a priority senior to the rights of the federal Central Valley Project (CVP) and the State Water Project (SWP). Permits for the diversion of water from the Delta under the area of origin statute may be conditioned by the SWRCB to include standard permit Term 91 which prohibits diversions at times when the SWP and/or CVP are required to release stored water from their reservoirs in excess of export diversions, project carriage water,

and project in-basin deliveries[5]. Under these conditions, the City would be allowed to divert water only at times when Delta outflow is greater than regulatory minimum requirements, or when the CVP and/or SWP are exporting water that has no previously been stored in CVP-SWP reservoirs or imported to the basin by the CVP-SWP.

Financing of DWSP

The cost of the Phase 1 portion of the DWSP as is estimated to be $172 Million. This cost is apportioned based on benefits to existing customers and to new development. The financing of the project will be done through customer user rates, development fees, and federal and state grants as described in **Section 10910(d)(2)(B)** starting **Page 31**.

Regulatory Permitting for DWSP

Refer to section titled, "Current Water Supply Condition" on **Page 4** regarding the steps taken to date for implementing Phase 1 of the DWSP. Other regulatory approvals beyond the authorization of the water rights by the SWRCB, are the need for a Section 404 Clean Water Act and Section 10 River & Harbor permits from the Army Corps of Engineers, Section 1601 Streambed Alteration Agreement from the State Department of Fish and Game, and a California Department of Health Services Drinking Water Treatment Plant permit for including the DWSP in the COSMUD potable water system. The Army Corps of Engineers has been consulted on the Phase 1 project especially as it pertains to work in and around the levee and the Delta.

Necessary SEWD Water Right Permits/Contracts

SEWD is pursuing its own appropriative water rights on the Calaveras River that will likely yield some wet and normal year water but no dry or critical year supply is expected. To date, there is no known contract water right amount, so, for purposes of the WSE, up to 50 TAF/year is assumed in the wet and above normal hydrologic years, 15 TAF/year in below normal and dry years, and zero in critical year types. This is reflected in **Table 4** on **Page 17**.

Other supplies are anticipated through future appropriative water right permits on the Stanislaus River and Littlejohn's Creek. Both of these potential supplies are not accounted for in this WSE or reflected in **Table 3** on **Page 15**. Other potential water supplies shown in **Figure 9** on **Page 16** are also not accounted for in this WSE.

Summary of Surface Water Utilization for the GP Update

The COSMA has and will continue to meet annual demands during differing hydrologic periods with surface water, groundwater, water conservation, and other potential water supplies such as non-potable supplies from local communities, raw surface water from local irrigation districts, and water from

[5] The application of Term 91 to diversions under the area of origin statute has not yet been thoroughly interpreted by the courts, so the operation and effect of Term 91 and how it impacts area of origin diversions remains unclear.

active groundwater storage projects. Currently, the COS is pursuing raw surface water transfer agreements with local irrigation districts and municipalities and possible use of tertiary treated recycled water from the City of Lodi for use as a non-potable source for irrigation of public landscape areas. Potable surface water transfer supplies would be diverted for treatment at the SEWD WTP or the DWSP WTP. Water transfers would require mutually agreeable contract terms between the City and another entity transferring water and would require the approval of the Department of Water Resources. Water purchases, treatment facilities and conveyance infrastructure would be funded locally through a combination of rates and fees. Timing of water transfers would coincide with water demands that outpace current supplies through SEWD or the City's water right.

Water Facility Phasing

An important element of the DWSP Feasibility Report was looking beyond the current General Plan to begin to understand how water entitlements will be granted or be diminished over time to meet growing water demands. The certified EIR referenced the work completed in the Feasibility Report and provided a firm definition of the DWSP Phase 1 project and defined the programmatic nature of the Phase 2 project and its timing being associated with the build-up of demand as a result of new development.

In the DWSP Feasibility Report, population was used to assume growth and water demand beyond 2015 (build-out of the current 1990 General Plan) and assumptions for water supply entitlements were made in order to forecast the ultimate size of the DWSP project and needed upgrades to the SEWD WTP over time. As a result of this report, a scheduled phasing of the DWSP project, SEWD WTP upgrades, and groundwater facilities was made as shown in **Table 9** below.

In the sizing of the different water facilities, the modeling of operations of the DWSP and SEWD WTPs is assumed to occur simultaneously, and, if water supply is available, the water demand is met first by SEWD and then by the DWSP. This set of assumptions is used for modeling purposes to best reflect the operational goals of the City's current and future conjunctive use program. The timing of expansion of the two surface water WTPs is based on **Table 9** with the exception that the DWSP Phase 1 project is assumed to remain at 30 mgd until water demand can no longer be met with the available supplies.

Table 9. Phasing of COSMA Water Supply Facilities Based on 1990 General Plan[6]

Phasing	Year	SEWD WTP (mgd)	DWSP Diversion and WTP (mgd)	Groundwater (mgd)
Immediate Phase	**2003**	45	0	65
	2009	50	0	83
1-Build-out of General Plan	**2010**	50	30	83
	2015	50	30	83
2-Interim Milestone	**2016**	60	30	83
	2020	60	60	90
	2030	60	90	110
3- Build-out of 1990 General Plan Boundary/ POU	**2031**	60	90	110
	2040	60	135	140
	2050	60	135	140

As demands continue to increase out to 2035 or build-out of the GP Update, COSMUD will continuously evaluate the need for expanding the Phase 1 project. For purposes of the WSE, a separate analysis was performed based on the water supplies described for SEWD and groundwater to evaluate when an expansion may be needed. This is done primarily to rely upon the existing environmental documentation for the Phase 1 project to support the growth contemplated in the GP Update. Capacity above Phase 1 has been reviewed only at the programmatic level and will require additional study when those increases are necessary. Additional improvements in facilities and operations of the SEWD WTP are required to increase its reliable base load capacity to 50 and 60 mgd, respectively.

To protect larval delta smelt during April through June, when early life history stages of delta smelt and the eggs and larvae of other fish are likely to be in the project area, the potential of the fish screen and diversions to impact these life stages of fish would be reduced operationally (by reducing diversions and thus reducing approach velocities and diversion volume). This would also reduce the potential for juvenile fish of all sizes to be affected by the diversion and fish screen during the spring (April through June). Monitoring will be required from April through June to detect the presence of larval delta smelt in the vicinity of the project area and trigger the implementation of impact avoidance and minimization measures. Measures taken to protect delta smelt would also protect Chinook salmon and other fish and macroinvertebrates. In the modeling of the DWSP, curtailments occur in the month of May of each year.

[6] SEWD efficiency improvements accelerated the increase in rated WTP capacity from 45 mgd in 2009 to 50 mgd in 2005.

Groundwater Supplies

DWSP planning assumes a maximum long term operational yield objective of the basin underlying the Urban Services Area of the 1990 General Plan reflecting a conservative 0.60 AF/ac/year groundwater extraction rate. This is a 20 percent reduction in the amount of groundwater that the COSMA is currently using based on the 0.75 AF/ac/year extraction rate. The purpose of this reduction is to fulfill the COS's objective of managing the underlying groundwater basin for the protection of groundwater resources indefinitely.

A deviation from the lower extraction rate can occur if lands within the General Plan Planning Area Boundary are converted from agricultural uses irrigated with groundwater to urban uses. To account for the prior groundwater pumping, an agricultural credit is assumed based on not exceeding a 1.0 AF/ac/year maximum. This acknowledges that the groundwater basin was being used for agriculture prior to urbanization. The determination of how the agricultural credit concept is summarized below and a detailed technical memorandum is included as **Exhibit "F"** to this WSE.

Agricultural Groundwater Use Conversion

The approach taken to determine the validity of assuming agricultural credits is based on a proven theoretical approach of determining the agricultural water supply requirement and use of the integrated groundwater surface water model (IGSM) for San Joaquin County. The IGSM calculates agricultural supply requirements given the various parameters of agricultural crop types, their irrigation efficiencies, soil conditions, field capacities, root zones, etc. The IGSM is run first applying the agriculture to establish the baseline condition. The second run removes the agriculture to see how the basin rebounds as a result of no agricultural pumping in the urban services boundary. Urban land use and water demand (groundwater and surface water) are then applied and the impacts are evaluated as follows:

Constrained Impacts to the Groundwater

Impacts to the groundwater elevations can occur in three ways:

1. the gradient (or slope) of the groundwater piezometric surface (groundwater table) would not increase in the area of the salinity front (See **Figure 8** on **Page 19** for approximate location of salinity front),

2. groundwater elevations would not drop more than a foot in the agricultural area where the credit is applied, and

3. the lowest elevation of the regional cone of depression would not be impacted by the application of urban groundwater extractions in the agricultural areas.

Each IGSM scenario that includes urban extractions in areas where agricultural extraction are removed is measured against the three impact constraints listed

above. The lesser of the applied groundwater extractions is used as the incremental increase to account for agricultural credits. In no case should groundwater extractions exceed 1.0 AF/ac/year of urban developed area.

Future Conjunctive Management

This section describes how the water supply sources in the COSMA can continue to be operated in conjunction with each other to meet future water demands. This analysis includes modeling a complete conjunctive management program similar to conjunctive use program in-place today including all existing and foreseeable COSMA water supplies and projected demands. The analysis addresses the planning period from 2000 to 2035 to evaluate the adequacy of surface water entitlements and the necessary facility requirements to meet the GP Update water demands.

As mentioned above, groundwater extractions are targeted to not go above the long-term operational yield of the basin of 0.6 acre-ft/acre/year or beyond the 0.75 AF/ac/year maximum in any one given year. The concept of agricultural credits will also be considered, if applicable.

For this analysis, it is assumed that SEWD will maintain its existing 50 mgd surface WTP until 2010. After that, the analysis considers the option of expanding the SEWD WTP capacity to 60 mgd so that the combined capacity of COSMA, SEWD, and other groundwater facilities will meet maximum day municipal demands. For modeling purposes, it is assumed that SEWD WTP capacity is expanded to 60 mgd in 2016 as shown in **Table 9** on **Page 44**. SEWD will likely implement planned efficiency enhancements prior to 2016 to increase its rated WTP capacity sooner, however, for conservative modeling purposes the timeframe is extended to 2016. The funding of the enhancements will be from the water retailers and any grant funds that SEWD receives.

The operation of the DWSP and SEWD WTPs is assumed to occur simultaneously, and, if water supply is available, the water demand is met first by SEWD, then by the DWSP, and lastly by groundwater. Additional enhancements to the design and operations of the SEWD and DWSP WTPs are assumed to minimize the impact of scheduled maintenance, and account for the impact of higher turbidity in the raw water supply especially in the wet months of the wet years.

Groundwater extraction capacity within the General Plan Boundary is conservatively sized for a certain level of redundancy for service in critical years, to meet maximum day demands, and to meet requirements. In the event that surface water is curtailed by contract or by Endangered Species Act (ESA) mitigation requirements, especially in dry and critical years, groundwater becomes a significant portion of the urban water retailers' water supply. Prior to construction of the DWSP (first phase assumed to be completed in 2010), water demands will exceed available surface water treatment capacity necessitating

the on-going use of groundwater facilities within the urban retailers' service areas until the SEWD expansion and/or the DWSP is operational.

The timing and amount of water assumed available from each SEWD source is based on conservative estimates of the reliable yield of each source and the probability of the various contracts being renewed (See **Figure 20** for 35 year projection of average surface water supplies and their sources).

The OID and SSJID transfer contract is assumed to expire in 2025 and not be renewed. Once all of the OID/SSJID contract water is used, the New Hogan and then the New Melones CVP contracts are used. The New Hogan contract is assumed to be subject to CVP deficiencies which include shortages of up to 40 percent in critical years as well as provisions that make the New Melones CVP contract water available only in the wet years. Appropriative water on the Calaveras River is used next. Once the SEWD supplies are used, the model turns to DWSP supplies.

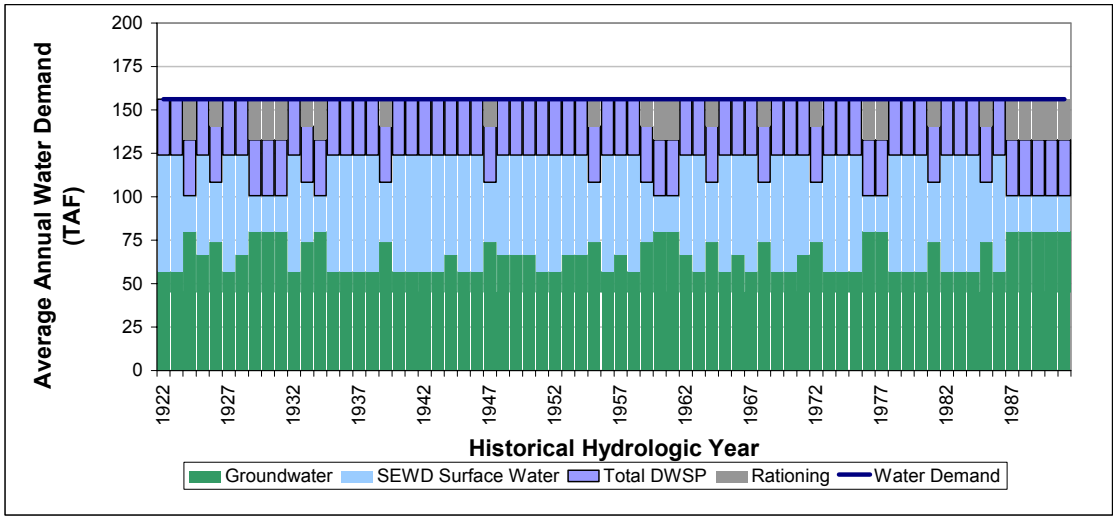
Sources of water supply for the DWSP include Section 1485 water and Area of Origin water, described in sections above. The amount of Section 1485 water depends on the discharge volume from the municipal wastewater treatment plant over time. For the purpose of this study, and to be consistent with the City's water right application, the amount of Section 1485 water available in a given year is assumed to be 41 percent of the total municipal water use within the 1990 General Plan POU. No reductions of Section 1485 water occur in dry years as a result of water rationing because rationing is assumed to affect only the outdoor uses of water that typically do not enter the wastewater system. The need for Area of Origin water is not expected until 2020 or beyond.

To account for the variation in water supplies as a result of annual hydrology, a 70 year historic model of hydrology was used to determine the sum total of water supplies in any given year type. For instance, in dry years, surface water curtailments are considered at both WTPs, so groundwater and rationing are used to make up the difference. The objective is that over the 70 years, the groundwater use does not exceed the predefined sustainable yield of the basin as described below. **Figure 19** below shows the results at 2035 on how water demands are met from the above mentioned sources. This figure shows that, in even the driest historical hydrologic periods (say 1976 to 1978 or 1987 to 1991) there is sufficient water supply to meet 2035 water demands. **Exhibit "E"** provides the tabular and graphic form for each five year increment from 2005 to 2035 to show the adequacy of water supplies throughout the 70 years of historical hydrology.

The operational yield objective of the groundwater basin is based on not allowing the groundwater elevations to drop to a point where impacts could occur as described above or that the annual yield in any given year over the 70-year hydrologic period will not exceed the 0.75 AF/ac/year plus an agricultural credit. The groundwater component is needed to make a final determination of the

adequacy of surface water supplies to be able to compare the allowable yield with the calculated yield from the 70-year hydrologic conjunctive use model.

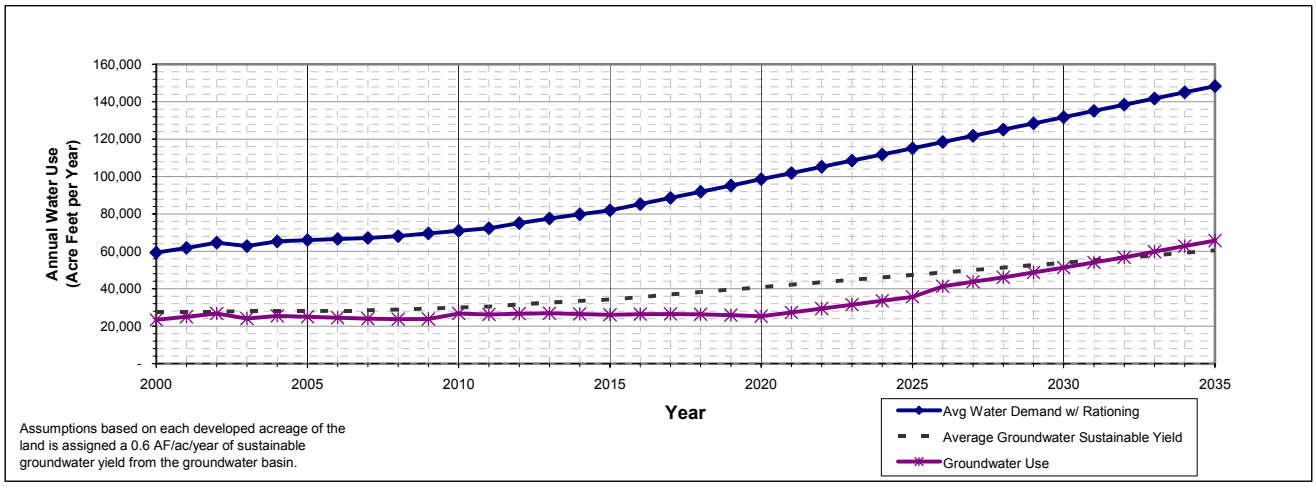
Figure 19. 70-year Historic Hydrologic Period Using 2035 Water Demand and Supply Condition.



Conjunctive Use Model Results

The impacts to the groundwater basin (The groundwater component is the bottom set of bars shown in **Figure 19)** are measured against the three criteria listed in the **Constrained Groundwater Use Impacts** section above and a finding of the maximum sustainable groundwater yield is made for each year of the simulation. The results of this study in five year increments are included in **Exhibit "E"** for reference. The average and maximum groundwater yield at GP Update build out is determined to be approximately 65 TAF/year and 102 TAF/year, respectively. **Figure 20** shows the build-up of water demand as the top line, the safe sustainable yield as the dashed line and the modeled average extraction yield as the bottom line. From this figure, it shows that during no time until 2033 does the groundwater yield approach the targeted goal of 0.60 AF/ac/year. After 2033 groundwater yields are at or slightly above the targeted goal. Any slight exceedence can be corrected by applying agricultural credits after 2015 as per **Exhibit "F"**.

Figure 20. Average Groundwater Use vs. Demand From 2000 to GP Update Build Out Using 0.60 AF/ac/year Groundwater Sustainable Yield

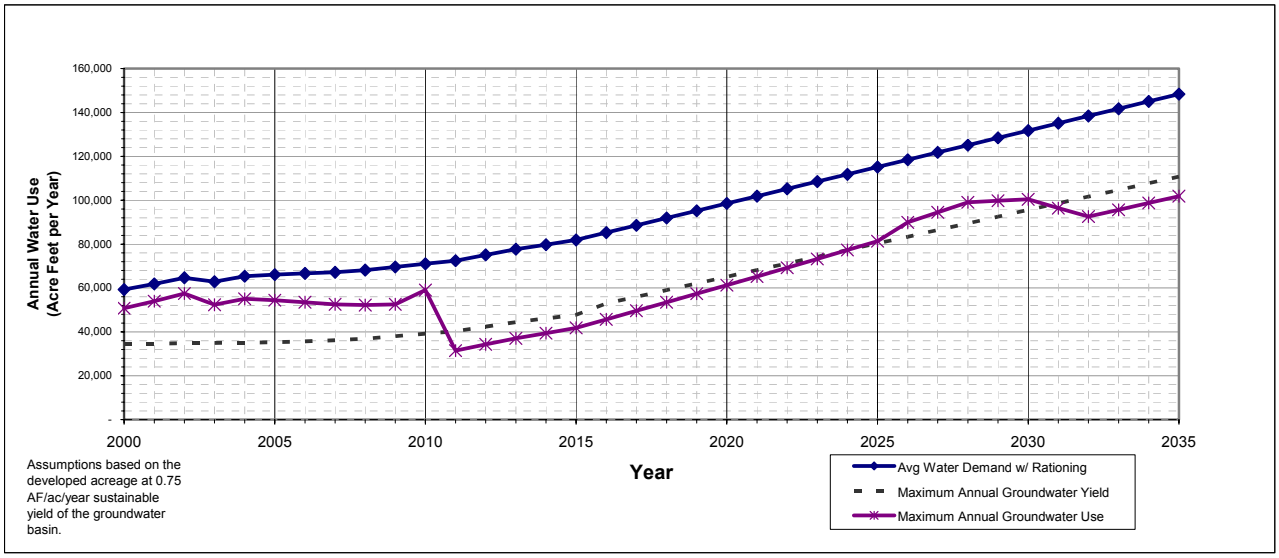


Groundwater Exceedence in Any One Year

The groundwater yield in any given dry year should not exceed the DWSP goal of having a maximum of 0.75 AF/ac/year plus the agricultural credits determined above. For the 70 years of historical hydrology, the maximum groundwater yield is extracted for each year of the GP Update model (i.e., 2010 to 2035, see tables in **Exhibit "E"** for maximum over 70 year period in five year increments). This is then compared to the maximum yield of the basin underlying the COSMA. The results of this analysis are shown in **Figure 21**. This graph is the "worst" case scenario and it is anticipated that beyond 2020 there will be active groundwater recharge programs (e.g., aquifer storage and recovery, recharge basins, in-lieu surface water irrigation to agriculture) to make up for the dry year dependency on groundwater. While these programs are very likely to occur, this WSE conservatively assumes that there will be no contribution to COS water supplies.

The exceedence shown in **Figure 21** of groundwater demand beyond 2010 going beyond the DWSP goal is of concern and can be addressed partially by permitting a higher groundwater yield to account for the agricultural lands that are currently irrigated with groundwater taken off-line and developed. **Exhibit "F"** provides a clear presentation of how an additional increment of urban groundwater use can be yielded from the basin and remain conservative in the approach to meet the ultimate objective or goal of the DWSP to reduce groundwater demands.

Figure 21. Maximum Single Year Groundwater Use vs. Demand From 2000 to GP Update Build Out



Applying the methodology in **Exhibit "F"**, the 0.75 AF/ac/year goal can be increased in the COS up to 0.87 AF/ac/year and maintain a net positive impact to the groundwater basin. Based on this higher amount, assumed to not occur until 2015 when agricultural lands begin to be fallowed and developed, the groundwater use compared to sustainable yield is shown in **Figure 22**.

Figure 22. Maximum Groundwater Use vs. Demand From 2000 to GP Update Build Out Using Ag Credit

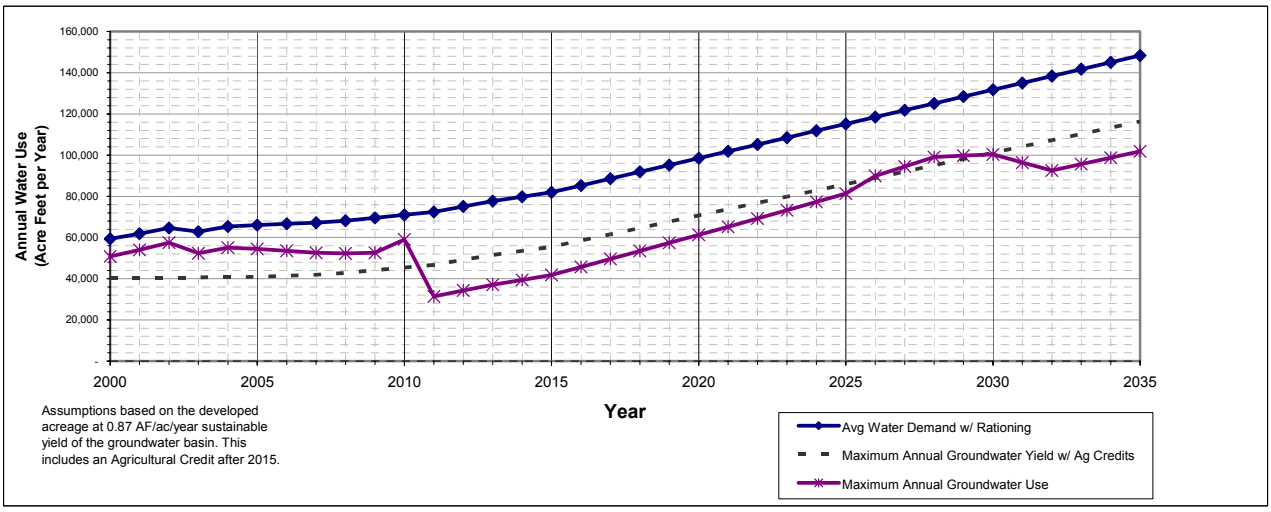


Figure 22 shows groundwater use exceeding the driest year groundwater goal in 2025 for a brief period. This is a result of the OID/SSJID contract termination. Beyond 2025 surface water supplies from SEWD continue to contribute to Section 1485 water in terms of treated wastewater to the Delta. This increase in Section 1485 water provides the additional water needed to reduce reliance on groundwater in the driest of years by build-out in 2035.

Summary of Conjunctive Use Model Findings

Figure 23 illustrates the increase and decrease in surface water supplies "on average" over the period from 2000 to 2035 based on the demands from 2000 to the 2035 of the GP Update and the conjunctive use program described above. Maximum surface water use is constrained by the SEWD or the DWSP conveyance and WTP capacity and by the various contract entitlements described above. For example, the set of bars for each contract for each year considers 70 years of historical hydrology (i.e., rainfall, stream flows, etc) from 1921 to 1991 and the limitations of the SEWD and DWSP WTPs to treat and deliver potable water supplies for that given year. For instance, the OID/SSJID contract is for a maximum of 30,000 AF/year, but results in 22,850 AF/year on average over the 70 years of hydrology and then ends in 2025. The decrease in overall surface water for SEWD throughout the planning period reflects the assumption that the annual volume of the CACWD Appropriative Water Right water will diminish slightly due to new water demands expected in the CACWD service area.

While **Figure 23** does not show the use of the COS's Area of Origin water, it is important to note that the COS will pursue Phase 2 of the DWSP with the completion and certification of the appropriate environmental documentation and approval of the Area-of-Origin water right by the SWRCB by 2025 or based on water demands, whichever occurs sooner. Access to Area-of-Origin water provides additional assurances in the event Appropriative Water Rights on the Calaveras or the Calaveras County Water Rights Transfer water to SEWD differs from the assumptions used in this WSE. In addition, while this WSE recognizes the strong possibility of obtaining additional interim surface water supplies, it does not rely upon those supplies for purposes of this WSE.

A similar table as **Table 7** on **Page 30** is provided for the future 2035 condition to compare the availability of water supplies with forecasted water demands. **Table 7** indicates that in the dry year conditions, there are adequate water supplies while achieving an average sustainable groundwater yield of approximately **65,000 AF/year** (slightly exceeding the average sustainable yield goal of 60,000 AF/year) while not exceeding the maximum groundwater yield in any one hydrologic year type.

Figure 23. Projected Average Surface Water Contract Use from 2000 to 2035

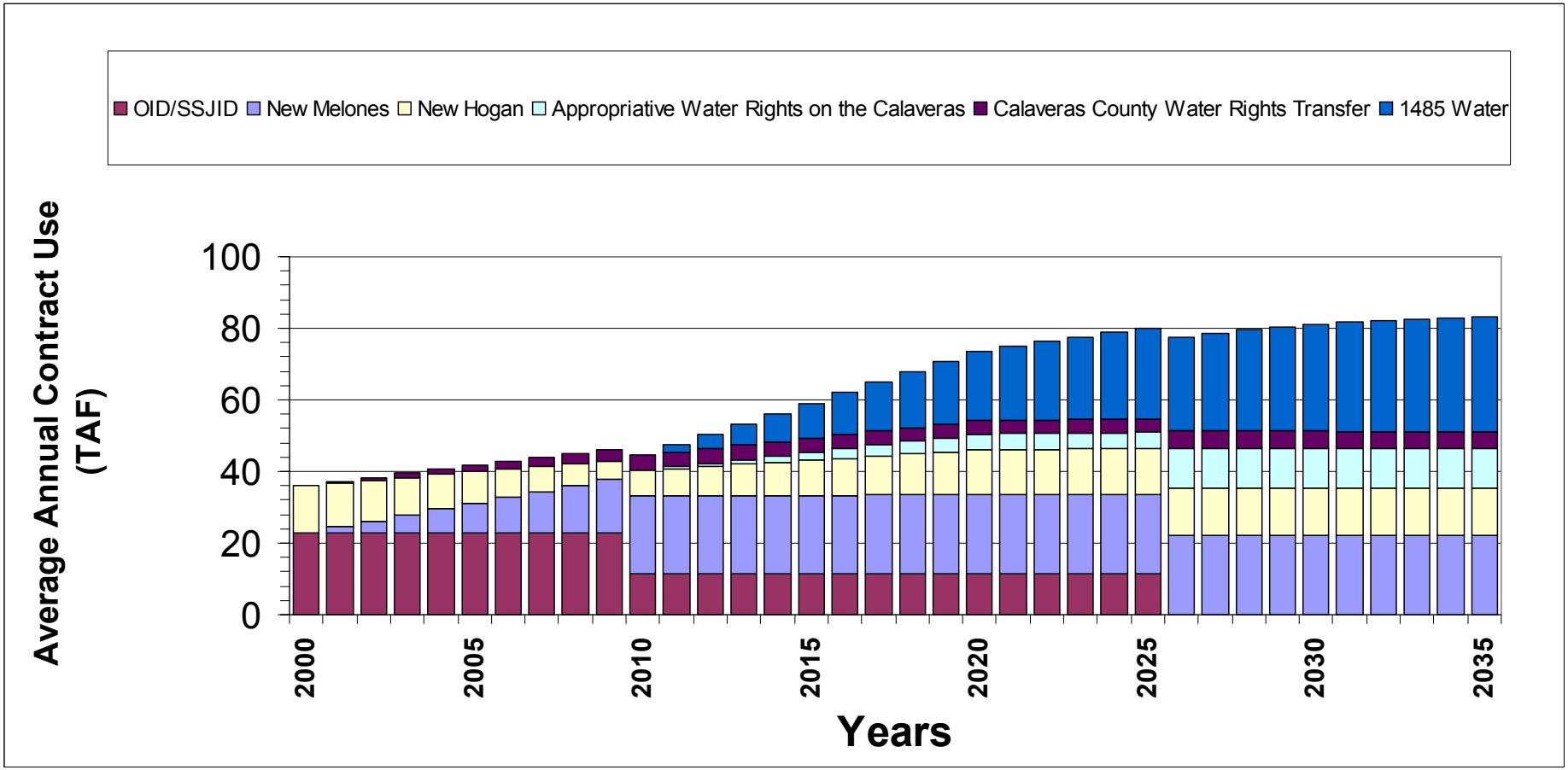


Table 10. Existing (2004), Foreseeable, and General Plan Update Water Supplies and Demands for the COSMA by Retail Water Service Provider

Year Type		Demand Reduction	Existing (2004) and Foreseeable			General Plan Update			Total Existing and Foreseeable and General Plan Update			Year 2004, Foreseeable Demands, and General Plan Update
			Surface Water (AF/year)	Groundwater (AF/year)	Total (AF/year)	Surface Water (AF/year)	Groundwater (AF/year)	Total (AF/year)	Surface Water (AF/year)	Groundwater (AF/year)	Total (AF/year)	(AF/year)
Normal	COSMUD	0%	39,378	3,636	43,014	32,473	35,157	67,630	71,851	38,793	110,644	110,644
	Cal-Water		20,101	12,756	32,856	5,679	4,468	10,147	25,780	17,224	43,003	43,003
	County		1,378	716	2,094	301	136	437	1,679	852	2,531	2,531
	Total		**60,857**	**17,108**	**77,965**	**38,453**	**39,761**	**78,214**	**99,310**	**56,868**	**156,178**	**156,178**
Single Dry	COSMUD	15%	5,038	31,524	36,562	28,500	28,985	57,485	33,538	60,509	94,048	94,048
	Cal-Water		14,444	13,484	27,928	3,512	5,113	8,625	17,956	18,596	36,553	36,553
	County		1,171	609	1,780	98	274	372	1,269	883	2,152	2,152
	Total		**20,654**	**45,616**	**66,270**	**32,110**	**34,372**	**66,482**	**52,764**	**79,988**	**132,752**	**132,752**
Multiple Dry (Hypothetical 3-year Drought Period into the Future(using 1977 to 1980 Drought Sequence))	COSMUD	5% (1st Year)	39,378	3,636	43,014	32,473	35,157	67,630	71,851	38,793	110,644	110,644
	Cal-Water		20,101	12,756	32,856	5,679	4,468	10,147	25,780	17,224	43,003	43,003
	County		1,378	716	2,094	301	136	437	1,679	852	2,531	2,531
	Total		**60,857**	**17,108**	**77,965**	**38,453**	**39,761**	**78,214**	**99,310**	**56,868**	**156,178**	**156,178**
	COSMUD	10% (2nd Year)	4,223	30,923	35,146	28,588	29,052	57,640	32,811	59,975	92,786	92,786
	Cal-Water		15,191	14,049	29,239	3,434	5,053	8,487	18,625	19,102	37,727	37,727
	County		1,240	644	1,885	88	266	355	1,328	911	2,239	2,239
	Total		**20,654**	**45,616**	**66,270**	**32,110**	**34,372**	**66,482**	**52,764**	**79,988**	**132,752**	**132,752**
	COSMUD	10% (3rd Year)	4,223	30,923	35,146	28,588	29,052	57,640	32,811	59,975	92,786	92,786
	Cal-Water		15,191	14,049	29,239	3,434	5,053	8,487	18,625	19,102	37,727	37,727
	County		1,240	644	1,885	88	266	355	1,328	911	2,239	2,239
	Total		**20,654**	**45,616**	**66,270**	**32,110**	**34,372**	**66,482**	**52,764**	**79,988**	**132,752**	**132,752**
Average over 70-Years	COSMUD	**5%**	23,960	15,793	39,753	33,919	30,761	64,680	57,879	46,554	104,433	104,433
	Cal-Water		18,668	13,885	32,553	5,104	4,454	9,557	23,772	18,339	42,111	42,111
	County		1,378	716	2,094	221	181	402	1,599	897	2,496	2,496
	Total		**44,007**	**30,394**	**74,400**	**39,243**	**35,395**	**74,638**	**83,250**	**65,789**	**149,039**	**149,039**

Reference: City of Stockton Urban Water Management Plan 2000 Update, December 2000

Notes:

1.) Dry year surface water amounts assume SEWD's New Hogan Central Valley Project water with deficiencies, and Oakdale Irrigation District and South San Joaquin Irrigation District deficiencies as stipulated in the contract for these water supplies.

2.) Normal year surface water deliveries are restricted to the projected availability of SEWD conveyance and treatment plant capacity (not to exceed 60 mgd).

Table 10 presents the average annual quantities of surface water and groundwater to make a positive determination of water supply availability. The facility capacity verification below is needed to compare water supplies and their respective facilities with the actual facility capacity. This check is made based on maximum month demands using a multiplier of 1.79 times the average annual water demand. This verification is made in **Table 11** based on the worst case hydrologic scenarios for surface water and groundwater (i.e., worst case for surface water is in normal to wet years and for groundwater in drought years) from **Table 10** and indicates the needed facility capacity in each of the service areas to meet existing and foreseeable water demands. The "Needed Capacity" is based on the maximum volume of surface water or groundwater converted to an equivalent maximum month demand shown in the given scenarios of hydrologic conditions shown in **Table 10**.

Table 11 shows that there is sufficient surface water facility capacity to provide for existing and foreseeable water demands within the COSMA by each of the water retail service providers. The distribution of DWSP WTP capacity is based on the best available data as to the adequacy of conveying potable water from the DWSP WTP to the COSMUD north system and Cal Water. The most significant assumption is that Cal Water will likely depend more on the SEWD WTP simply due to its geographic location. The southern COSMUD system with approximately 14,000 AF/year or 19 mgd of build-out maximum month water facility capacity is also placed into this category with the construction of the South Stockton Aqueduct essentially connecting the system directly to the SEWD WTP.

Table 11. Verification of Maximum Month Water Facility Capacity by Water Retail Service Provider

	SEWD WTP (mgd)		DWSP WTP (mgd)		Total Surface Water (mgd)		Groundwater (mgd)		Total Water Facility Capacity (mgd)	
	Needed Capacity	Actual Capacity	Needed Capacity	Actual Capacity	Needed Capacity	Actual Capacity	Needed Capacity	Actual Capacity	Needed Capacity	Actual Capacity
COSMUD	29.1	29.1	24.0	24.0	53.1	53.1	122.4	49.3	**175.5**	**102.4**
Cal-Water	29.1	29.1	5.7	5.7	34.8	34.8	34.6	64.0	**69.4**	**98.8**
County	1.8	1.8	0.3	0.3	2.1	2.1	1.9	2.0	**4.0**	**4.1**
Total	60.0	60.0	30.0	30.0	90.0	90.0	158.9	115.3	**249.0**	**205.3**

Table 11 indicates under the groundwater facilities portion of the table that approximately 73 mgd of additional groundwater facilities will be necessary to meet the water demands through the conjunctive use program in the COSMUD service area. This additional groundwater capacity will be constructed as new

growth areas develop and are necessary to fully exercise the basin in the manner described above based on hydrologic conditions. In no case does the additional groundwater capacity put the COSMA beyond its groundwater conjunctive use management goals.

Description of Change in DWSP Phasing

The findings of this WSE clearly deviate with the timing of phased increases in DWSP capacity with the phasing shown in **Table 9** on **Page 44**. **Table 9** depicts the phasing used in the DWSP Feasibility Report and the EIR. As mentioned directly above, the conclusion of this WSE is that the DWSP Phase 1 can continue to supply water to meet the build-out water demands of the GP Update. The COS will likely pursue Phase 2 and begin the environmental review process long before build-out of the GP Update occurs. This affords the COS to be prepared and to allow demands to dictate when Phase 2 becomes necessary. Time will be of the essence to get Phase 2 under construction once this occurs.

Beyond the Phase 2 requirement of preparedness, there are several reasons for differences between the findings of the WSE and the DWSP Feasibility Report and EIR.

Increased Reliability in SEWD Supplies

The underlying assumptions used in the DWSP reports were conservative but were based on the best available data. Since the time when research was undertaken for the DWSP, a significant amount of work has been completed in other venues. One significant change in assumptions is the amount of water available to Municipal and Industrial (M&I) uses through SEWD. According to SEWD (see Exhibit "G"):

"In wet years, the district currently has over 145,000 acre-feet ofwater supplies available, more water than it could deliver to its customers with its present facilities. Quantifying that 30,000 AFA in a dry year or 22,000 AFA in a critical year is inappropriate. In the first year of a dry cycle, the district would likely have over 100,000 acre-feet available. Only in the 2nd or 3rd year of a multi-year dry cycle the district could have less than 30,000 acre-feet. With the completion of Phase 1 of the Farmington Program (Peters Pipeline) in 2005, available supply to the district will increase by over 10,000 AFA. Banked groundwater stored when excess surface water is available will supplement surface water supplies in dry and critical hydrologic years."

Comparing the table excerpted from the Feasibility Report (See **Table 12**) with **Table 3** on **Page 15**, the WSE acknowledges that there is an approximate aggregate difference of 20,000 AF/year. This difference is shown in **Figure 24** over the planning period of the DWSP. DWSP supplies do not change from the original assumptions. Rather, the supplies the City will get from SEWD now appear firmer, more reliable, and more plentiful than when the DWSP Feasibility Study and DWSP EIR were prepared.

Table 12. Feasibility Report Existing SEWD Water Sources and Critical Year Availability

Source	Annual Contract Amount Thousand Acre-Feet (TAF)	Projected "Critical Year" Annual Availability (AF/year)				
		Planning Year				
		2000	2010	2020	2035	2050
Current "Firm" Sources of Supply						
Reclamation – New Hogan Water Supplies	Total Yield 100 TAF [1] (M&I 15 TAF) (Ag & Recharge 75 TAF)	12,000	12,000	12,000	12,000	12,000
Calaveras County Water District Appropriative Water Rights	Unused Calaveras County Water Rights (M&I 10 TAF)	10,000	8,000	6,000	3,000	0
Reclamation – New Melones Interim Water Contract and Section 215 "Spill" Water	Total Contract 75 TAF (M&I 40 TAF) (Ag & Recharge 20 TAF) (Losses 15 TAF)	Not Available in Dry Years				
SSJID Transfer - Stanislaus River[2]	15 TAF	4,000	4,000	0	0	0
OID Transfer - Stanislaus River	15 TAF	4,000	4,000	4,000	0	0
Total	**Total 205 TAF (M&I 95TAF)**	**30,000**	**28,000**	**22,000**	**15,000**	**12,000**
FUTURE "POTENTIAL" SOURCES OF SUPPLY						
New Appropriative Water Rights on Calaveras	50 TAF	Not Available in Dry Years				
Farmington Projects Rights Transfer	50 TAF	Not Available in Dry Years				
Reoperation of New Hogan Reservoir[3]	25 TAF – 40 TAF	Not Available in Dry Years				
Total	**75 TAF – 100 TAF**	**0**	**0**	**0**	**0**	**0**

Source: City of Stockton Delta Water Supply Project Feasibility Report (January 2003, ESA and MWH)

Notes:
1. SEWD has a right to 56.5 percent of the yield, and Calaveras County Water District (CCWD) has rights to the remaining 43.5 percent. CCWD currently uses approximately 3,500 ac-ft of its allocation, and prior water rights demand is 13,000 ac-ft. Based on an agreement between CCWD and SEWD, SEWD currently has use of the unused portion of CCWD's allocation.

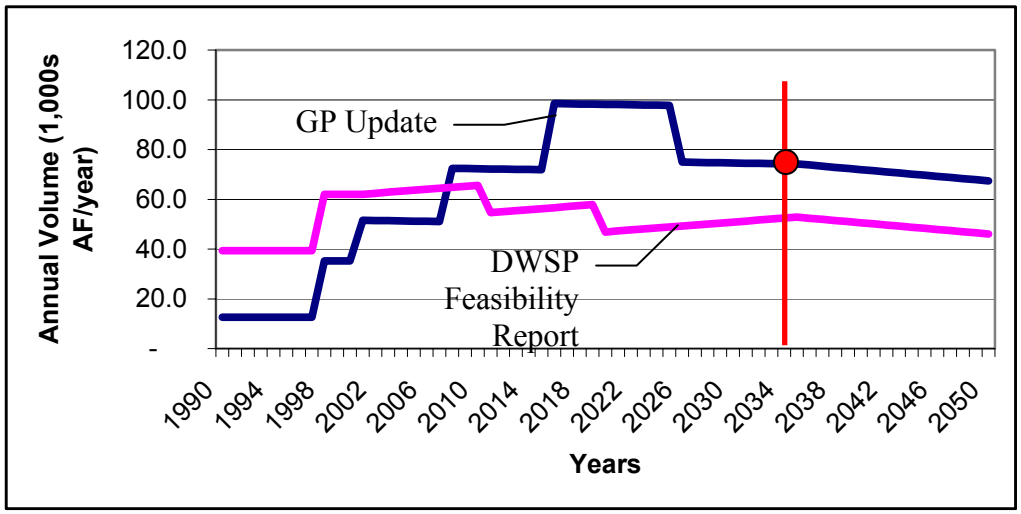
2. For planning purposes, it is assumed that SSJID may not continue its water transfer to SEWD past 2010.

3. Very preliminary analyses suggest that "reoperation"of New Hogan Reservoir, together with some form of conjunctive use water banking, could increase the average annual yield (but not the dry year yield) of New Hogan Reservoir. SEWD is currently not pursuing reoperation water since the water rights that SEWD is applying for on the Calaveras River will capture the same water and store in groundwater bank. The status of the SEWD's Water Right application is uncertain.

From the set of modeling assumptions, the majority of this increase results from the inclusion of more Calaveras County Appropriative Water Rights Transfer water for M&I and having it taper off at a slower rate than assumed in the DWSP Feasibility Report. The other surface water entitlement is the SEWD Appropriative Water Rights on the Calaveras River for which they have submitted an application and will likely receive water in the wet years. No water is assumed in the dry years. **Table 3** also shows that the senior water rights of the Calaveras County Appropriative Water Rights Transfer will yield some "critical" year supply to increase the minimum of 12,000 AF/year used in the DWSP Feasibility Report to 22,000 AF/year (does not include SSJID/OID contracts after 2025).

This difference is shown in **Figure 24** over the planning period of the DWSP. DWSP supplies do not change from the original assumptions. Rather, the supplies the City will get from SEWD now appear firmer, more reliable, and more plentiful than when the DWSP Feasibility Study and DWSP EIR were prepared.

Figure 24. SEWD Water Supplies (Weighted Average of Hydrologic Period)



Additional Area Contemplated in the GP Update

The water demand at 2035 in the DWSP Feasibility Study Report and in this WSE is approximately the same at approximately 156,000 AF/year. The amount of urban developed acreage under the GP Update is 103,000 acres out of the total GP Update area of 122,060 acres. The existing General Plan at 2050 was estimated to have 82,000 acres within the POU with no acreage accounting beyond 2015 or build-out of the General Plan. The increase in developed acreage results in a significant increase in available groundwater yield. This is due to the conservative policy of basing sustainable groundwater yield for the COSMA on the urbanized area of development. Using the goal of 0.60 AF/acre/year identified in the DWSP Feasibility Report applied to the GP Update, approximately 61,800 AF/year of groundwater can be used; whereas, under the

DWSP Feasibility Report, the resulting groundwater yield was only 48,000 AF/year. This adds another 13,800 AF/year of water to the GP Update.

Use of Agricultural Credits

In the WSE, a slightly different approach was taken regarding converting agricultural lands to urban. In the WSE, it was assumed that the groundwater elevations today are a result of groundwater extractions from agriculture and urban uses within the basin. If an agricultural property is extracting greater than the goal of 0.60 AF/acre/year (i.e., agriculture irrigation requirements average anywhere from 3 to 5 AF/acre/year depending on crop type) that some credit should be provided to the City of Stockton if the land is converted to urban uses with only a 0.6 AF/acre/year average groundwater use. A detailed groundwater analysis was performed in support of the GP Update and a conservative increase in the goal of 0.75 for the driest year pumping was increased to 0.87 AF/acre/year. This permitted more pumping in the driest year but not exceeding the self-imposed cap to minimize any concerns from over pumping the basin in the drier years.

Conclusion of Changes

In all, there is approximately 34,000 AF/year (i.e., 20,000 AF from SEWD and 14,000 AF from GW) of more water than what was assumed for the DWSP in year 2035. **Figure 25** is extracted directly from the DWSP Feasibility Report to illustrate the change this amount of water has on the phasing of the DWSP. The surface water requirement governs the need for either more SEWD capacity or more DWSP capacity. Based on the phasing in the Feasibility Report at 2035 the surface water requirement is approximately 90,000 AF/year as shown in **Figure 23**. This figure is based on the information known at the time of writing the DWSP Feasibility Report. A 90,000 AF/yr DWSP requirement equates to approximately the Phase 2 capacity of 90 mgd for DWSP WTP. If the more current SEWD surface water amounts and higher groundwater use is added, the resulting phase, if applied in the same manner as Figure 23, the end of Phase 1 or the 30 MGD capacity of the DWSP is at approximately 2035 as shown in **Figure 26**. Under the original set of conditions Phase 3 would be needed by 2030. With the change in conditions, Phase 1 can extend beyond the 2015 to a time when Phase 2 is needed based on demand. This may be at 2035 build-out of the GP Update or sooner.

Figure 25. DWSP Feasibility Report Phasing Diagram

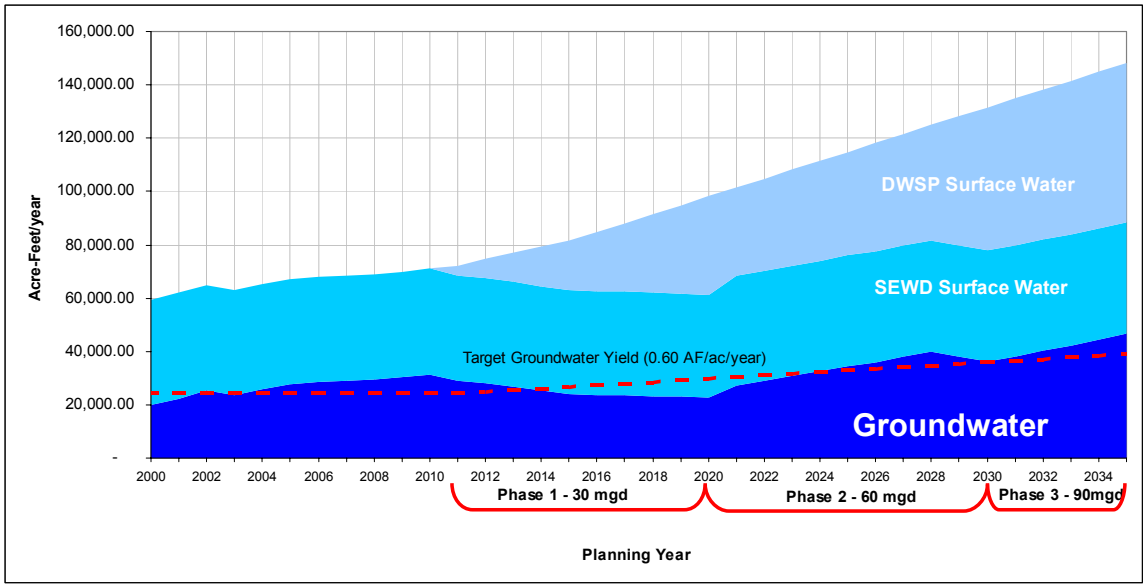
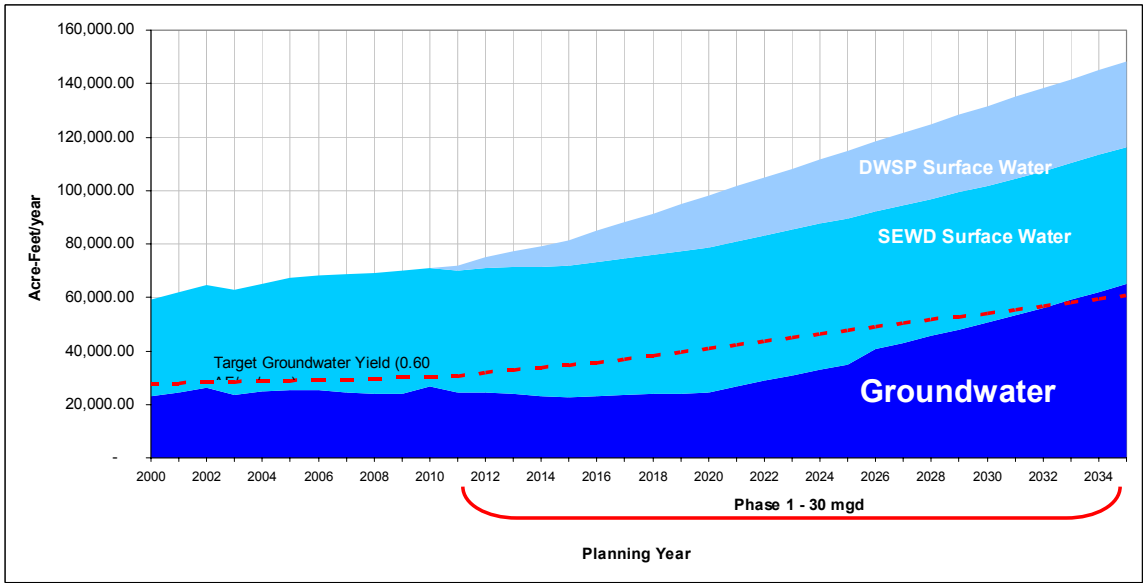


Figure 26. GP Update WSE Phasing Diagram



DETERMINATION OF SUFFICIENCY

This WSE determines that the COSMA urban water retailers currently cannot support the GP Update without the DWSP Phase 1 project and associated water supplies and continuation of the on-going groundwater use and management program with self-imposed goals becoming effective when the DWSP becomes operational. In consideration of the significant steps in the environmental review, permitting, and financing of the DWSP, the construction and operation of the DWSP by 2010 is considered to be a viable water supply for meeting the GP Update's build-out water demand and meets the goals of the DWSP as stated in the Current Water Supply Condition section starting on **Page 4**.

The urban retail water purveyors make this determination based on the information provided in this WSE and on the following specific facts:

- The existing near-term and long-term reliable supplies of SEWD surface water supplies, non-potable water supplies, and indigenous groundwater supplies can deliver a sustainable reliable water supply without impacting environmental values and/or impacting the current stabilization of the groundwater basin underlying the COSMA.
- The existing and future conjunctive use program of using surface water and each of the urban water retailer's groundwater supplies has been extensively analyzed as part of the DWSP Feasibility Report and EIR and as part of this WSE. All studies show that sufficient water rights and available groundwater supplies will exist for the level of water demand contemplated under the GP Update.
- The GP Update area will be served by water supplies made available through the existing and planned future conjunctive use program within the COSMA urban water retailer's service areas.
- The diversion structure, raw water pipeline, treatment plant and treated water pipeline elements of the DWSP are necessary water supply elements in meeting the GP Update water demands.
- New groundwater facilities are necessary to fully implement the conjunctive use program that is currently in effect and contemplated with operation of the DWSP. The use of new wells will take place only in the dry and critical years when SEWD surface water supplies are curtailed, and in no case do groundwater extractions impact the long term sustainability of the groundwater basin and existing wells.

Exhibit “A”
Memo from COSMUD to City of Stockton Community Development Department Director

Exhibit “B”
Preferred General Plan Update Map
Dated September 2005

Exhibit “C”

City of Stockton Water Rights Permit for Delta Diversion

Exhibit “D”

Existing Firm and Interim Surface Water Contracts and SEWD Wheeling Contracts for the Urban Water Retailers

Exhibit “E”

Results of 70 Year Historical Hydrology Model Runs from 2005 to 2035 in Five Year Increments

Exhibit “F”

Groundwater Studies Supporting Agricultural Credits

EXHIBIT “C”

Existing Surface Water and Wheeling Contracts

SECOND AMENDED CONTRACT

AMONG THE STOCKTON EAST WATER DISTRICT, 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

TABLE OF CONTENTS

PARAGRAPH		PAGE
1	Definitions	4
1A	Acquisition and Construction Fund	4
1B	Agricultural Water	5
1C	Annual Audit	5
1D	Annually	5
1E	Base Monthly Payment	5
1F	Base Supply of Raw Water	5
1G	Base Supply of Treated Water	5
1H	Bond Resolution	5
1I	Bond Reserve Account	5
1J	Bond Sinking Fund Account	5
1K	Contractors	5
1L	Conveyance and Storage Facilities	6
1M	Debt Service	6
1N	Debt Service Surcharge	6
1O	Initial Delivery Date	6
1P	Initial Delivery of Water	6
1Q	Intake Facilities	6
1R	Municipal and Industrial Share	6
1S	Municipal and Industrial Water	6
1T	New debt service	7
1U	New debt service surcharge	7
1V	New Hogan Contracts	7
1W	New Hogan Dam	7
1X	New Melones Contract	7
1Y	New Melones Dam	7
1Z	New Service Area	7
1AA	Nominal Capacity	7
1BB	North Stockton Aqueduct	8
1CC	Noticed Public Hearing	8
1DD	Prime Rate	8
1EE	Parties	8
1FF	Produced Water	8
1GG	Raw Water	8
1HH	Raw Water Transmission Line	8

PARAGRAPH		PAGE
1II	Southern Water System	8
1JJ	Surplus Account	9
1KK	Treated Water	9
1LL	Water Fund	9
1MM	Water Treatment Facilities	9
1NN	Water Treatment Facilities Advances	9
1OO	Water Treatment Facilities Bonds	9
1PP	Water Treatment Plant	9
1QQ	Year	10
2	Term	10
2A	Effective Date of Second Amended Contract	10
2B	Replacement of Original Contract	10
3	Renewal; Continued Services	10
3A	Renewal	10
3B	Continued Service	10
3C	One Contractor May Renew	11
4	Water to be Furnished to the Contractors	11
4A	Obligation of Stockton East	11
4B	Water to be Made Available	11
4C	Emergency Conditions	12
4D	Additional Water	12
4E	Acceptance of Treated Water	13
4F	Scheduling of Maintenance	14
4G	Standard of Operation	14
4H	Calculation of Percentage	14
4I	Minimium Amount	14
4J	Lack of Availability of Raw Water	15
4K	Failure of System to Accept Water	15
4L	Inability to Deliver Treated Water	16
4M	Allocation of Deficiency	16
5	Payment by Contractors	16
5A	Amount to be Paid Annually	16
5B	Credit	19
5C	Audit	20
5D	Allocation of Charges	20
5E	Payment Adjustments	20
5F	Further Adjustments	21
5G	Failure to Continue Service	21
6	Time and Manner of Payment	21
6A	Monthly Payments	21
6B	Proration	22
6C	Procedures for Audit	22

PARAGRAPH		PAGE
6D	Establishing Base Monthly Payment	22
6E	Public Hearing on Base Monthly Payment	23
6F	Final Payments	23
7	Repair and Replacement Reserve Account	23
7A	Maintenance of Repair and Replacement Reserve Account	23
7B	Amount of Annual Payment	24
7C	Adjustment of Payment and Use of Account	24
8	Water Deficiency Reserve Fund	24
9	Water Treatment Facilities Reserve Fund	25
9A	Debt Service	25
9B	Operation and Maintenance	25
9C	Replacement and Expansion	25
10	Scheduling of Water	25
11	Measurement	26
12	Quality	26
13	Other Contractors	26
14	Operations	26
15	Construction of New Facilities	26
16	Attorneys Fees and Costs	27
17	Successors	27
18	Default and Remedies	27
18A	Interest	28
18B	Remedies	28
19	Notices	28
20	Subject to Bond Resolution	28
21	Specific Performance	29
22	Severability	29
23	Entire Agreement	29
24	Remedies Not Exclusive	29
25	Waiver	29
26	Titles	29
27	Gender, Number	30
28	Amendment	30
29	Controversies	30
30	Interest Received on Reserve Funds	30
31	Modification of Bond Resolution	30
32	Subject to United States Bureau of Reclamation Contract	30
33	Conduct of Public Hearings	34
34	Adjudication of Ground Water Basin	34
35	Stockton East as Contractor	34

PARAGRAPH		PAGE
36	Temporary Use of Funds	34
37	Allocation of Surplus Water Fund	35
38	Resolutions and Execution	35
39	Subject to Opinion	36
40	Subject to Removal of San Marcos Decision Strictures	36

LIST OF EXHIBITS

EXHIBIT	DESCRIPTION
A	Amortization Schedule
B	Water Delivery Points
C	Water Treatment Facilities Advances
D	Major Repair and Replacement Schedule
E	Resolution of Board of Directors of Stockton East
F	Resolution of Board of Directors of Cal-Water
G	Resolution of the City Council of the City of Stockton
H	Resolution of the Board of Supervisors Relative to Lincoln
I	Resolution of the Board of Supervisors Relative to Colonial

The original contract ("Original Contract") was made the 11th day of February, 1975, among Stockton East Water District, a political subdivision of the State of California, hereinafter referred to as Stockton East, the California Water Service Company, a California corporation, hereinafter referred to as Cal-Water, the City of Stockton, a municipal corporation of the State of California, hereinafter referred to as City, the Lincoln Village Maintenance District, a political subdivision of the State of California, governed by the Board of Supervisors of San Joaquin County, hereinafter referred to as Lincoln, and the Colonial Heights Maintenance District, a political subdivision of the State of California, governed by the Board of Supervisors of San Joaquin County, hereinafter referred to as Colonial. This Second Amended Contract is made this ____ day of _____, 19__, by and among all the same parties as were parties to the Original Contract.

WITNESSETH THAT:

WHEREAS, Stockton East contemplated the construction of water treatment facilities which would permit treatment of raw water available to Stockton East and in turn make the same available for municipal and industrial use within Stockton East through Cal-Water, City, Lincoln and Colonial, which operate "municipal" water distribution systems within that portion of Stockton East commonly known as the Stockton Metropolitan Area; and

WHEREAS, it was anticipated that said water treatment facilities would have a nominal capacity to treat and distribute 20,000 acre feet of water per year and would be physically capable of treating additional quantities of water annually; and

WHEREAS, in order to construct said water treatment facilities, pursuant to authority granted to it by an affirmative vote at an election held on March 5, 1974, Stockton East sold revenue bonds pursuant to the Revenue Bond Law of 1941, which bonds have a maximum amortization period of not to exceed 30 years from the date of their issue; and

WHEREAS, said water treatment facilities have been constructed; and

WHEREAS, the purpose of constructing and operating the water treatment facilities was to assist in alleviating severe ground water overdraft problems especially in the western portion of Stockton East underlying the Stockton Metropolitan Area, and particularly to stop, or slow the

rate of, falling ground water tables and related saline intrusion from the west; and

WHEREAS, Stockton East with the concurrence of City, Cal-Water, and the Board of Supervisors of San Joaquin County has heretofore had prepared, approved and adopted a "Master Water Plan" and a "Contingency Water Plan" and an "Environmental Impact Report dated October, 1973" to serve as guidelines to Stockton East in solving the water problems of Stockton East and in providing solutions in the problems of ground water overdraft and saline intrusion, which plans, among other things, contemplated the construction of water treatment facilities; and

WHEREAS, since the construction of the water treatment facilities, there has been completed the Eastern San Joaquin Groundwater Study; and

WHEREAS, that Study demonstrates that an additional annual minimum of 30,000 acre feet of supplemental surface water must be imported into the Stockton Metropolitan Area in order to meet the needs of that area by the year 2020; and

WHEREAS, it is the desire and intention of all of the parties that said water treatment facilities, and the distribution of water treated by them, will be operated and conducted at all times in a manner which will have the most beneficial effect possible in reducing ground water overdraft, reducing the rate of lowering of underground water levels and of reducing saline intrusion into the ground water basin underlying Stockton East; and

WHEREAS, under date of August 25, 1970, Stockton East under its prior name of Stockton and East San Joaquin Water Conservation District, entered into contracts with the United States of America and the Calaveras County Water District by which Stockton East obtained a portion of the supply of water developed by New Hogan Dam on the Calaveras River; and

WHEREAS, under date of December 19, 1983, Stockton East entered into a contract with the United States Department of the Interior, Bureau of Reclamation, by which Stockton East obtained the right to a portion of the supply of water developed by New Melones Dam on the Stanislaus River, on an interim basis; and

WHEREAS, Stockton East has allocated a portion of its water supply from New Hogan Dam and New Melones Dam together with such other water supplies as it may have now and in

the future to said water treatment facilities so as to permit said water treatment facilities to produce a minimum of 20,000 acre feet of treated water per year; and

WHEREAS, in order to eliminate the present ground water overdraft and to meet its municipal and industrial and agricultural needs, Stockton East requires additional supplies of water in excess of those which it now obtains from New Hogan Dam and is now endeavoring to obtain the supplies of water which it requires from various sources which may now or in the future be available; and

WHEREAS, in order to make the most beneficial use of the water from New Hogan Dam, New Melones Dam, and any other source, it will be necessary to construct conveyance and storage facilities, and to expand the existing water treatment facilities; and

WHEREAS, a First Amendment to the Original Contract was made May 31, 1977, and expired March 31, 1978; and

WHEREAS, the parties hereto desire to enter into this Second Amended Contract so as to produce the maximum benefit to the underground basin by providing for a mechanism for the financing and construction of such conveyance, storage and expanded water treatment facilities as may be necessary, and by altering the method of payment of the base monthly payment under the Original Contract so as to provide maximum incentive for use of treated water in a cost effective and/or energy efficient manner thereby reducing the use of water produced from the underground basin; and

WHEREAS, Stockton East will perform studies necessary to provide recommendations to the Contractors intended to optimize energy efficiency; and

WHEREAS, it is the intent of the parties hereto that this Second Amended Contract shall apply to all treated water produced by the water treatment facilities, regardless of the source of raw water so treated;

Now, Therefore, It Is Agreed As Follows:

1. DEFINITIONS: When used herein, unless otherwise indicated expressly to the contrary, the following words, terms and phrases shall have the following meanings:

1A. "Acquisition and Construction Fund" means the fund having such name established and defined by the Bond Resolution.

1B. "Agricultural water" means 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 2 acres.

1C. "Annual Audit" means the audit to be undertaken each year, by a certified public accountant selected by Stockton East, in accordance with subparagraphs 5C and 6C.

1D. "Annually" refers to the 12-month period commencing on April 1 and ending on the next succeeding March 31st.

1E. "Base monthly payment" means the basic payment which each Contractor shall pay and which the Contractors together shall pay, the amount of which shall be calculated on an annual basis pursuant to Paragraph 5 and shall be paid on a monthly basis pursuant to Paragraph 6.

1F. "Base supply of raw water" means the minimum supply of raw water provided by Stockton East from various sources to meet the needs of the water treatment facilities, which base supply of raw water shall be 20,000 acre feet per year except as provided in subparagraphs 4J, 4K, and 4L.

1G. "Base supply of treated water" means the minimum supply of treated water which Stockton East will furnish from the water treatment facilities to Contractors in the manner set forth in this Second Amended Contract, which base supply of treated water shall be 20,000 acre feet per year except as provided in subparagraphs 4J, 4K, and 4L.

1H. "Bond Resolution" means the resolution adopted by Stockton East on February 20, 1975, identified as Resolution No. 74-75-21.

1I. "Bond Reserve Account" means the account held as a reserve fund by Stockton East, and used by Stockton East in accordance with the Bond Resolution.

1J. "Bond Sinking Fund Account" means the account having such name established and defined by the Bond Resolution.

1K. "Contractors" means the parties to this Second Amended Contract, other than Stockton East, or any other parties who may hereafter take water in accordance with Paragraph 13 and who further agree to be bound by all of the terms of this Second Amended Contract as the same now exists or as it may have been amended at the time such additional Contractors agree to take water and who agree in

writing to be bound by this Second Amended Contract or this Second Amended Contract as amended.

1L "Conveyance and Storage Facilities" means those facilities not at present constructed which Stockton East intends to construct in order to acquire, store and convey raw water to the water treatment facilities from sources other than New Hogan Dam.

1M. "Debt service" means the payments required to be ~~made during each year for principal, interest and other~~ charges to the holders of the water treatment facilities bonds, all in accordance with the schedule attached hereto as Exhibit "A", provided that debt service shall not include premiums on water treatment facilities bonds required to be called under the Bond Resolution except to the extent that any such premium in any year exceeds interest earned in such year on the Bond Sinking Fund Account.

1N. "Debt service surcharge" means an annual sum equal to 20% of annual debt service.

1O. "Initial delivery date" means March 10, 1977, the date of first delivery of treated water from the water treatment facilities into the distribution facilities of Cal-Water under the Original Contract.

1P. "Initial delivery of water" means the actual first delivery of treated water from the water treatment facilities into the distribution facilities of any one or more of the Contractors.

1Q. "Intake facilities" means the facilities constructed as a part of the water treatment facilities at Bellota, San Joaquin County, California, to divert water into the raw water transmission line.

1R. "Municipal and industrial share" means the percentage of the cost of acquisition of supplemental surface water from any source other than New Hogan Dam, including the cost of acquisition of such water and the cost of construction of conveyance and storage facilities which is allocated as municipal and industrial water by Stockton East as set forth in Paragraph 15. Such share shall be paid from the time the first payment becomes due regardless of whether all the municipal and industrial allocated water is in fact used for municipal and industrial purposes.

1S. "Municipal and industrial water" means water used for other than agricultural purposes.

1T. "New debt service" means the payments required to be made during each year, for principal, interest and other charges to the holders of any bonds which may be issued hereafter to finance expansion, additions to, or replacements of the water treatment facilities; and, in the event any bonds are issued to finance the acquisition, location or construction of Conveyance and Storage Facilities if any portion of the raw water conveyed or stored by such facilities is used by the Contractors as municipal and industrial water, new debt service shall include the municipal and industrial share of the payments required to be made during each year for principal, interest and other charges to the holders of such bonds.

1U. "New debt service surcharge" means an annual sum equal to the percentage of annual new debt service required as a surcharge by the controlling debt documents.

1V. "New Hogan Contracts" means the two contracts entered into under date of August 25, 1970, one between the United States of America and the Stockton and East San Joaquin Water Conservation District (now Stockton East) and the Calaveras County Water District, and the other between the Calaveras County Water District and the Stockton and East San Joaquin Water Conservation District (now Stockton East) which contracts together provide for a supply of water to Stockton East from New Hogan Dam.

1W. "New Hogan Dam" means the dam, reservoir and related facilities constructed in Calaveras County on the Calaveras River pursuant to the Act of Congress of December 22, 1944 (58 Stat. 887).

1X. "New Melones Contract" means that contract entered into under date of December 19, 1983, between Stockton East and the United States Department of the Interior, Bureau of Reclamation, by which Stockton East obtained the right to a portion of the supply of water developed by New Melones Dam, on an interim basis.

1Y. "New Melones Dam" means the dam, reservoir and related facilities constructed on the Stanislaus River pursuant to the Flood Control Acts of December 22, 1944 (58 Stat. 887) and October 23, 1962 (76 Stat. 1173).

1Z. "New Service Area" means an area not presently served by any of the Contractors.

1AA. "Nominal capacity" means the capacity of the water treatment plant to produce treated water under normal operating conditions. The water treatment plant construct-

ed pursuant to the plans and specifications described in subparagraph 5A of the Original Contract has a nominal capacity of 20,000 acre feet per year.

1BB. "North Stockton Aqueduct" means a pipeline extending from the water treatment plant to the approximate location of the intersection of Hammer Lane and Southern Pacific Railroad right-of-way in City, sufficient in size to serve that portion of the urban area north of the Calaveras River, together with a branch extending westerly along March Lane to El Dorado Street, and a branch extending westerly along Hammer Lane to West Lane.

1CC. "Noticed public hearing" means a public hearing held by the Board of Directors of Stockton East following at least 10 days notice given to each of the Contractors and further published at least once in a newspaper of general circulation published within Stockton East.

1DD. "Prime rate" means, during any year, the prime interest rate, as announced by the Bank of America, N.T.&.S.A. or its successor, in effect on April 1 of that year for the best credit risks of said Bank or its successor.

1EE. "Parties" means all of the parties to this Second Amended Contract or as the parties may hereafter be modified by the addition or subtraction of one or more contractors.

1FF. "Produced water" means water extracted from the underground by Stockton East or water otherwise developed or made available by Stockton East and not purchased from another agency or entity.

1GG. "Raw water" means the supply of untreated water made available to the water treatment facilities.

1HH. "Raw water transmission line" means the pipeline constructed as a part of the water treatment facilities extending from the intake facilities at Bellota, San Joaquin County, California, to the water treatment plant.

1II. "Southern Water System" means that water supply and distribution system operated by San Joaquin County which provides municipal and industrial water to the Airport, AirMetro Industrial Park, and surrounding Airport facilities; San Joaquin General Hospital, the County Jail Complex and Juvenile Justice Center, three migrant labor camps, County facilities in the Mathews Road area, and such

other areas as may be added to the system from time to time by action of the Board of Supervisors.

1JJ. "Surplus Account" means the account having such name established and defined by the Bond Resolution.

1KK. "Treated water" means water processed by the water treatment plant or other water meeting the requirements of Paragraph 12 made available in accordance with this Second Amended Contract to the Contractors by Stockton East.

1LL. "Water Fund" means the fund having such name established and defined by the Bond Resolution.

1MM. "Water treatment facilities" means (a) the water treatment plant, (b) the raw water transmission line, (c) all related facilities constructed by Stockton East pursuant to bond authorization obtained at an election held on March 5, 1974, and pursuant to all statutory authority including, but not limited to, Sections 53540 and 53541 of the Government Code, as amended, and further in accordance with the plans and specifications described in subparagraph 5A, of the Original Contract, and (d) those measuring devices selected, installed and maintained by Stockton East pursuant to paragraph 11 of this Second Amended Contract; all as they have been constructed or installed pursuant to the Original Contract and as they may be expanded, added to, or replaced after the commencement of the term of this Second Amended Contract.

1NN. "Water treatment facilities advances" means the total sum of money Stockton East advanced under the Original Contract from funds other than the proceeds of the water treatment facilities bonds, to the cost of the water treatment facilities, namely, the sum of $614,073.46, as set forth in the schedule attached hereto as Exhibit "C".

1OO. "Water treatment facilities bonds" means the bonds heretofore issued by Stockton East pursuant to the Revenue Bond Law of 1941.

1PP. "Water treatment plant" means the water treatment plant built by Stockton East generally in the vicinity of East Main Street and the Stockton Diverting Canal, near Stockton, San Joaquin County, California, as a part of the water treatment facilities, pursuant to the Original Contract, as such plant may be expanded, added to, or replaced after the commencement of the term of this Second Amended Contract.

1QQ. "Year" means each 12-month period commencing on April 1 and ending on the next succeeding March 31.

2. TERM.

2A. Effective Date of Second Amended Contract. This Second Amended Contract shall be effective immediately upon its execution by the last of the parties hereto to execute said Contract except that for all purposes the provisions of the Original Contract shall continue to control until the North Stockton Aqueduct has been placed in service, at which time the terms of this Second Amended Contract shall become operative. Notwithstanding the previous sentence, City shall construct and place in service the North Stockton Aqueduct on or before October 31, 1988. This Second Amended Contract shall remain in effect until April 1, 2035.

2B. Replacement of Original Contract. This Second Amended Contract shall replace the Original Contract as soon as it shall take effect, except that where in this Second Amended Contract reference is made to provisions of the Original Contract, those provisions so referred to shall remain in effect. Those back sums referenced in Paragraphs 13 and 14 of the Original Contract shall continue to be due and shall be paid, until paid in full, as though the Original Contract were still in effect.

3. RENEWAL: CONTINUED SERVICE:

3A. Renewal: Each Contractor shall have the right, upon written notice to Stockton East given not less than six months prior to expiration of the initial or any renewal term of this Second Amended Contract, to extend the term of this Second Amended Contract for such term and upon such terms and conditions as Stockton East and the Contractor giving such notice shall agree upon in writing. Promptly after receipt of such notice Stockton East and such Contractor shall negotiate as to the terms and conditions of such renewal contract for such renewal term. The terms and conditions of any such renewal contract shall not be more favorable to one Contractor than those of any such renewal contract between Stockton East and another Contractor.

3B. Continued Service: After the expiration of the initial or any renewal term of this Second Amended Contract, each Contractor shall be entitled to continued service under the following conditions:

3B(1). Service of water in annual percentage amounts determined in accordance with the provisions set forth in Paragraph 4.

3B(2). Service of water shall be at charges to be mutually agreed upon by the parties, provided, however, that if such charges cannot be agreed upon, then service shall be continued at charges calculated in the same manner as applicable during the preceding initial or renewal term, as the case may be.

3B(3). Other terms and conditions of continued service shall be reasonable and equitable and shall be mutually agreed upon, provided, however, that if the parties cannot agree upon such other terms and conditions, continued service shall be in the manner and under all the terms and conditions applicable during the preceding initial or renewal term, as the case may be.

3B(4). If a Contractor shall have given Stockton East written notice of its election to enter into a renewal contract as provided in subparagraph 3A, and if upon expiration of the initial or extended term of this Second Amended Contract, as the case may be, the parties shall not have executed such renewal contract, then such Contractor shall be entitled to continued service under the provisions of this subparagraph 3B.

3C. One Contractor May Renew: The failure of one or more Contractors to enter into a renewal contract or to receive continued service pursuant to the provisions of subparagraph 3A or 3B, as the case may be, shall not prevent any other Contractor from exercising its right to enter into a renewal contract or to receive such continued service, as the case may be.

4. WATER TO BE FURNISHED TO THE CONTRACTORS:

4A. Obligation of Stockton East: Stockton East shall undertake all steps necessary to permit it to operate and maintain the water treatment facilities in order to meet the obligations of Stockton East under this Second Amended Contract. Stockton East shall only be excused from the performance of its obligations under this subparagraph 4A in the event of its performance being prevented by conditions beyond its control, such as, but not limited to an inability to raise sufficient funds to construct said water treatment facilities.

4B. Water to be Made Available: Subject to the provision of subparagraphs 4J, 4K, 4L and 5G, Stockton East

shall make available to the Contractors a minimum of 20,000 acre feet of treated water during each year of the term of this Second Amended Contract. Water shall be allocated among the Contractors in the following manner: Each Contractor shall have the right to take on a continuing monthly basis an amount of treated water equal to the current percentage applicable to such Contractor calculated by Stockton East in accordance with Paragraph 4H hereof multiplied by the aggregate amount of treated water delivered by Stockton East during such month. Nothing in this paragraph will prohibit any Contractor from taking more than its percentage of entitlement at any time to the extent that any other Contractor is not able to use its applicable percentage of entitlement. However, each of the parties hereto agrees to exert its best efforts to use its full proportional water entitlement and to cooperate to see that each Contractor, to the extent possible, receives its full entitlement, both in an energy-efficient and/or cost-effective manner.

4C. Emergency Conditions. In the event of the occurrence of an emergency or other condition beyond the control of a Contractor which requires such Contractor to use more than the percentage of treated water to which it is then entitled hereunder in order to meet the health or safety needs of its consumers, and in the event there is no unused treated water then available, the remaining Contractors ("Remaining Contractors") agree to make available on a temporary basis upon written request therefor from the Contractor so in need (the "Requesting Contractor"), sufficient water to meet such health or safety needs provided that the Requesting Contractor shall pay the Remaining Contractors within 60 days of written demand therefor any actual extra costs, including the cost of replacing the water so provided, and a 15% surcharge for overhead and administration, incurred by the Remaining Contractors by reason of making such treated water available to the Requesting Contractor. The Requesting Contractor shall diligently prosecute all reasonable corrective measures to restore full service independent of water so made available by the Remaining Contractors.

4D. Additional Water: To the extent Stockton East so determines, it will make available to Contractors through the water treatment facilities quantities of water in addition to the base supply of treated water annually. Such additional water shall be made available on a pro-rata basis to the Contractors in accordance with percentages currently allocated to each Contractor pursuant to this Paragraph 4. It is understood that the ability of Stockton East to deliver such additional water on a pro-rata basis

will be dependent upon various factors involving the combined operations of the water treatment facilities and the distribution systems of each of the Contractors. However, the parties agree that they shall together use their best efforts to permit the utilization of such additional water, as well as the base supply, on such pro-rata basis.

4E. Acceptance of Treated Water: The Contractors shall use their best efforts to accept treated water, including both the base supply under Paragraph 4B and any additional water under Paragraph 4D, made available to the Contractors to the extent of the physical capacity of the combined systems and the physical capacity of each Contractor to take and use such water at the times that it is made available, and each Contractor shall undertake all reasonable methods of operation necessary to permit the use of such water, rather than water pumped from the underground, within their respective systems when such water is made available, whether as a part of the base supply or as additional water. Each Contractor shall either construct necessary physical systems to facilitate the taking of water provided to it under this Second Amended Contract or shall arrange through wheeling agreements for the use of the physical systems of other Contractors. The City will construct and place in service the North Stockton Aqueduct (as defined herein) on or before October 31, 1988. Each of the parties hereto agrees to cooperate, to the extent feasible in the operation of its system, to the end that each Contractor receives its full entitlement of treated water in an energy efficient and/or cost effective manner, provided, however, that (unless otherwise mutually agreed) each Contractor shall bear its fair share of the cost of any joint use or jointly owned facility and the expense of operation and maintenance thereof. To this end, the Contractors shall, as necessary, enter into wheeling agreements, subject to all the provisions of this Second Amended Contract. In the event agreement as to the terms of any such wheeling agreement cannot be reached within ninety (90) days of opening of negotiations on any such wheeling agreement, any party to such wheeling agreement negotiation may initiate binding arbitration in accordance with the California Arbitration Act (Code of Civil Procedure §§1280 and following), with the following provisions: Each party shall appoint one arbitrator, who may be any person; the arbitrators so appointed shall appoint a neutral arbitrator, who may be any person and who shall be the sole decision-maker; the scope of arbitration shall be limited to the terms to be included in the wheeling agreement. Nothing in this Paragraph 4E contained shall, however, be deemed to obligate any Contractor to make its facilities, or any part thereof, available for use of any other Contractor unless

there is adequate capacity available in such facilities for such use of the second Contractor. No Contractor shall extend service to a new service area relying on the conveyance facilities of any other Contractor except by mutual agreement. No Contractor shall be under any obligation to dedicate all or any portion of its facilities to the use of any other Contractor hereunder. The foregoing provisions of this Paragraph 4E shall not limit the mutual undertakings of the Contractors set forth in Paragraph 4C to make water available on a temporary basis to a Requesting Contractor in the event of an emergency or other condition beyond the control of the Contractor.

4F. Scheduling of Maintenance: Any repairs, maintenance, replacement, or other work which will necessitate taking all or a portion of the water treatment facilities out of operation shall, to the extent practical, be undertaken each year between November and February, inclusive.

4G. Standard of Operation: Stockton East shall, at all times during the term hereof, operate and maintain the water treatment facilities in accordance with good and accepted waterworks practices.

4H. Calculation of Percentage: On or before September 1 of each year, each Contractor shall provide to Stockton East, in form designated by Stockton East, data, sufficient in Stockton East's determination, to enable Stockton East to calculate the total amount of water produced by that Contractor during the previous Year from all sources, whether from wells, Stockton East, or other providers or sources. On or before the October 1 next succeeding the provision of such data, Stockton East shall calculate for each Contractor a percentage determined by dividing the total amount of water produced by each Contractor, as calculated by Stockton East from the data provided to Stockton East, by the sum of such totals for all Contractors, and multiplying by 100. Such percentage so determined for each Contractor shall be the percentage applicable for each Contractor respectively in accordance with paragraphs 4 and 5, for the Year next succeeding such calculation and Stockton East shall promptly notify the Contractors of each such percentage. Stockton East's determination of the percentages shall be final.

4I. Minimum Amount: Notwithstanding any other provision of the Original Contract or of this Second Amended Contract, in consideration of the consent by Cal Water to a reduction in its minimum allocation of 18,500 acre feet of treated water yearly from the existing 20,000 acre feet nominal capacity of the water treatment plant set forth in

the Original Contract to an amount based on its total water production from all sources as a percentage of all Contractors' total water production from all sources as determined in Paragraph 4 hereof, Stockton East hereby agrees to deliver to Cal Water (on a monthly basis) during each Year a minimum of not less than one-half of the total treated water available for delivery to all Contractors. The Contractors other than Cal Water hereby agree and consent to such agreement by Stockton East regardless of whether, as a result of such deliveries to Cal Water pursuant to such agreement, the amount of treated water delivered to such other Contractors, or any of them, during any Year may be less than the amount determined under Paragraph 4B by use of the applicable percentage determined under Paragraph 4H hereof and regardless of whether the amount of treated water may be insufficient in any Year to meet the allocation of such other Contractors so determined under Paragraph 4B by use of the applicable percentage determined under Paragraph 4H after first meeting the allocation of Cal Water, Cal Water. After so meeting such allocation of Cal Water, the remaining treated water shall be allocated on a prorata basis among such other Contractors based on their respective applicable percentages determined under Paragraph 4H. The provisions of this Paragraph shall remain in effect until Conveyance and Storage Facilities have been constructed which deliver to the water treatment plant raw water sufficient in amount to increase the annual nominal capacity of that plant from 20,000 acre feet to 30,000 acre feet.

4J. Lack of Availability of Raw Water: Subject to subparagraph 5G, Stockton East shall be excused from its obligation to deliver annually a minimum of 20,000 acre feet of treated water, without Contractors being excused from making their respective payments to Stockton-East required by this Second Amended Contract during any Year in which there is available to Stockton East, from all sources, less than a total for all uses of 20,000 acre feet of raw water. In such event Stockton East shall during such a Year deliver as much water as it does have available but shall have no liability for its failure to deliver more.

4K. Failure of System to Accept Water: Subject to subparagraph 5G, Stockton East shall also be excused from its obligation to deliver a minimum of 20,000 acre feet of water in any Year during which the combined systems of Contractors fail to accept a full 20,000 acre feet of water due to operational or physical limitations and in such event Stockton East shall deliver as much water as is operationally possible but shall not be obligated to deliver the full 20,000 acre feet of water during such a Year, and in

such event the Contractors shall not be excused from making their respective payments to Stockton, East required by this Second Amended Contract.

4L. Inability to Deliver Treated Water: Subject to subparagraph 5G, Stockton East shall also be excused from its obligation to deliver water without the Contractors being excused from payment during any period, not exceeding 18 months, of failure by Stockton East to deliver treated water for any reason. In the event of a failure by Stockton East to deliver treated water to Contractors, then to the extent practical and to the extent of the capacity of the water treatment facilities, the availability of raw water, and the ability of Contractors' systems to accept water, Stockton East shall subsequently during the Year of such a failure, make up any quantity required to be delivered as a part of the base supply of treated water.

4M. Allocation of Deficiency: Any deficiency resulting due to conditions mentioned in subparagraphs 4J, 4K and 4L shall be allocated among the Contractors on a proportional basis in accordance with the percentages currently allocated to each Contractor pursuant to this Paragraph 4.

5. PAYMENT BY CONTRACTORS.

5A. Amount to Be Paid Annually: In exchange for Stockton East agreeing to make available to Contractors treated water in the manner set forth in Paragraph 4 and otherwise operating in accordance with this Second Amended Contract, the Contractors together shall pay annually, in equal monthly installments estimated, computed, and paid as set forth in Paragraph 6, to Stockton East, regardless of the amount of water actually delivered to Contractors and regardless of whether any water is delivered at all, subject to subparagraph 5G, the sum of the following:

5A(1). Debt service and the debt service surcharge for the subject Year together with 30 equal annual payments calculated to amortize the total water treatment facilities advances with interest at the average interest rate applicable to the water treatment facilities bonds, provided, that, there shall be deducted from the amount of the water treatment facilities advances the aggregate of the sums which have been applied to the water treatment facilities advances either directly from the proceeds of the water treatment facilities bonds or from sums made available pursuant to Paragraph 4 of the Original Contract.

5A(2). New debt service and the new debt service surcharge.

5A(3). A sum equal to the aggregate of the following:

(a) the cost of expansion of, additions to, or replacements of, the water treatment facilities,

(b) the municipal and industrial share of the cost of acquisition of supplemental surface water from any source other than New Hogan Dam, and

(c) the municipal and industrial share of the cost of construction and acquisition of Conveyance and Storage Facilities, less the aggregate of all payments on account of such costs heretofore made by the Contractors, and plus interest at the prime rate for one Year on the remaining balance of such costs, divided by the number of Years remaining in the term of this Second Amended Contract, provided, however, that those costs itemized in the preceding clauses (a), (b) and (c) shall be included only if and to the extent that they have not been financed by the issuance of bonds and/or paid for from reserves established and maintained by Stockton-East pursuant to the provisions of the Bond Resolution, the Original Contract or this Second Amended Contract.

5A(4). The annual adjusted price of the raw water delivered to the water treatment plant including both the base supply of raw water and any additional water which may be delivered to and accepted by the Contractors. The adjusted price of raw water shall be determined annually for each applicable Year as follows:

5A(4)(a). From the total actual cost of all water purchased in any Year by Stockton East there shall be deducted any charges of any kind imposed by a purveyor of raw water to Stockton East on the use or required scheduling of municipal and industrial water, as opposed to agricultural water.

5A(4)(b). The amount so obtained pursuant to subparagraph 5A(4)(a) shall then be multiplied by a fraction, the numerator of which shall be the amount of raw water delivered to the water treatment plant during the year and the denominator of which shall be all water purchased or produced by Stockton East during the year. For purposes of the denominator, water shall be measured as follows:

5A(4)(b)(i) Water purchased from New Hogan Dam shall be the amount of water released from New Hogan

Dam less the amount of water diverted within Calaveras County as such diversions within Calaveras County are measured or determined from time to time by agreement between Stockton East and the Calaveras County Water District.

5A(4)(b)(ii) In measuring surface water from sources other than New Hogan Dam the water shall be measured at the point at which such water is measured for purposes of payment by Stockton East to the purveyor of such water.

5A(4)(b)(iii) Produced water shall be measured at the point of production.

5A(4)(c). It is understood by the parties that the provisions of this subparagraph 5A(4) shall not be deemed to control the present or future agricultural water rates or charges of Stockton East.

5A(4)(d). To the amount so obtained there shall then be added, in order to obtain the adjusted price of raw water, all charges, of any kind imposed by a purveyor of raw water to Stockton East on the use or required scheduling of municipal and industrial water as opposed to agricultural water, but excluding any minimum payments made for municipal and industrial water not used in order to make such water available in the future, but including interest charges payable by Stockton East under the New Hogan Contracts, the New Melones Contract, or any other contract for the purchase of raw water by Stockton-East in the future.

5A(4)(e). In the event that in the future water is delivered by Stockton East to water treating facilities in addition to the water treatment plant, then the adjusted price for raw water shall be calculated for all water delivered to water treating facilities and shall then be apportioned among the various water treating facilities on an equal per acre foot basis.

5A(5). The actual operation, maintenance, repair and replacement costs directly attributable to the water treatment facilities for the annual production of the base supply of treated water less sums drawn against the Repair and Replacement Reserve Account pursuant to the provisions of Paragraph 8 of the Original Contract. It is understood that no item for depreciation shall be included in the sums calculated and paid pursuant to Paragraphs 5 and 6.

5A(6). An amount equal to the actual cost of administrative services attributable to the operation of the water treatment facilities and the administration of this Second

Amended Contract including, but not limited to, management time and required legal, accounting, and consulting engineering services, and the actual cost of paying agents or other services which Stockton East requires in processing and making payments on the water treatment facilities bonds, or any other related bonds.

5A(7). The actual cost of insurance for the water treatment facilities, and Conveyance and Storage Facilities, including, but not limited to, casualty and liability and including fire, and extended coverage, at full replacement value, but excluding "loss of revenue" insurance.

5A(8) A sum equal to the actual cost of operation, maintenance, and repair of the wells, pumps, conduits, and related facilities enumerated in Paragraph 8, including both costs arising on account of actual operation and costs arising on account of necessary standby facilities for use in future Years when such production facilities may be required.

5A(9) The annual payments required by Paragraphs 7 and 8 into the reserve funds established by Paragraphs 7 and 8.

5A(10) The sum of $100,000, to be paid into the Water Treatment Facilities Reserve Fund established by Paragraph 9; said sum of $100,000 to be adjusted from time to time by Stockton East, provided that:

5A(10)(a) Prior to any initial or subsequent adjustment in said sum of $100,000, Stockton East shall obtain a written report, or reports, from one or more registered civil engineers as to the need for funds to meet expenditures described in subparagraph 9C.

5A(10)(b) Prior to any initial or subsequent adjustment upward in said sum of $100,000, the Board of Directors of Stockton East shall hold a noticed public hearing to consider such upward adjustment.

5A(10)(c) Said sum of $100,000 shall in no event be reduced below $100,000 and shall only be adjusted above $100,000 for the purpose of meeting expenditures described in subparagraph 9C.

5B. Credit: Against the sums due under subparagraph 5A there shall be allowed as a credit, a sum calculated in a manner established by resolution of the Board of Directors of Stockton East for the use of the raw water transmission line and intake facilities for delivery of water to

users and uses other than the water treatment plant, provided that prior to initially adopting or thereafter altering said method of calculation the Board of Directors of Stockton East shall first hold a noticed public hearing relative to such method of calculation.

5C. Audit: The annual amount of operations, maintenance, repair and replacement, the cost of necessary and desirable improvements, and modifications to the treatment ~~facilities, the cost of acquisition of surface water from~~ any source other than New Hogan Dam, the cost of construction of Conveyance and Storage Facilities and the cost of necessary and desirable improvements and modifications thereto, the cost of administrative services, charges for raw water, and the amount of all other variable costs, charges, credits, and funds shall be determined each year by Stockton East and thereafter audited and reported upon by an independent certified public accountant selected by Stockton East as set forth in subparagraph 6C.

5D. Allocation of Charges: The charges imposed by this Paragraph 5 shall be allocated among the contractors annually in proportion to the percentage currently allocated to each contractor pursuant to Paragraph 4.

5E. Payment Adjustments: Notwithstanding any other provision of this Second Amended Contract, City shall pay an estimated sum of $5,856,586 and Lincoln Village and Colonial Heights Maintenance Districts combined shall pay an estimated sum of $582,690 to Stockton East as consideration for the purchase of water entitlements, which entitlements had been previously allocated under the Original Contract to Cal-Water. The sums shall be paid in equal monthly installments commencing at the date the Second Amended Contract becomes operative and extended thereafter for 15 years.

As and for consideration to Cal Water to terminate the Original Contract and enter into the Second Amended Contract, the base monthly payment which Cal Water would otherwise be obligated to pay under this Paragraph 5 shall be reduced by an estimated sum of $6,439,276 which credit shall be applied in equal monthly installments on a monthly basis during each month commencing at the date the Second Amended Contract becomes operative and extended thereafter for 15 years. The above-mentioned estimated sums shall be adjusted to the actual amounts applicable to each Contractor as of the date that the North Stockton Aqueduct is placed in service, in accordance with Paragraph 2A of this Second Amended Contract. Such actual amounts shall be determined by Stockton East.

Notwithstanding any other provision of this Second Amended Contract to the contrary, Lincoln Village and Colonial Heights Maintenance Districts shall make payment to Stockton East solely on the basis of a charge per acre foot of water computed by Stockton East to be applicable to the Lincoln Village and Colonial Heights Maintenance Districts for their allocation of surface water as computed under Section 4H, which charge shall be equal to the unit cost per acre foot payment made by any other Contractor pursuant to the payment provisions within this Second Amended Contract with the exception of payments made under Section 5E. The payment of the charge will be made on a monthly basis.

5F. Further Adjustments: It is agreed that in the year 2016, and each tenth (10th) Year thereafter, the contractors will review the payment of capital costs with bonded indebtedness as compared to water allocation and make such adjustments to future payments as appropriate to adjust any inequities.

5G. Failure to Continue Service: Following any period of 18 months during which Stockton East fails to make available to Contractors at least 7,500 acre feet of treated water, the Contractors shall be excused from making the payments required pursuant to this Second Amended Contract until such time as Stockton East is prepared to, and has, restored the normal service contemplated by this Second Amended Contract. In the event of any failure of the raw water supply, damage or destruction of all or a portion of the water treatment facilities, or any other cause preventing Stockton-East from making available to Contractors the quantities of water contemplated by this Second Amended Contract, Stockton East shall use its best efforts to restore full service promptly. In the event of damage to or destruction of the water treatment facilities, any insurance proceeds shall be applied to repair and reconstruction. In the event that all or a portion of the water treatment facilities are taken or damaged by condemnation by, or conveyed by Stockton East to avoid or compromise any condemnation proceeding to, a public agency not assuming the obligations of this Second Amended Contract, then Stockton- East shall use any proceeds from such a condemnation or conveyance in the manner required by the Bond Resolution.

6. TIME AND MANNER OF PAYMENT:

6A. Monthly Payments: Payment of the annual sum due pursuant to Paragraph 5 shall be as set forth in this Paragraph 6. There shall be a base monthly payment made as set

forth in this Paragraph 6. Payment shall be made monthly on the first day of each month.

6B. Proration: During the term of this Second Amended Contract payments which cover less than a full month or which cover less than a full Year's service shall be prorated accordingly.

6C. Procedures for Audit: Actual and variable costs and other items subject to audit shall be audited and reported upon by an annual audit as set forth in subparagraph 5C. The audit shall be commenced each Year not later than July 1 next following the close of each Year. The annual audit shall be completed not later than December 31 succeeding the close of the Year being audited. Each audit shall cover a full Year commencing on April 1 and ending on March 31. In the event that an annual audit discloses a necessary adjustment or correction in any amount or fund, then such adjustment or correction shall be applied to the base monthly payment to be paid during the Year next succeeding the completion of such an annual audit. Three copies of the annual audit report shall be furnished to each Contractor without expense promptly after receipt by Stockton East.

6D. Establishing Base Monthly Payment. The base monthly payment shall be calculated annually as follows:

6D(1) On or before the first day of October annually Stockton-East shall announce a new base monthly payment to be applicable during the next succeeding Year.

6D(2) The base monthly payment which shall be announced annually pursuant to subparagraph 6D(1) shall be an estimate, which estimate shall be made by Stockton East to include the following:

6D(2)(a) Debt service, the debt service surcharge, new debt service, new debt service surcharge, and any payment toward water treatment facilities advances required by subparagraph 5A(1) for the subject Year and for costs established in subparagraph 5A(3).

6D(2)(b) A sum based on an estimate of the actual cost of variable items as anticipated for the forthcoming Year during which said base monthly payment will be applicable. The estimate so made is to be made following a survey of current and anticipated costs of the subject items and in consideration of information disclosed by the last available required audit and records of Stockton East for the immediately preceding Year.

6D(2)(c) The application of any credit which it is estimated may be due the Contractors.

6D(2)(d) A sum necessary to make any corrections because of overpayments or underpayments arising because of variance between estimates and actual experience during the preceding Year and any corrections or adjustments disclosed as necessary by the last available audit.

6D(2)(e) A deduction for all sums collected pursuant to Paragraph 6D(3), for the previous year, in excess of that amount required for the groundwater production fund, as determined by Stockton East.

6D(3) 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. That portion of such assessment which is deducted pursuant to paragraph 6D(2)(e) shall be paid to meet costs set forth in paragraph 6D(2)(a) and 6D(2)(b).

6E. Public Hearing On Base Monthly Payment: Annually prior to announcing the base monthly payment for the next Year the Board of Directors of Stockton East shall hold a noticed public hearing to consider the amount of said base monthly payment.

6F. Final Payments: During the 12 months next following the availability of the audit of the last 12 months preceding the cessation of service pursuant to this Second Amended Contract, and any extension, continuation, or renewal thereof, 12 final monthly payments shall be made which together shall adjust any differences among the parties between the last base monthly payment and actual experience during the last 12 months as confirmed by audit of operations for the last 12 months.

7. REPAIR AND REPLACEMENT RESERVE ACCOUNT:

7A. Maintenance of Repair and Replacement Reserve Account: Stockton East has established and shall maintain during the term of this Second Amended Contract a reserve account for the purpose of covering the cost of repairs and replacement of items scheduled pursuant to subparagraph 7B which are required during the life of the Second Amended Contract in order to maintain the water treatment facilities in good order and at all times able to meet efficiently the production of the water to be supplied pursuant to this Second Amended Contract. The account identified in

this Paragraph 7 is the same as the Repair and Replacement Reserve Account established by the Bond Resolution.

7B. Amount of Annual Payment: There is attached hereto as Exhibit "D" a major repair and replacement schedule which schedule has been prepared with the assistance of the engineers who designed the water treatment facilities and which sets forth an estimate of such anticipated major repair and replacement expenses during the life of the Second Amended Contract and the amount of level annual payments sufficient to provide a reserve account adequate to meet the expenses anticipated by said schedule.

7C. Adjustment of Payment and Use of Account: Payment shall be made by the Contractors annually as a part of the total payment required by Paragraph 5 into the Repair and Replacement Reserve Account in accordance with the payment schedule established by Exhibit "D". Payments to be made into the reserve fund shall be adjusted from time to time, by Stockton East to meet actual operating experience, provided that prior to any such adjustment the Board of Directors of Stockton East shall first hold a noticed public hearing. Any sums drawn against the Repair and Replacement Reserve Account shall be deducted from the actual charge for operation, maintenance, and replacement made pursuant to subparagraph 5A(5).

8. WATER DEFICIENCY RESERVE FUND: It is recognized that pursuant to the New Hogan Contracts Stockton East in some years may be required to take a 25% deficiency in its New Hogan Dam water supply. In order to furnish Contractors with a minimum of a full 20,000 acre feet of water per year Stockton East agrees that it will purchase water, or construct, install, or acquire such wells, pumps, conduits, and related facilities as may from time to time be required to permit Stockton East to take such water from the underground annually as may be necessary to augment an annual deficiency of as much as 25% in the base supply of raw water. In order to place itself in a position to meet the obligations of this Paragraph 8 Stockton East has established a Water Deficiency Reserve Fund into which it shall deposit annually a sum set by the Board of Directors of Stockton East. The amount so deposited shall not in any Year exceed an amount equal to ten cents multiplied by the total number of acre feet of water delivered to the water treatment plant during the subject Year. Funds in said Water Deficiency Reserve Fund may be applied by Stockton East at such time as Stockton East may from time to time determine is appropriate to the construction or other acquisition of such wells, pumps, conduits, and related facilities, and to do any other acts necessary on the part of

Stockton East in its judgment to furnish the base supply of treated water to Contractors annually. In the event that during the term hereof Stockton East by act of the California legislature is granted special powers to levy taxes or assessments for the purposes specified herein and such taxes or assessments are applicable to the treated water which is the subject of this Second Amended Contract, then this Paragraph 8 shall be inapplicable and of no force and effect.

9. WATER TREATMENT FACILITIES RESERVE FUND: Stockton East has established and shall maintain during the term of this Second Amended Contract a Water Treatment Facilities Reserve Fund. There shall be deposited in that fund at the end of each Year the sums paid to Stockton East pursuant to subparagraphs 5A(10). Stockton East may, at any time, make withdrawals from said Water Treatment Facilities Reserve Fund and expend such funds as Stockton East determines, provided that such expenditures are limited to the following purposes:

9A. Debt Service: Debt service, including the call and redemption of bonds prior to fixed maturity date.

9B. Operation and Maintenance: Operation, maintenance, and repair of the water treatment facilities including the items listed in subparagraphs 5A(4) through 5A(8).

9C. Replacement and Expansion: Necessary or desirable replacement, expansion, improvement, modification, and increase in the capacity of the water treatment facilities.

10. SCHEDULING OF WATER: From time to time as is necessary and convenient, and at least once each year during the month of March representatives of the Contractors and Stockton East shall meet and confer as to available raw water and the scheduling of the delivery of treated water to the Contractors. Following such conferences Stockton East shall, from time to time announce schedules for the delivery of treated water to Contractors and to each Contractor. The schedules so announced, from time to time, shall be developed in a manner to permit making maximum use of the treated water which may be available subject to the respective demands of Contractors' systems. It is also understood that schedules announced pursuant to this Paragraph 10 shall be goals toward which Stockton East and the Contractors shall work in operating the water treatment facilities and the respective distribution systems of Contractors, but it is understood that such goals may not in every instance be achieved.

11. MEASUREMENT: Necessary measurement of water to permit compliance with this Second Amended Contract shall be by recording measuring devices selected by Stockton East and installed and maintained by Stockton East and subject to inspection at all times by the Contractors.

12. QUALITY: Stockton East has obtained and shall maintain in effect during the term of this Second Amended Contract a permit to operate the water treatment facilities from the California Department of Health Services. At all times Stockton East will use its best efforts to the end that the quality of water delivered by it pursuant to and in satisfaction of this Second Amended Contract meets or exceeds requirements as to water for human consumption of the Department of Public Health of the State of California, the United States Environmental Protection Agency and their respective successors. The Contractors shall likewise use their best efforts to meet or exceed such requirement with respect to water delivered by the Contractors to their respective customers or users.

13. OTHER CONTRACTORS: It is recognized that another Contractor, not a party hereto at this time, could take water. The parties hereto agree that no such Contractor shall be furnished water on terms more favorable than those made available to the Contractors at the date such a new Contractor agrees to take water and to be bound by this Second Amended Contract. No additional Contractors will be added to this Second Amended Contract without the express written consent of all the existing Contractors, which consents shall not be unreasonably withheld. Notwithstanding the provisions herein, the Southern Water System may become a Contractor under this Second Amended Contract, upon written notice to the other parties hereto.

14. OPERATIONS: Stockton East shall at all times make all reasonable efforts to operate the water treatment facilities in a manner in accordance with the currently applicable schedule adopted as set forth in Paragraph 10. In so operating Stockton East will endeavor to meet the full water demand of the systems of the Contractors during periods of low demand. During periods of high demand it is understood that all systems may be required to operate ground water pumps in order to meet peak loads. Water will be delivered into the systems of Contractors by delivery to Cal Water at the point shown on Exhibit "B". Such water delivery points may later be changed, and new delivery points may be created.

15. CONSTRUCTION OF NEW FACILITIES: The parties recognize that in order to meet the increased demand for treated

water in the Stockton Metropolitan Area it will be necessary for Stockton East to acquire water from sources other than New Hogam Dam and in order to transport such water to the water treatment facilities it will be necessary to construct Conveyance and Storage Facilities. The cost of acquiring such additional water, the cost of the Conveyance and Storage Facilities, and the respective agricultural share and municipal and industrial share of such costs are presently unknown. Since the Contractors will be the parties ultimately responsible for payment of such municipal and industrial share, the engineering feasibility of such project and the cost thereof are matters of vital interest to them. Accordingly, Stockton East agrees that it will consult with the Contractors on any such proposed acquisition or construction, together with engineering details and details as to the cost thereof, the municipal and industrial share of all such costs to be allocated to the Contractors, the proposed financing plan, the financial impact on the Contractors, and other pertinent aspects of the overall project. If all Contractors approve the plan in writing, then Stockton East may proceed in accordance with law. If any Contractor shall not approve within thirty days of a request for approval by Stockton East, the proposed plan shall be submitted to a vote of the electors of Stockton East, and the results of such vote shall be final and binding on all Contractors.

16. 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 Second Amended Contract, the rights of the respective parties hereunder, or to enforce a right or obligation created by this Second Amended Contract, the prevailing party or parties shall receive costs and reasonable attorneys fees to be set by the court.

17. SUCCESSORS: This Second Amended Contract shall bind and inure to the legal successors of the parties and is not made for the benefit of any other parties. Any Contractor may assign all or any part of this Second Amended Contract to a public agency having the power of eminent domain. In the event of any such assignment of all of a Contractor's interest in this Second Amended Contract, the Contractor so assigning shall be relieved from all further obligations under this Second Amended Contract. In the event of such an assignment of a part of a Contractor's interest under this Contract the Contractor so assigning shall remain obligated for the remainder of its obligations under this Second Amended Contract.

18. DEFAULT AND REMEDIES:

18A. Interest: Any sum due hereunder and not paid when due shall bear interest at the prime rate until paid in full.

18B. Remedies: If any Contractor shall fail to cure or correct any default, including, but not limited to payment of any sum when due, then following 10 days written notice of such default to the defaulting Contractor, Stockton East shall have, without further notice or demand and without one remedy excluding any other, all remedies at law, in equity, or as set forth below:

18B(1). The discontinuance of service until the default is remedied and in the event of such a discontinuance of service Contractor shall continue to be liable for the accrual of the base monthly payment or payments accruing during such period of discontinued service. In the event of a discontinuance of service to any Contractor, written notice of such cessation shall be given by Stockton East to all of the Contractors and, if discontinuance of service requires a cessation of wheeling, the Contractors providing wheeling shall cease wheeling, and Stockton East shall, and hereby agrees to, hold harmless and indemnify any Contractor from liability which might arise following such a written notice of the cessation of wheeling.

18B(2). The collection by suit of any sums due, it being understood that the collection by suit of any sums due shall not waive or terminate a Contractor's continuing obligation to make all required payments to Stockton East.

19. NOTICES: Notices required or permitted to be given under this Second Amended Contract shall be made by all parties as provided herein. Mail shall be deposited in a United States Post Office mail box first class postage prepaid addressed as shown by the respective addresses following the signature block for each of the parties hereto. 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.

20. SUBJECT TO BOND RESOLUTION: This Second Amended Contract and the relationship between Contractors and Stockton East, and the respective obligations and privileges of each of the parties shall, in all respects, be subject to and bound by the Bond Resolution. In the event of any conflict between the Bond Resolution and this Second Amended Contract the Bond Resolution shall prevail.

21. 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 Contract 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.

22. SEVERABILITY: If any term, provision, covenant, or condition of this Second Amended Contract is held by a court of competent jurisdiction to be invalid, void, or unenforceable, the remainder of the provisions shall remain in full force and effect and shall in no way be affected, impaired or invalidated.

23. ENTIRE AGREEMENT: This instrument constitutes the sole and only agreement of the parties hereto relating to the rights and obligations granted and assumed herein. Any prior agreements, promises, negotiations, or representations not expressly set forth in this Second Amended Contract are of no force or effect, except as set forth in paragraph 2B of this Second Amended Contract.

24. REMEDIES NOT EXCLUSIVE: Any remedy granted to a party by this Second Amended Contract is not exclusive and any party may elect any remedy granted by this Second Amended Contract, or otherwise, at law, by statute, or in equity, or any combination thereof.

25. WAIVER: No waiver of any default shall constitute a waiver of any other breach or default, whether of the same or any other term, covenant, or condition. No waiver, benefit, privilege, or service voluntarily given or performed by either party shall give the other any contractual right by custom, estoppel, or otherwise. The subsequent acceptance of any payment pursuant to this Second Amended Contract shall not constitute a waiver of any preceding default by any party other than default in the payment of the particular payment so accepted, regardless of a party's knowledge of the preceding breach at the time of accepting the payment.

26. TITLES: The table of contents of this Second Amended Contract and the captions of the various articles and paragraphs of this Second Amended Contract are for convenience and ease of reference only and do not define,

limit, augment, or describe the scope, content, or intent of this Contract or of any part or parts of this Second Amended Contract.

27. GENDER, NUMBER: The neuter gender includes the feminine and masculine, the masculine includes the feminine and neuter, and the feminine includes the masculine and neuter, and each includes corporation, partnership, or other legal entity when the context so requires. The singular number includes the plural and the plural the singular whenever the context so requires.

28. AMENDMENT: This Second Amended Contract may only be amended by agreement of all the parties.

29. CONTROVERSIES: No dispute or controversy between any two or more of the parties hereto shall affect the rights of any party or parties not involved in such dispute or controversy.

30. INTEREST RECEIVED ON RESERVE FUNDS: All interest income received by Stockton East by virtue of the investment of funds on hand in any reserve fund or account to the extent any such fund is funded out of payments made pursuant to this Second Amended Contract, shall be added to the respective reserve fund generating such interest and shall be expended for the purposes of such reserve fund.

31. MODIFICATION OF BOND RESOLUTION: There shall be no modification of the Bond Resolution nor the adoption of a supplemental or additional resolution which affects the obligations of any Contractor or increases or changes their respective payment obligations without the prior written consent of each Contractor.

32. SUBJECT TO UNITED STATES BUREAU OF RECLAMATION CONTRACTS: It is understood that this Second Amended Contract and the rights and obligations of the parties hereunder are subject to the terms of the New Hogan Contracts and the New Melones Contract and by execution hereof each of the Contractors agrees to be bound by the provisions of said contracts, including, but not limited to, the provisions of Article 32 of the contract entered into under date of August 25, 1970 between the United States of America and the Stockton and East San Joaquin Water Conservation District (now Stockton East) and the Calaveras County Water District, and Article 17 of the New Melones Contract and pursuant to the provisions of subdivision (g) of said Article 32 and of subdivision (7) of said Article 17, the provisions of subdivision (a) through (g) of said Article 32 and of said Article 17 are hereinafter set forth:

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 purpose 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 District 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.

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 conspicious 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 conspicious 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.

Stockton East covenants and agrees to perform all of its obligations under the provisions of said Article 32 and of said Article 17.

33. CONDUCT OF PUBLIC HEARINGS: Whenever Stockton East is required by this Second Amended Contract to hold a noticed public hearing such noticed public hearing may be consolidated with any other noticed public hearing required by this Second Amended Contract. A notice of a public hearing required by this Second Amended Contract need not set forth in detail the item or items to be considered but will be sufficient if it describes generally the subject matter to be considered at the public hearing.

34. ADJUDICATION OF GROUND WATER BASIN: In the event of a future adjudication of rights to extract water from the ground water basin underlying Stockton East, the parties agree and stipulate among themselves that use of water delivered under this Second Amended Contract shall constitute a reasonable beneficial use of ground water to the extent that such use results in a reduction in ground water extraction below the level of such extraction prior to the initial delivery date. The parties further agree that in the event of an adjudication, the respective positions they assert, whether in judicial proceedings or stipulated settlement, will be in accordance with the provisions of this Paragraph 34.

35. STOCKTON EAST AS CONTRACTOR: In the event that while service is continued hereunder to any Contractor Stockton East undertakes, by purchase, other acquisition, or by contract, the operation of all or any part of the distribution system of any Contractor, then in such capacity, as the operator of a distribution system, Stockton East shall not extend to such a system or the water users of such a system any benefit, right, or preference, not extended to the other Contractors, unless such benefit, right, or preference is also extended to all other Contractors.

36. TEMPORARY USE OF FUNDS: In the event that during any year Stockton East has a shortage of funds to meet

anticipated or unanticipated costs and charges arising under subparagraphs 5A(4) through 5A(8) then Stockton East may, in its discretion, use any funds it may have on hand in the Water Treatment Facilities Reserve Fund for such purposes. In the event that Stockton East does use funds in the Water Treatment Facilities Reserve Fund pursuant to the preceeding sentence, then Stockton East may withdraw from the Surplus Account at the end of the current Year, and at the end of any necessary succeeding Years, sufficient funds to reimburse the Water Treatment Facilities Reserve Fund for the money used pursuant to this Paragraph 36 from the Water Treatment Facilities Reserve Fund.

37. ALLOCATION OF SURPLUS TO WATER FUND: At the time of setting the amount of the annual payments to be made by the Contractors pursuant to Paragraphs 5 and 6, an estimate shall be made of that amount of money which will remain in the Surplus Account at the end of the current Year which will be in excess of the amount required to meet all allocations and payments to Stockton East in the current Year provided for by Paragraphs 8, 9 and 36, and subparagraph 5A(1). The sums to be paid by the Contractors pursuant to Paragraphs 5 and 6 for the coming Year shall be reduced by such amount estimated to be remaining in the Surplus Account. At the end of the current Year, all moneys remaining in the Surplus Account which are in excess of the amounts required to meet all allocations and payments to Stockton East provided for by Paragraphs 8, 9 and 36 and subparagraph 5A(1) for such current Year shall be deposited in the Water Fund and used as therein provided.

38. RESOLUTIONS AND EXECUTION: There are attached hereto the following: as Exhibit "E" a certified copy of a resolution of the Board of Directors of Stockton East authorizing execution of this Second Amended Contract; as Exhibit "F" a certified copy of a resolution of the Board of Directors of Cal-Water authorizing execution of this Second Amended Contract; as Exhibit "G" a certified copy of a resolution of the City Council of City authorizing execution of this Second Amended Contract; as Exhibit "H" a certified copy of a resolution of the Board of Supervisors of the County of San Joaquin acting on behalf of Lincoln authorizing execution of this Second Amended Contract; and as Exhibit "I" a certified copy of a resolution of the Board of Supervisors of San Joaquin County acting on behalf of Colonial authorizing execution of this Second Amended Contract. The parties shall execute ten originals of this Second Amended Contract.

39. SUBJECT TO OPINION: Notwithstanding any other provision of this Second Amended Contract, it shall not become effective until there has been obtained, from Messrs. Orrick, Herrington & Sutcliffe, the bond counsel who issued the original opinion for the bonds issued pursuant to the Bond Resolution, an opinion stating that any and all requirements of the Bond Resolution, the bonds issued pursuant thereto, and the laws authorizing and governing the issuance of such bonds, with respect to execution of this Second Amended Contract have been met.

40. SUBJECT TO REMOVAL OF SAN MARCOS DECISION STRICTURES: Notwithstanding any other provision of this Second Amended Contract, it shall not become effective until each of the Contractors, upon advice of their respective attorneys, agrees in writing that the strictures imposed upon the payment by public agencies of certain capital costs, by the California Supreme Court in the case of San Marcos Water District v. San Marcos Unified School District (1986) 42 Cal. 3d 154, have been lifted either by remedial legislation or further judicial decision.

Executed on the day and year first above written at Stockton, California.

STOCKTON EAST WATER DISTRICT
a political subdivision of the
State of California

By: Roger M. Huckins
ROGER M. HUCKINS, PRESIDENT

ATTEST:

EDWARD M. STEFFANI
SECRETARY

APPROVED AS TO FORM:

JOHN W. STOVALL
GENERAL COUNSEL

Address for Notice to
Stockton East:
Post Office Box 5157
Stockton, California 95205

CALIFORNIA WATER SERVICE
COMPANY
a California Corporation

By _____
C. H. STUMPL, PRESIDENT

ATTEST:

APPROVED AS TO FORM:
McCutchen, Doyle, Brown
& Enersen

_____
LESTER SAXE
SECRETARY

_____
A. CRAWFORD GREENE
ATTORNEYS

Address for Notice to Cal-Water:
Post Office Box 1150
San Jose, California 95108

CITY OF STOCKTON, a municipal corporation of the State of California

By _____
BARBARA FASS, MAYOR

ATTEST:

APPROVED AS TO FORM:

_____
FRANCES HONG
CITY CLERK

_____
ROBERT THOMAS HARRIS
CITY ATTORNEY

Address for Notice to City:
c/o City Clerk, City Hall
Stockton, California 95202

LINCOLN VILLAGE MAINTENANCE DISTRICT, a political subdivision
of the State of California
governed by the Board of Supervisors of San Joaquin County

By _____
GEORGE BARBER
CHAIRMAN, Board of Supervisors
County of San Joaquin

State of California

ATTEST:

APPROVED AS TO FORM:

JORETTA J. HAYDE
CLERK OF THE Board
of Supervisors of the
County of San Joaquin,
State of California

By: _____
~~DEPUTY~~ CLERK

_____
JOHN CHEADLE
COUNTY COUNSEL

Address for Notice to Lincoln:
c/o Board of Supervisors
Courthouse
222 E. Weber Avenue
Stockton, California 95202

COLONIAL HEIGHTS MAINTENANCE DISTRICT, a political subdivision of the State of California governed by the Board of Supervisors of San Joaquin County

By _____
GEORGE BARBER, CHAIRMAN
Board of Supervisors
County of San Joaquin
State of California

ATTEST:

APPROVED AS TO FORM:

JORETTA J. HAYDE
CLERK OF THE Board
of Supervisors of the
County of San Joaquin,
State of California

By: _____

_____

~~DEPUTY~~ CLERK

JOHN CHEADLE
COUNTY COUNSEL

Address for Notice to Colonial:
c/o Board of Supervisors
Courthouse
222 E. Weber Avenue
Stockton, California 95202

Exhibit "A"

AMORTIZATION SCHEDULE

Year	Payments: Interest	Payments: Principal (1,000s)	Payments: Total	Bond Years	Cumulativ Bond Year
1975	(sale)	-	-	-	-
1976	$1,386,000	-	$1,386,000	-	-
1977	1,386,000	-	1,386,000	-	-
1978	1,386,000	-	1,386,000	-	-
1979	1,386,000	$ 250	1,636,000	1,000	1,000
1980	1,368,500	275	1,643,500	1,375	2,375
1981	1,349,250	300	1,649,250	1,800	4,175
1982	1,328,250	325	1,653,250	2,275	6,450
1983	1,305,500	350	1,655,500	2,800	9,250
1984	1,281,000	375	1,656,000	3,375	12,625
1985	1,254,750	400	1,654,750	4,000	16,625
1986	1,226,750	425	1,651,750	4,675	21,300
1987	1,197,000	450	1,647,000	5,400	26,700
1988	1,165,500	475	1,640,500	6,175	32,875
1989	1,132,250	500	1,632,250	7,000	39,875
1990	1,097,250	550	1,647,250	8,250	48,128
1991	1,058,750	600	1,658,750	9,600	57,725
1992	1,016,750	650	1,666,750	11,050	68,775
1993	971,250	700	1,671,250	12,600	81,375
1994	992,250	750	1,672,250	14,250	95,625
1995	869,750	800	1,669,750	16,000	111,625
1996	813,750	850	1,663,750	17,850	129,475
1997	754,250	900	1,654,250	19,800	149,275
1998	691,250	950	1,641,250	21,850	171,125
1999	624,750	1,025	1,649,750	24,600	195,725
2000	553,000	1,100	1,653,000	27,500	223,225
2001	476,000	1,175	1,651,000	30,550	253,775
2002	393,750	1,250	1,643,750	33,750	287,525
2003	306,250	1,350	1,656,250	37,800	325,325
2004	211,750	1,450	1,661,750	42,050	367,375
2005	110,250	1,575	1,685,250	47,250	414,625

/ 15,125,000/
term maturity

$19,800,000 27 yr. average: $1,654,287 414,625

Average life: 20.94 years.

Exhibit "A"

$15,125,000 dated 2005; minimum mandatory calls starting in 1991 as per schedule.
Dated 4/1/75.

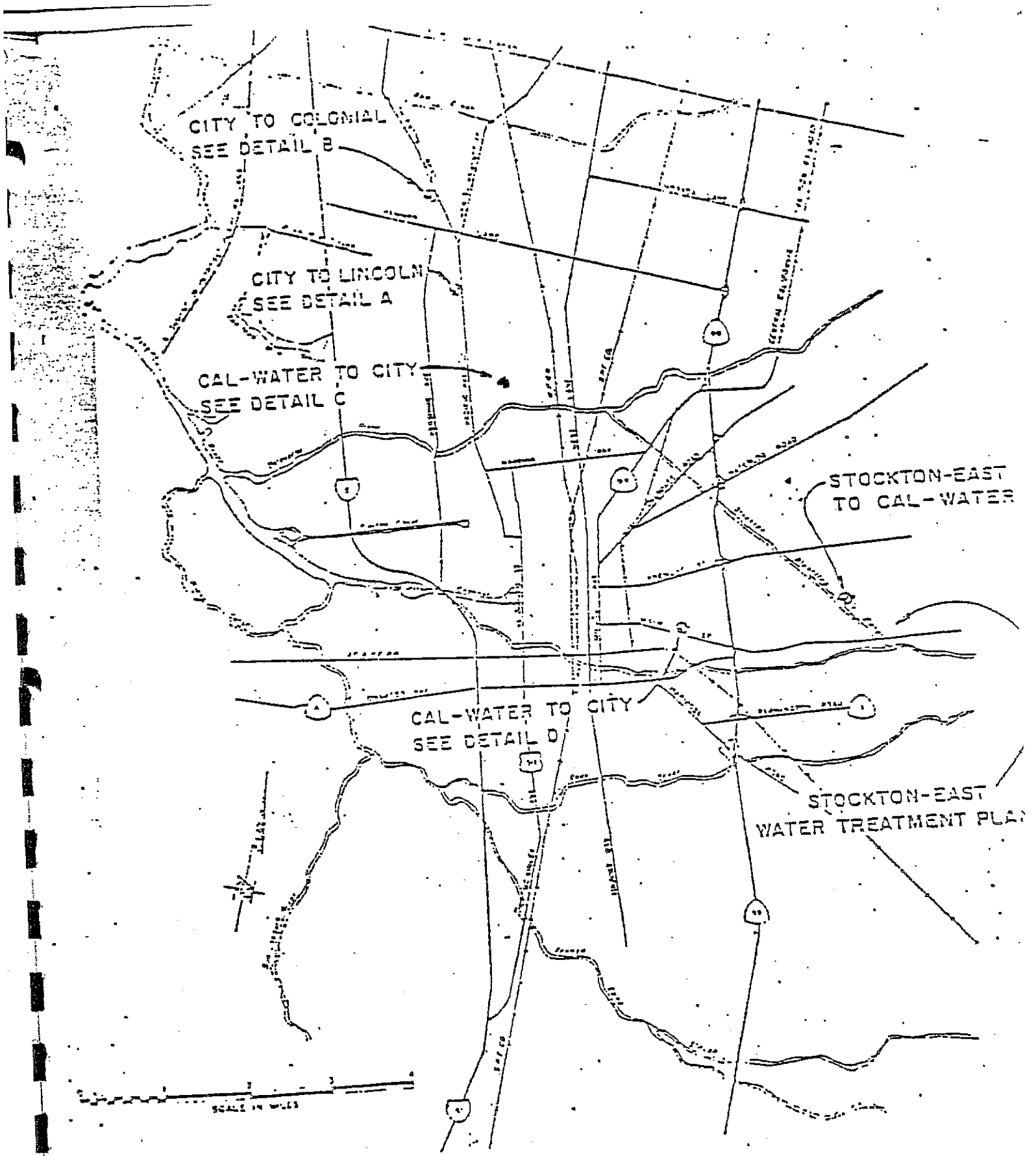
Call premiums:

Premium	Redemption Year
2-1/2%	1991
2-1/4	1992
2	1993
1-3/4	1994
1-1/2	1995
1-1/4	1996
1	1997
3/4	1998-1999
1/2	2000-2001
1/4	2002-2004
0	2005

Paying Agent:

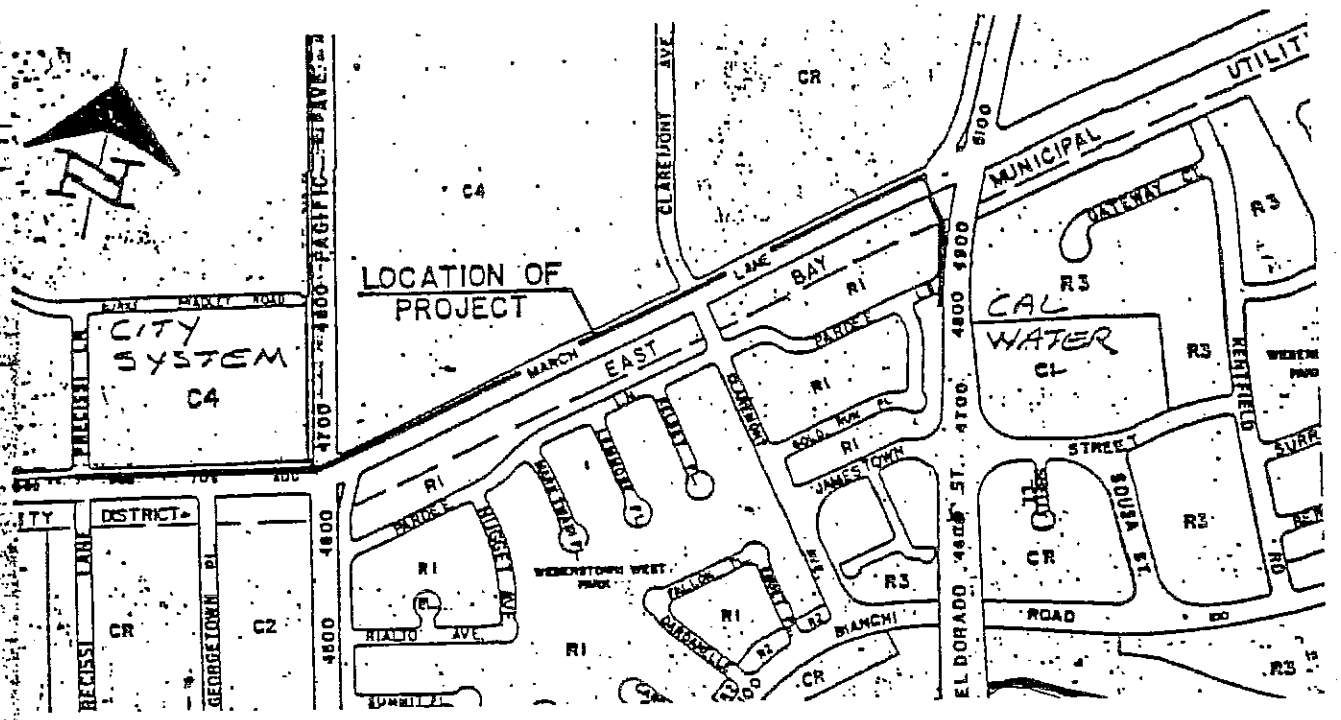
Bank of America, National Trust and Savings Association

The foregoing schedule is an example only based on interest at 7%.



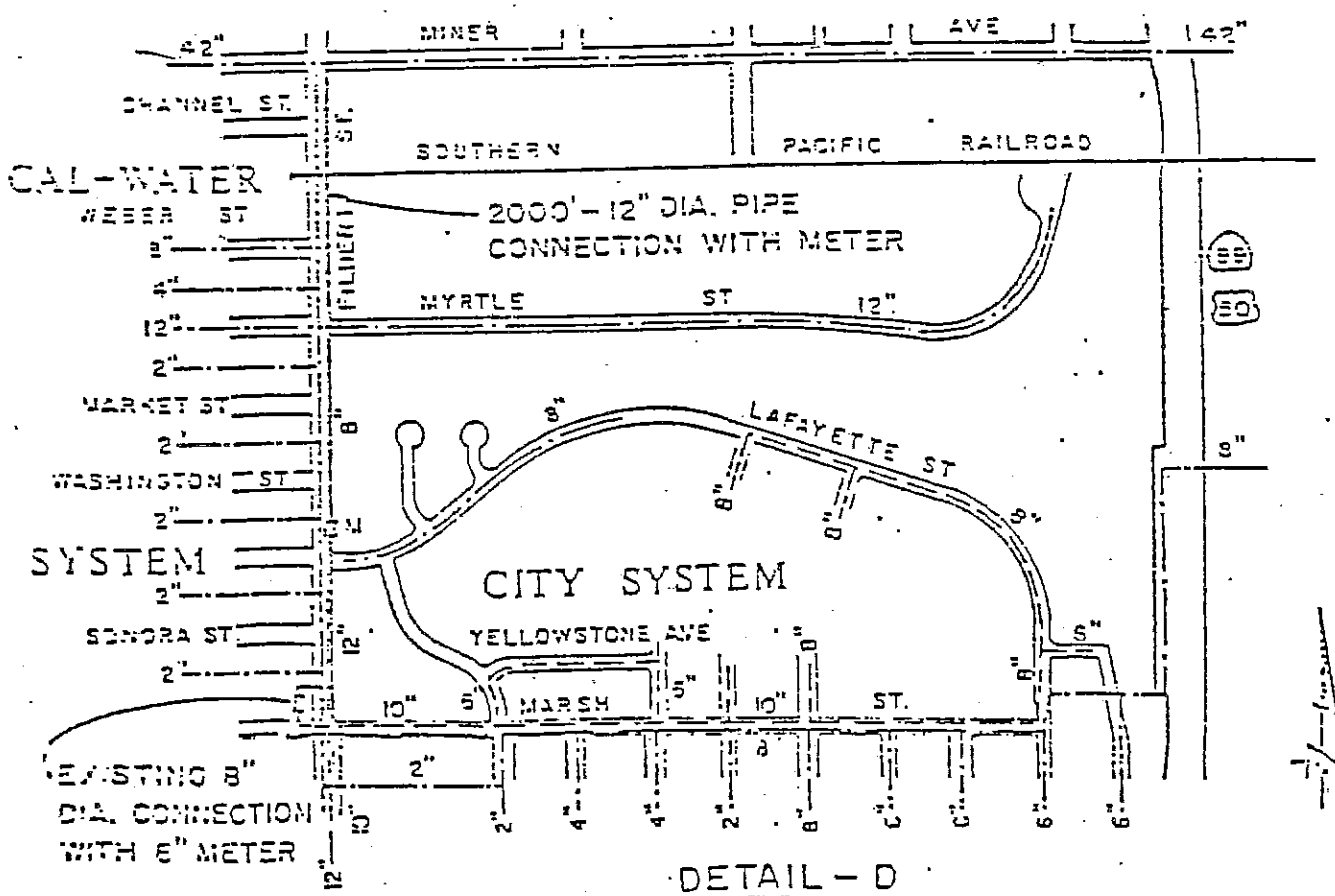
WATER DELIVERY POINTS

Exhibit "R"



DETAIL - C

CAL-WATER CONNECTION TO CITY (NORTH)



DETAIL - D

CAL-WATER CONNECTION TO CITY (DIAMOND-WALNUT)

Exhibit "B"

EXHIBIT C

WATER TREATMENT FACILITIES ADVANCES

1.	Feasibility Study of Master Water Plan Recommendations	$ 24,510.01
2.	Financial Consultant's Services	24,612.72
3.	Design Engineering, Pipeline	46,212.05
4.	Surveys, Pipeline and Treatment Plant	31,718.43
5.	Soil Studies, Pipeline and Treatment Plant	17,358.29
6.	Design Engineering, Treatment Plant	105,660.32
7.	Architectural Design Services	14,707.38
8.	Contingency Water Plan	13,974.00
9.	P.L. 984 Loan Application	40,893.60
10.	Environmental Impact Report	11,521.13
11.	Legal Services	35,960.00
12.	Bond Election	25,817.21
13.	Lands, Easements and Rights of Way	209,094.22
	TOTAL	$602,039.36

The foregoing items were expended prior to November 30, 1974. There shall be added to said sum of $602,039.36 an additional sum in the amount of $12,034.10 for items similar to those enumerated above expended between December 1, 1974 and the date that funds became available from the sale of the Water Treatment Facilities Bonds.

EXHIBIT D

MAJOR REPAIR AND REPLACEMENT SCHEDULE

The following schedule of major repairs and replacements is the schedule mentioned in subparagraph 7B of the Contract.

Item	Estimated Costs of Major Repairs and Replacements During Five-Year Periods Shown (Based on 1974 Costs in $1000)						
	0-5	5-10	10-15	15-20	20-25	25-30	30-35
Chemical Feeders	5	15	25	25	25	25	25
Electrical and Instrumentation	10	40	60	60	60	60	60
Natural Gas Engines	5	20	5	20	5	20	5
Chemical Mixers	3	6	6	6	6	6	6
Pumps and Motors	30	40	50	50	50	50	50
Chlorine Equipment	5	10	10	10	10	10	10
Air Conditioning	-	-	8	-	-	8	-
Flocculators	5	10	14	14	14	14	14
Valves	4	8	8	8	8	8	8
Miscellaneous	5	11	11	11	11	12	12
Sub-total	72	160	197	204	189	213	190

Total = $1,225,000.00

Cost Per Year = $ 35,000.00

Ed Stefani
Stockton-East Water Dist
PO Box 5157
Stkn CA 95205

Before the Board of Supervisors

County of San Joaquin, State of California

B- 87- 1419

MOTION: SOUSA/CARTER

SEP 24 1987
STOCKTON-EAST WATER DISTRICT

SECOND AMENDED CONTRACT FOR SALE OF TREATED WATER

IT IS HEREBY RESOLVED that the Board of Supervisors approve the Second Amended Contract between Stockton East Water District, California Water Service Company, City of Stockton, and Lincoln Village and Colonial Heights Maintenance Districts and authorize the Chairman of the Board to execute the Contract.

I HEREBY CERTIFY that the above order was passed and adopted on SEP 1 5 1987 by the following vote of the Board of Supervisors, to wit:

AYES: WILHOIT, COSTA, SOUSA, CARTER, BARBER

NOES: NONE

ABSENT: NONE

ABSTAIN:

Copies to:

JORETTA J. HAYDE
Clerk of the Board of Supervisors
County of San Joaquin
State of California

JORETTA J. HAYDE

RESOLUTION NO. 87-88-10

RESOLUTION OF THE BOARD OF DIRECTORS OF THE STOCKTON-EAST WATER DISTRICT APPROVING AND AUTHORIZING EXECUTION OF SECOND AMENDED CONTRACT WITH CITY OF STOCKTON, LINCOLN VILLAGE MAINTENANCE DISTRICT, COLONIAL HEIGHTS MAINTENANCE DISTRICT, AND CALIFORNIA WATER SERVICE COMPANY.

IT IS HEREBY RESOLVED that the Second Amended Contract between the Stockton-East Water District, 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, for a term extending until April 1, 2035, be, and it hereby is, approved.

BE IT FURTHER RESOLVED that the President and Secretary of this Board of Directors be, and they hereby are, authorized and directed to execute said Second Amended Contract on behalf of the STOCKTON-EAST WATER DISTRICT.

PASSED AND ADOPTED this 15th day of September, 1987, by the following vote of the Board of Directors, to wit:

AYES: BOZZANO, DONDERO, HUCKINS, LAVEN, and SOLARI

NOES: TONE

ABSENT: MACNEAR

Roger M. Huckins

ROGER M. HUCKINS, President
Board of Directors
Stockton-East Water District

ATTEST:

EDWARD M. STEFFANI, Secretary
Board of Directors
Stockton-East Water District

I hereby certify that I am the Secretary of the Stockton-East Water District and that the foregoing is a true and correct copy of a resolution which was duly adopted by the vote of the Board of Directors of the Stockton-East Water District shown above on September 15th, 1987.

Dated at Stockton, California, on the 25th day of September, 1987.

EDWARD M. STEFFANI, Secretary
Stockton-East Water District

Exhibit "E"
Sheet 1 of 2

1201-304-001

Resolution No. 87-0508

Exhibit "G"

STOCKTON CITY COUNCIL

RESOLUTION AUTHORIZING THE EXECUTION OF A SECOND AMENDED CONTRACT FOR THE SALE OF TREATED WATER BETWEEN THE CITY OF STOCKTON, STOCKTON EAST WATER DISTRICT, CALIFORNIA WATER SERVICE COMPANY, LINCOLN VILLAGE MAINTENANCE DISTRICT AND COLONIAL HEIGHTS MAINTENANCE DISTRICT

WHEREAS, in order to meet the water needs of the parties hereto, the original contract was made February 11, 1975, and amended May 31, 1977, allocating certain water entitlements among the parties; and

WHEREAS, such agreements were executed in order to protect the groundwater basin in and around the City of Stockton from overdraft and saline intrusion; and

WHEREAS, in order to further those considerations enunciated in the original contracts, it has become necessary to reapportion certain surface water entitlements, and to make provisions for the expansion of certain water conveyance, storage and treatment facilities; now therefore

BE IT RESOLVED BY THE COUNCIL OF THE CITY OF STOCKTON, AS FOLLOWS:

That the Mayor is hereby authorized to execute on behalf of the City of Stockton the Second Amended Four Party Contract attached hereto as Exhibit "A" and by reference made a part hereof.

INTRODUCED SEPTEMBER 14, 1987.

PASSED, APPROVED and ADOPTED this 21st day of September, 1987.

Stockton

Date: Sept. 22, 1987

Frances Hong
City Clerk of the City of Stockton
By Peggy A. Jackson
Deputy

Before the Board of Supervisors

County of San Joaquin, State of California

B- 87-1419

MOTION: SOUSA/CARTER

SECOND AMENDED CONTRACT FOR SALE OF TREATED WATER

IT IS HEREBY RESOLVED that the Board of Supervisors approve the Second Amended Contract between Stockton East Water District, California Water Service Company, City of Stockton, and Lincoln Village and Colonial Heights Maintenance Districts and authorize the Chairman of the Board to execute the Contract.

I HEREBY CERTIFY that the above order was passed and adopted on September 15, 1987 by the following vote of the Board of Supervisors, to wit:

AYES: WILHOIT, COSTA, SOUSA, CARTER, BARBER

NOES: NONE

ABSENT: NONE

ABSTAIN: NONE

JORETTA J. HAYDE
Clerk of the Board of Supervisors
County of San Joaquin
State of California

Joretta J. Hayde

Before the Board of Supervisors

County of San Joaquin, State of California

B- 87-1419

MOTION: SOUSA/CARTER

SECOND AMENDED CONTRACT FOR SALE OF TREATED WATER

IT IS HEREBY RESOLVED that the Board of Supervisors approve the Second Amended Contract between Stockton East Water District, California Water Service Company, City of Stockton, and Lincoln Village and Colonial Heights Maintenance Districts and authorize the Chairman of the Board to execute the Contract.

I HEREBY CERTIFY that the above order was passed and adopted on September 15, 1987 by the following vote of the Board of Supervisors, to wit:

AYES: WILHOIT, COSTA, SOUSA, CARTER, BARBER

NOES: NONE

ABSENT: NONE

ABSTAIN: NONE

JORETTA J. HAYDE
Clerk of the Board of Supervisors
County of San Joaquin
State of California

Joretta J. Hayde

B 12 (2/87)

EXHIBIT A

RECEIVED
MAY - 1 1997
CITY CLERK
CITY OF STOCKTON

WATER TRANSFER AGREEMENT BY AND BETWEEN THE OAKDALE IRRIGATION DISTRICT, SOUTH SAN JOAQUIN IRRIGATION DISTRICT AND STOCKTON EAST WATER DISTRICT, et al.

This Agreement is entered into this first day of April, 1997, between and among the Oakdale Irrigation District ("OID"), the South San Joaquin Irrigation District ("SSJID"), sometimes hereinafter collectively referred to as "Joint Districts;" and Stockton East Water District ("SEWD"), City of Stockton, Lincoln Village Maintenance District, and the Colonial Heights Maintenance District , herein collectively referred to as "Purchasers"; and Central San Joaquin Water Conservation District ("Central"). Joint Districts, Purchasers and Central are collectively referred to hereafter as "Parties".

RECITALS

WHEREAS, Joint Districts, are operating under and by virtue of Division 11 of the California Water Code; and

WHEREAS, SEWD is operating under and by virtue of Chapter 819 of the Statutes of 1971, as amended; and

WHEREAS, the Purchasers desire to purchase water from Joint Districts for M & I and irrigation uses; and

WHEREAS, SEWD intends to deliver the water provided hereunder utilizing the Goodwin Dam Intake structure and other facilities owned and/or financed by the Purchasers; and

WHEREAS, Joint Districts are the owners of certain water rights to the waters of the Stanislaus River; and

WHEREAS, the purpose of this Agreement is to facilitate a long term transfer of water conserved or water otherwise developed by Joint Districts; and

WHEREAS, Joint Districts are currently subject to changing land use patterns for both irrigable and nonirrigable lands, in that irrigated and nonirrigated agricultural lands are being converted to urbanized uses which is anticipated to result in a temporary decline in use of water for agricultural purposes and the long-term demand growing within the area for use of water for urban purposes; and

WHEREAS, due to such changes and due to ongoing conservation practices and improvements in facilities by the Joint Districts, the water to be transferred to the Purchasers by this Agreement, hereinafter referred to as the "Agreement-

PERMANENT

Water," is surplus to the current needs of the landowners and water users of the Joint Districts in accordance with California Water Code section 22259; and

WHEREAS, the quantity and quality of ground water within lands underlying the Purchasers is threatened from over-drafting of ground water in areas of San Joaquin County, including some areas within SEWD; and

WHEREAS, Purchasers intend by this Agreement to (1) obtain additional surface water for their use; (2) cause a reduction in the extraction of ground water; and (3) assist their landowners, water users, and water purveyors in obtaining a safe and reliable water supply; and

WHEREAS, by providing Agreement-Water to the Purchasers pursuant to this Agreement, the Joint Districts intend to (1) keep agriculture viable within their districts and benefit Joint Districts' water users and landowners; (2) safeguard the Joint Districts' ground water and provide for reasonable beneficial uses of available water supplies that may be temporarily available due to land use changes and increased conservation within their districts; (3) continue to maintain and secure these water supplies for the long term benefit of the Joint Districts and the landowners served by them; and (4) provide water determined to be not immediately required for agricultural or beneficial purposes within the Joint Districts to be placed to reasonable beneficial use by the Purchasers.

NOW, THEREFORE, the Parties, on the terms and conditions herein set forth, agree as follows:

AGREEMENT

1. DEFINITIONS: The following definitions shall govern this agreement:

a. "Agreement-Water" is that surface water which is surplus to the current needs of the landowners and water users of the Joint Districts in accordance with California Water Code Section 22259, which is to be transferred to the Purchasers by this Agreement.

b. "Delivery" means that the Agreement-Water is made available to Purchasers at the SEWD Goodwin Tunnel Intake, whether or not Purchasers take and/or store and/or can make use of such water. This definition is intended to include the grammatical variations of the term "delivery" including "deliver" and "delivered", where such term references water.

2. DESIGNATION OF SEWD: The Purchasers designate SEWD to carry out the obligations of Purchasers hereunder, including paying for, receiving, treating, transporting and distributing Agreement-Water purchased hereunder, and paying Purchasers' share of costs as provided herein. In the event that SEWD should fail to comply with any obligation hereunder, Joint Districts shall notify the other Purchasers at least thirty (30) days before terminating this Agreement and offer them the opportunity to cure.

3. TERM: The term of this agreement shall be ten years from the date on which water is first delivered to Purchasers under this agreement, with an option to renew for an additional ten years, upon conditions mutually agreeable to the Parties. Once all approvals are obtained and water is delivered to Purchasers under this Agreement, Purchasers may terminate this Agreement upon two years prior notice after the first five years.

4. AGREEMENT TO TRANSFER: The Joint Districts will annually sell and deliver Agreement-Water for reasonable and beneficial uses in the quantities described and subject to the terms and conditions of this Agreement. Agreement-Water will be used within the boundaries of Purchasers and Central, except that Purchasers may sell the water for use outside their boundaries according to the provisions of Paragraph 25.

5. QUANTITY: a) Joint Districts agree to sell and deliver to Purchasers 30,000 acre-feet of water in years in which the United States Bureau of Reclamation's forecast of inflow to New Melones Reservoir ("forecast") equals 500,000 acre-feet or more; 12,500 acre-feet if the forecast is between 450,000 and 499,000 acre-feet, and 8,000 acre-feet if the forecast is less than 450,000 acre-feet.

b) The amount of Agreement-Water is based on the water supply forecast in April of each year. The Agreement-Water shall be delivered over a water year commencing on October 1 and terminating on September 30 of succeeding year.

6. DELIVERY OBLIGATIONS OF OID AND SSJID: It is understood that OID and SSJID shall each contribute one-half of the Agreement-Water to be transferred to Purchasers pursuant to this Agreement, and neither shall be responsible for the other district's inability to deliver its share of Agreement-Water in any year. If a shortage occurs under Paragraph 16 which is such that one of the Districts is no longer able to meet its obligations in this Agreement for the duration of the term hereof, the other District may, but is not obliged to, deliver water to make up the shortage. SEWD's payment obligation shall not be affected if one of the Joint Districts shall deliver Agreement-Water on behalf of the other, and Joint Districts shall determine the division of payments between themselves by separate agreement.

7. PURCHASE PRICE: In years in which the forecast equals or exceeds 450,000 acre-feet, SEWD shall pay Joint Districts $55 per acre-foot of water delivered by Joint Districts, whether Purchasers take the water or not. If Joint Districts provide reduced deliveries pursuant to one or more of the provisions this Agreement, SEWD shall pay only for water actually delivered. In years in which the forecast is less than 450,000 acre-feet, and only 8,000 acre-feet are delivered, Purchasers shall pay $90 per acre-foot.

8. ANNUAL CHANGES TO PURCHASE PRICE: a) The purchase price shall be adjusted based on changes to the Consumer Price Index as shown as the

urban wage earners and clerical workers, U.S. City average (CPI-W)("Index")for the twelve month period concluding with the August CPI index of each preceding year. Effective October 1 of each year, following the initial delivery of water, the base purchase price shall be modified, whether an increase or decrease in price, based on the same percentage that the Index as published in August of such year has changed, whether higher or lower, as compared to the Index published in August of the preceding year, provided, however, that the increase shall not exceed 5 per cent in any year and provided further that the purchase price shall at no time be based on a per acre-foot price of less than $55 per acre-foot for water sold to Purchasers or $15 for water sold to Central.

b) If the Index is discontinued or revised during the term, such other index or computation with which it is replaced shall be used in order to obtain substantially the same result as would be obtained if the Index had not been discontinued or revised, and in the absence of such a comparable replacement index, the Parties shall mutually determine a comparable replacement index.

9. PAYMENTS: a) Joint Districts shall bill SEWD and Central monthly for the water delivered in the preceding month. SEWD and Central shall pay within thirty days of receipt of the invoice.

b) All payments to be made by SEWD pursuant to this Agreement will be made one-half to SSJID and one-half to OID. The respective payments will be made to:

South San Joaquin Irrigation District
11011 E. Highway 20
Manteca, California 95336

Oakdale Irrigation District
1205 East "F" Street
Oakdale, California 95361

10. INTEREST: SEWD shall pay the Joint Districts interest at the annual interest rate of 10% on any charges that remain unpaid thirty (30) days beyond the due date.

11. BILLING "YEAR" DEFINED: For billing and forecasting purposes, each new year under this Agreement shall run concurrently with the "water year," defined as October 1 through September 30 of the following calendar year.

12. WATER QUALITY: The Joint Districts make no warranty or representations as to the quality or fitness for use of Agreement-Water sold and delivered to SEWD. SEWD shall be responsible for all necessary measures at its own expense for the testing, treatment, and other steps required for the intended uses of the Agreement-Water by the Purchasers.

13. WATER MEASUREMENT: The Agreement-Water will be measured by Joint Districts pursuant to the provisions of paragraphs 6.1-6.4, inclusive, of the

March 23, 1990, agreement by and between the County of San Joaquin, City of Stockton, OID, SSJID, Goodwin Tunnel Financing Authority, and SEWD (hereinafter, the "Goodwin Agreement").

14. LIMITING CONDITIONS: The Joint Districts' obligations hereunder and the Delivery Provisions will, at all times, be subject and subordinate to the following conditions: (1) the terms and conditions of their water rights; (2) the 1988 Agreement and Stipulation (the "1988 Agreement") with the United States Bureau of Reclamation (the "Bureau"), as it now exists and as modified from time to time; (3) the Tulloch Enhancement Agreement with PG&E, as it now exists and as modified from time to time; (4) the Goodwin Agreement, as it now exists and as modified from time to time; (5) the terms and conditions of Federal Energy Regulatory Commission licenses, as they now exist, and as they may be amended and/or renewed upon relicensing including, but not limited to, those held for Tulloch and Goodwin Dams; (6) the rights of landowners, within the boundaries of OID or SSJID as of the initial delivery of Agreement-Water hereunder, to the beneficial use of their respective district's water; (7) applicable federal and state laws now in existence and as modified from time to time, affecting the Joint Districts' rights or obligations, and (8) the rights of the cities of Lathrop, Manteca, Escalon and Tracy pursuant to Water Supply Development Agreement with SSJID. The conditions described in 1-8, inclusive, above, are collectively referred to as the "Limiting Conditions." Nothing in Exhibit A or in this Agreement shall be construed so as to contradict, conflict with or otherwise be contrary to the provisions of any of the Limiting Conditions; and in the event of any conflict between any of the Limiting Conditions and this Agreement, the Limiting Condition(s) shall control, and Joint Districts shall not be deemed to be in violation of this Agreement by any modifications of the agreement, including reduced supply for SEWD, required to ensure compliance with any of the Limiting Conditions.

15. AGREEMENT-WATER DELIVERY: Joint Districts will deliver Agreement-Water to Purchasers in the amounts listed in Paragraph 5 in each and every year of this Agreement, subject to the changes, limitations and other provisions in this Agreement. Joint Districts will deliver Agreement-Water in accordance with the schedule in Exhibit A to this Agreement ("Delivery Schedule"), provided that the Parties may jointly agree to variations on the Delivery Schedule. Purchasers may presume that water is available at the Goodwin Tunnel Intake in the amounts listed in Paragraph 5 based upon the April 1 forecast and according to the Delivery Schedule, and may divert such amounts at the Goodwin Tunnel Intake, unless Joint Districts notify them of a reduction pursuant to one or more of the provisions of this Agreement. Joint Districts shall give Purchasers at least 60 days notice prior to imposing a reduction.

16. WATER SUPPLY REDUCTIONS: Water supply to be delivered to SEWD under this Agreement may be reduced by Joint Districts for any of the following reasons: the Limiting Conditions; failure of facilities; intervening acts, including litigation and stream adjudication brought by third parties, or actions of any state or federal agency exercising jurisdiction or claiming an interest and/or right to reduce and/or modify operations and/or quantities of water otherwise available to the Joint

Districts; diversions which may hereafter be authorized for others from the North, Middle or South Forks of the Stanislaus River, and any action, legislation, ruling or determination adverse to the Joint Districts affecting the Agreement and beyond the reasonable control of the Joint Districts. Joint Districts shall make good faith efforts to oppose such reductions, but Purchasers agree that Joint Districts shall not be liable for reductions of supply in this Agreement due to such causes. In the event of a reduction of supply caused by factors listed in this Paragraph, Purchasers shall pay only for water actually delivered.

17. DIVERSION COSTS: In accordance with the Goodwin Agreement, all permitting, construction, reconstruction, and maintenance costs for facilities necessary or used to divert Agreement-Water from the Goodwin Pool and those which are necessary to accomplish the measurement of Agreement-Water shall be borne solely by SEWD. SEWD is solely responsible for all costs associated with treatment, diversion headworks, pumping facilities, etc., to divert, convey, transport, treat, and deliver Agreement-Water to the Purchasers.

18. WATER RIGHTS: If approval of the transfer from Joint Districts to Purchasers is not sought from the State Water Resources Control Board, Joint Districts shall inform Purchasers of any approvals which Joint Districts consider necessary and of the process they will follow to obtain any necessary approvals, and provide a justification for the process selected or for the conclusion that no approvals are required.

19. ENVIRONMENTAL REVIEW: Joint Districts will be the lead agencies for purposes of the California Environmental Quality Act. Expenses of environmental review and approval will be split equally between the Purchasers and Joint Districts. An Oversight Committee composed of 4 representatives from the Purchasers and 4 representatives from the Joint Districts shall approve in advance and monitor the scope of environmental work and the selection of consultants to perform the work.

20. TERMINATION: The Parties to this agreement shall have the right of termination as set forth in this paragraph.

A. Joint Districts:

(1) If regulatory approvals and final CEQA action are not satisfied by December 31, 1998, either OID or SSJID may, by written notice to the other Parties, cancel this agreement.

(2) Should the State Water Resources Control Board, the United States Bureau of Reclamation, the United States Corps of Engineers, or any other state or federal agency or any state or federal court, excercising jurisdiction over this Agreement and/or the operations of Joint Districts or their water rights, impose any requirements, limitations, operational restrictions, fees, charges, costs, water rights restrictions or operating criteria upon the Joint Districts in whole or in part as a result of the transfer of Agreement-Water under this

Agreement, then Joint Districts may, in their sole and unlimited discretion, determine that compliance with such regulatory action is not in the interest of the Joint Districts, and terminate this Agreement. Written notice shall be provided to the other Parties.

(3) If, in the judgment of either of the Joint Districts, the costs of litigation, the restrictions imposed in the approvals of any regulatory agency, mitigation measures imposed by any agency pursuant to the California Environmental Quality Act, or any relief afforded to plaintiffs in an action brought in State of Federal Court involving this Agreement are too burdensome in relation to the benefits to be received under this Agreement, then either OID or SSJID may terminate this Agreement.

B. Purchasers.

(1) If regulatory approvals and final CEQA action are not satisfied by December 31, 1998, any Purchaser may, by written notice to the other Parties, cancel this agreement.

(2) Should the United States Corps of Engineers, the United States Fish and Wildlife Service, or any other state or federal agency or any other state or federal agency or any state or federal court, exercising jurisdiction over this Agreement and/or Purchasers' operations of the Goodwin Tunnel and related conveyance facilities, impose any requirements, limitations, operational restrictions, fees, charges, costs, or operating criteria upon the Purchasers in whole or in part as a result of the transfer of Agreement-Water under this Agreement, then Purchasers, in their sole and unlimited discretion, may determine that compliance with such regulatory action is not in the interest of the Purchasers, and terminate this Agreement. Written notice shall be provided to the other Parties.

(3) If, in the judgment of any Purchaser, the costs of litigation, regulatory review, compliance with regulatory conditions, CEQA compliance and/or mitigation, or relief afforded to plaintiffs in an action brought in State or Federal Court involving this Agreement are too costly in relation to the benefits to be received, then any Purchaser may terminate this Agreement.

C. Notice. A Party shall give 30 days advance written notice to all other Parties prior to terminating this Agreement. Prior to giving such notice, the Party electing to terminate pursuant to this provision shall have met and conferred with representatives of the other Parties to discuss the concerns.

In the event of termination under this paragraph, the Parties shall thereafter be under no further obligation or responsibility hereunder and will

release each other from further obligations under this Agreement, except for their respective shares of costs incurred prior to the effective date of termination.

21. REGULATORY AND LITIGATION COSTS: Joint Districts will defend their own interests in any litigation or regulatory action challenging the validity of Joint Districts' water rights. The Parties shall each defend their own interests in litigation or regulatory action involving this Agreement, including environmental compliance and transferability of the water. Any attorney fees and/or costs awarded in CEQA litigation to a person or entity not a party to this contract shall be split equally between Joint Districts and Purchasers.

22. CONDITIONS TO DELIVERY OF WATER: It is a condition to the obligations of Joint Districts to deliver water to Purchasers and to the obligation of Purchasers to pay for Agreement-Water that the following conditions be met:

Environmental Compliance. Adoption of a certified EIR pursuant to the requirements of the California Environmental Quality Act.

Other Approvals. The Joint Districts shall obtain such other state and/or federal regulatory approval for this transfer as are agreed upon by the Parties. Joint Districts and Purchasers shall split equally the cost of obtaining any regulatory approvals to which Purchasers have consented.

23. COOPERATION: To the extent reasonably required, each Party to this Agreement shall, in good faith, assist the other in obtaining all such necessary approvals and preparation of required environmental documents. The Parties agree to cooperate and assist each other in good faith in meeting such requirements of regulatory agencies as may be applicable to performance of any terms of the Agreement.

24. RIGHT TO SUSPEND DELIVERIES: In addition to any other remedy available, Joint Districts may suspend deliveries under this Agreement if any of the following shall occur:

Nonpayment. SEWD has failed to make any payment required by this Agreement. If SEWD contests such obligation or payment, it shall pay the amount due under protest to Joint Districts and invoke the procedures of Paragraph 31 as a condition of continued delivery. Prior to terminating for nonpayment by SEWD, Joint Districts shall give notice to all Purchasers and give them 30 days to make the payment.

Breach of Goodwin Agreement. Purchasers, or any of them, are determined by an arbitrator or court to be in breach of any of their obligations, covenants or responsibilities in the Goodwin Agreement.

25. RESALE: Purchasers may resell the water delivered to them under this Agreement. If the resale price exceeds the price paid by Purchasers to Joint Districts under this Agreement, and Purchasers incur actual costs in wheeling water to their buyer through Goodwin Tunnel and related conveyance facilities, Purchasers shall pay to Joint Districts one half the amount by which the resale price net of those actual costs exceeds the purchase price under this Agreement. If the water is delivered to the buyer via releases to the Stanislaus River, Joint Districts shall cooperate in making such releases, and Purchasers shall pay to Joint Districts one half the amount by which the gross resale price exceeds the purchase price under this Agreement.

26. STORAGE IN NEW MELONES: Joint Districts will not object if Purchasers request the United States Bureau of Reclamation to store Agreement-Water for use in subsequent years, provided that : (1) Purchasers use their stored water first in any given year, (2) Joint Districts are not injured, and (3) Purchasers' stored water spills before any water stored by Joint Districts. Should Purchasers obtain a written agreement with the United States to store Agreement-Water, Purchasers and Joint Districts shall mutually agree to any amendments to this Agreement required to confirm the timing of delivery of such stored water. It is agreed that payment for stored water shall be made by Purchasers to Joint Districts at the time of storage, and that election to store water in any given year shall be made on or before May 1 of that year.

27. WAIVER OF RIGHTS: Any waiver, at any time, by any Party of its rights with respect to a breach or default, or any other matter arising in connection with this Agreement, shall not be deemed to be a waiver with respect to any other breach, default or matter.

28. ASSIGNMENT: This Agreement is entered into in reliance on water supplies available to Joint Districts and the need and credit of Purchasers, as well as the desire of the Parties to assist in alleviating water shortage problems in San Joaquin County, and therefore, any attempted assignment of this Agreement in whole or in part without the prior written consent of all Parties hereto is void.

29. 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 signed for by OID, SSJID and Purchasers by such officers as they may, from time to time, authorize in writing to so act.

Any notices to Parties required by this Agreement shall be delivered or mailed, United States first-class postage prepaid, addressed as follows:

OAKDALE IRRIGATION DISTRICT
General Manager/Secretary
Oakdale Irrigation District
1205 East "F" Street
Oakdale, CA 95361

SOUTH SAN JOAQUIN IRRIGATION DISTRICT
General Manager/Secretary
South San Joaquin Irrigation District
11011 East Highway 120
Manteca, CA 95336

STOCKTON EAST WATER DISTRICT
General Manager/Secretary
Stockton East Water District
PO Box 5157
Stockton, CA 95207-0157

COUNTY OF SAN JOAQUIN
c/o Clerk, Board of Supervisors
Board of Supervisors
222 East Weber Avenue
Stockton, CA 95202

CITY OF STOCKTON
c/o City Clerk
City Hall
Stockton, CA 95202

CENTRAL SAN JOAQUIN WATER
CONSERVATION DISTRICT
311 East Main Street, Suite 202
Stockton, CA 95202

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.

30. APPROVALS: Where the terms of this Agreement provide for action to be based upon a judgment, approval, review or determination of any Party, such terms are not intended to be and shall never be construed as permitting such opinion, judgment, approval, review, or determination to be arbitrary, capricious or unreasonable.

31. ARBITRATION: In the event of a dispute between the Parties as to any right, alleged right, obligation or alleged obligation under this Agreement, the Parties shall make a good faith effort to resolve the dispute. In the event that a resolution of the dispute cannot be reached despite these efforts, any Party may declare an impasse and its intent to submit the matter to arbitration. Any such arbitration shall be held and conducted before one arbitrator who shall be selected by mutual agreement of the Parties. If agreement is not reached on the selection of an arbitrator within fifteen (15) days after a Party has notified the other Parties of its election to submit an issue to arbitration, then such arbitrator shall be appointed by the presiding judge of the superior court of Stanislaus County upon application of either Party hereto. The award or decision of the arbitrator shall be final and judgment may be entered thereon. The provisions of Title 9 of Part 3 of the California Code of Civil Procedure, including Section 1283.05, and successor statutes, permitting expanded discovery proceedings shall be applicable to all disputes which are arbitrated pursuant to this paragraph.

32. OTHER AGREEMENTS: Nothing contained herein restricts the Joint Districts from providing water services and sales to others as authorized by law which do not unreasonably interfere with Joint Districts' obligation hereunder.

33. ENTIRE AGREEMENT: This Agreement constitutes the entire Agreement between the Joint Districts and Purchasers and supersedes any oral agreement, statement or promise between them relating to the subject matter of the Agreement. Any amendment, including oral modifications, must be reduced to writing and signed by all Parties to be effective.

34. GOODWIN AGREEMENT: This Agreement amends the Goodwin Agreement to the extent necessary to permit the Parties to carry out the terms hereof. Joint Districts specifically agree that the license granted Purchasers by Section 2.1 of the Goodwin Agreement shall be deemed to enable Purchasers to take delivery of water made available by Joint Districts under this Agreement; in addition, the license granted Purchasers by Section 2.1 of the Goodwin Agreement shall be deemed to enable Purchasers to wheel water made available to Central under this Agreement pursuant to written agreement between Purchasers and Central. The Parties do not, however, intend to modify, alter, rescind, change or waive any of the terms and conditions of the Goodwin Agreement with respect to any other water.

35. DELIVERY OF WATER BY SSJID TO CENTRAL: SSJID agrees to make available to Central up to 15,000 acre-feet of Water over and above the amounts delivered to Purchasers pursuant to Paragraph 5, subject to all of the terms and conditions of this Agreement applicable to delivery of water by Joint Districts to Purchasers except to the extent they are inconsistent with the terms and conditions in this paragraph, and to the following additional terms conditions:

A. Conditions to Initial Delivery of Water. The following conditions must be satisfied prior to SSJID making Agreement-Water available to Central:

(1) Central's preparation of an initial plan of the proposed distribution facilities and a map showing the areas within Central which will be served. The initial plan is to be completed within four months of the date of this Agreement.

(2) Acceptance of the initial plan by SSJID's Board of Directors within 30 days of receipt. It is understood that one of SSJID's purposes in proposing to deliver water to Central is to improve groundwater levels within SSJID by reducing the use of groundwater within areas of Central which border on SSJID. SSJID will determine from the initial plan whether the proposed project will adequately serve those portions of Central which either share a common boundary with SSJID or which are adjacent to such areas, and which consist of approximately 6,000 acres.

(3) Central shall deliver to SSJID written evidence of Central's right to take delivery of water whether through the Goodwin Tunnel Facility or through other means acceptable to SSJID within six months of the date of this Agreement.

(4) Central's preparation of a study of the physical and financial feasibility of transporting water to Central and distributing the water within Central utilizing the Goodwin Tunnel. The completed study is to be prepared at Central's expense, is to be consistent with the initial plan approved by SSJID, and is to be delivered to SSJID within one year of the date of this Agreement. The study is to include a detailed description of the necessary distribution facilities; a schedule of the times and rates of diversion of water at Goodwin Tunnel; an estimate of the losses anticipated from diversion at Goodwin Tunnel until application within Central; a cost breakdown for the project showing the estimated cost for permits, approvals, environmental compliance, construction, and conveyance; a time estimate for construction; the method for payment of the facilities; and the final estimated cost to users for delivered water.

(5) Acceptance of the feasibility study by SSJID's Board of Directors within 60 days of receipt.

(6) Central's preparation of the initial plan and the feasibility plan is not subject to any required action on the part of the Joint Districts.

(7) Completion of the facilities by Central at its expense pursuant to the feasibility study within one year from the date that all conditions to delivery of Water to Purchasers are satisfied.

(8) If any one of the above conditions is not satisfied by the specified date, all obligations of SSJID to Central in this paragraph are terminated.

B. General Provisions Applicable to Delivery

(1) SSJID has no obligation to make Water available to Central in any year unless the United States Bureau of Reclamation's April 1 forecast of inflow to New Melones exceeds 600,000 acre-feet.

(2) The quantities of water to be made available by SSJID are subject to reduction pursuant to the other provisions of this Agreement.

(3) It is understood Water made available to Central pursuant to this paragraph 35 is the obligation, subject to all of the terms of this Agreement, of SSJID alone.

(4) Central shall use Water made available by SSJID for irrigation purposes only and within Central alone. Central shall make water available to those areas which can be effectively served by the facilities constructed pursuant to the feasibility study and if additional water is still available after needs within those areas are satisfied, to other areas within Central.

(5) Central shall pay SSJID $15.00 per acre-foot for Water made available pursuant to this Agreement. The purchase price is subject to the adjustment provisions of Paragraph 8.

(6) Central agrees to perform all of the other covenants of Purchasers or of SEWD in the Agreement which are applicable to delivery of Agreement-Water by Joint Districts, except as is otherwise provided in this paragraph.

(7) Subject to the changes, limitations and other provisions in this Agreement, SSJID will make water available to Central according to the schedule set forth in Exhibit A.

No breach or termination of this Paragraph or failure of any of the conditions in this Paragraph shall affect the remainder of this Agreement.

36. EFFECTIVE DATE: The effective day and date of this Agreement shall be the day and date first above written.

37. COUNTERPARTS: This Agreement may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. This Agreement shall not be effective until the execution and delivery between each of the Parties of at least one set of counterparts. The Parties authorize each other to detach and combine original signature pages and consolidate them into a single identical original. Any one of such completely executed counterparts shall be sufficient proof of this Agreement.

38. GENERAL INTERPRETATION: The terms of this Agreement have been negotiated by the Parties hereto and the language used in this Agreement shall be deemed to be the language chosen by the Parties hereto to express their mutual intent. This Agreement shall be construed without regard to any presumption or rule requiring construction against the Party causing such instrument or any portion thereof to be drafted, or in favor of the Party receiving a particular benefit under the agreement. No rule of strict construction will be applied against any person.

OAKDALE IRRIGATION DISTRICT, a political subdivision of the State of California

By _____
Title President, Board of Directors

ATTEST:

_____
Secretary

APPROVED AS TO FORM:

_____
General Counsel for Oakdale Irrigation District

SOUTH SAN JOAQUIN IRRIGATION DISTRICT, a political subdivision of the State of California

By _____

Title Board President

ATTEST: _____

Richard Martin

Secretary

APPROVED AS TO FORM:

_____

General Counsel for South San Joaquin Irrigation District

STOCKTON EAST WATER DISTRICT, a political subdivision of the State of California

By Dero Giannecchini
Title Board President

ATTEST:

Secretary

APPROVED AS TO FORM:

General Counsel for Stockton East Water District

LINCOLN VILLAGE MAINTENANCE DISTRICT, a political subdivision of the State of California governed by the Board of Supervisors of San Joaquin County

By _____
EDWARD A. SIMAS, Chairman
Board of Supervisors of LVMD

ATTEST: LOIS M. SAHYOUN
Clerk of the Board of Supervisors
of the County of San Joaquin,
State of California

By _____ SEAL
Deputy Clerk

APPROVED AS TO FORM:
TERRENCE R. DERMODY
County Counsel

By _____

COLONIAL HEIGHTS
MAINTENANCE DISTRICT, a
political subdivision of the State of
California governed by the Board of
Supervisors of San Joaquin County

By _____
EDWARD A. SIMAS, Chairman
Board of Supervisors of CHMD

ATTEST: LOIS M. SAHYOUN
Clerk of the Board of Supervisors
of the County of San Joaquin,
State of California

By: _____ (SEAL)
Deputy Clerk

APPROVED AS TO FORM:
TERRENCE R. DERMODY
County Counsel

By _____

CITY OF STOCKTON, a political subdivision of the State of California

By _____

Title City Manager

ATTEST:

_____

~~Secretary~~ ASSISTANT CITY CLERK

APPROVED AS TO FORM:

_____

City Attorney of the City of Stockton

CENTRAL SAN JOAQUIN WATER
CONSERVATION DISTRICT

By _____
Title President

APPROVED AS TO FORM:

_____
General Counsel for Central San
Joaquin Water Conservation District

ATTEST:

_____
Secretary

EXHIBIT A
Delivery Schedule

	SEWD			CENTRAL	
MONTH	AF	AVE DCFS	MAX D CFS	AF	AVE DCFS
January	1000	17	34	0	
February	1000	17	34	0	
March	1000	17	34	0	
April	3000	50	100	2000	33
May	4000	66	130	2000	33
June	4000	66	130	3000	50
July	4000	66	130	3000	50
August	4000	66	130	3000	50
September	3000	50	100	2000	33
October	2000	33	66	0	
November	2000	33	66	0	
December	1000	17	34	0	
TOTALS	30000 AF	498	998	15000	249

OID and SSJID shall deliver the average daily cfs to the Goodwin Tunnel intake unless notified otherwise by purchasers pursuant to paragraph 15 of the agreement.

12/12/96

EXHIBIT D

RESOLUTION TD-99-04
JOINT RESOLUTIONS
OF
SOUTH SAN JOAQUIN IRRIGATION DISTRICT
AND
OAKDALE IRRIGATION DISTRICT

CERTIFYING ENVIRONMENTAL IMPACT REPORT FOR WATER TRANSFER PROJECT

WHEREAS, South San Joaquin Irrigation District (SSJID) and Oakdale Irrigation District (OID) have proposed to transfer up to 30,000 acre-feet of surface water annually over a 10-year period through existing conveyance facilities to the Stockton East Water District and its customers, the City of Stockton and the Lincoln Village and Colonial Heights Maintenance Districts ("Water Transfer Project.")

WHEREAS, SSJID and OID as lead agencies prepared and circulated a draft Environmental Impact Report (DEIR) dated March 1999 regarding the Water Transfer Project, in accordance with the California Environmental Quality Act (Public Resources Code §21000 et seq.; "CEQA").

WHEREAS, SSJID and OID have reviewed the DEIR, and the analysis of potential environmental impacts from the Water Transfer Project described in the DEIR, and concur with the findings in the DEIR that there are no significant environmental impacts from the Water Transfer Project.

WHEREAS, SSJID and OID have jointly prepared and circulated responses to comments and recommendations received on the DEIR, in accordance with CEQA.

WHEREAS, changes to the DEIR are not necessary for it to satisfy CEQA as a result of the comments and recommendations received.

WHEREAS, SSJID and OID have jointly prepared a final Environmental Impact Report which consists of the DEIR, all comments and recommendations received on the DEIR and the list of persons, organizations and public agencies that have commented on the DEIR and the responses of SSJID and OID to the comments and recommendations received on the DEIR ("Final EIR").

WHEREAS, SSJID and OID have each reviewed and considered the information in the Final EIR before deciding whether to carry out the Water Transfer Project.

WHEREAS, SSJID and OID each find that the Final EIR has been completed in compliance with CEQA.

WHEREAS, SSJID and OID each find that the Final EIR reflects their respective independent judgments.

WHEREAS, SSJID and OID make as part of their findings all of the analysis and findings in the Final EIR.

NOW THEREFORE, BE IT RESOLVED that the Board of Directors of South San Joaquin Irrigation District and the Board of Directors of Oakdale Irrigation District each take the following actions:

1. Make the findings set forth above, each of which is found to be true.

2. Adopt the Final EIR.

3. Incorporate all of the findings in the Final EIR into the record of their adoption of the Final EIR and their decision to carry out the Water Transfer Project.

4. Find that the Water Transfer Project will not cause any significant environmental impacts.

5. Elect to carry out the Water Transfer Project beginning October 1, 1999.

6. Direct the general managers of each district to execute a Notice of Determination as to the actions set forth above in the form presented at this meeting with such changes as are acceptable to the general managers, to file a Notice of Determination with the County Clerks of Stanislaus, Calaveras, Tuolumne and San Joaquin Counties for posting for a thirty day period in accordance with CEQA and to file a copy of the Notice of Determination with the State Clearinghouse.

7. Direct that any required filing fee for filing the Notice of Determination, including any fee due the Department of Fish and Game, be paid.

8. That the documents and other materials that constitute the record of the proceedings regarding the Final EIR for the Water Transfer Project adopted by San Joaquin Irrigation District and Oakdale Irrigation District is available at:

South San Joaquin Irrigation District 11011 E. Highway 120 Manteca, CA 95336	Oakdale Irrigation District 1205 East "F" Street Oakdale, CA 95370

PASSED AND ADOPTED this 27th day of July 1999, by the following roll call vote:

OAKDALE IRRIGATION DISTRICT

AYES:	Burtschi, Francis, Webb, Taro
NOES:	
ABSENT:	Price
ABSTAIN:	

SOUTH SAN JOAQUIN IRRIGATION DISTRICT

AYES:	DeGroot, Kamper, Schulz, Haworth
NOES:	
ABSENT:	Roos
ABSTAIN:	

OADKALE IRRIGATION DISTRICT -
SOUTH SAN JOAQUIN IRRIGATION DISTRICT -
TRI-DAM PROJECT

OAKDALE IRRIGATION DISTRICT

Vice President, Henry Burtschi

Secretary, Wayne Marcus

SOUTH SAN JOAQUIN IRRIGATION DISTRICT

Vice President, Dave Kamper

Secretary, Richard Martin

EXHIBIT E

City of Stockton

Findings for the

Oakdale and South San Joaquin Irrigation District

Water Transfer Project

Containing

- Issue/Impact and Mitigation Measures
- Findings

CITY OF STOCKTON

CEQA FINDINGS AND MITIGATION MONITORING/REPORTING PROGRAM

(PURSUANT TO CALIFORNIA PUBLIC RESOURCES CODE SECTIONS 21081 AND 21081.6)

PROJECT DATA

INITIAL STUDY FILE NO.: IS12-99 (or) EIR FILE NO.: ER

State Clearinghouse No.: SCH#97122035 (If submitted to Clearinghouse)

Related File No.(s):

Property Owner(s): Oakdale and South San Joaquin Irrigation Districts, City of Stockton East Water District for San Joaquin County

Address: Water Transfer involves portions of San Joaquin, Calaveras, Stanislaus and Tuolumne Counties

Zip Phone ( )

Project Applicant: South San Joaquin Irrigation District and Oakdale Irrigation District

Contact Person: Dean Ruiz, Assistant Planner

Address: 325 N. El Dorado Street

Stockton Zip 95202 Phone (209) 937-8266

Project Title: Water Transfer Project of the South San Joaquin Irrigation District and Oakdale Irrigation District

Address: Counties of San Joaquin, Stanislaus, Tuolumne and Calaveras

Project Description/Location: South San Joaquin Irrigation District and Oakdale Irrigation district have proposed to transfer up to 30,000 acre-feet of surface water annually over a 10-year period through existing conveyance facilities to the Stockton East Water District and its customers, the City of Stockton and the Lincoln Village and Colonial Heights Maintenance Districts ("Project").

KEY

1. The impacts are shaded and followed by related mitigation measures, implementation and monitoring provisions, and findings.
2. Abbreviations: N/A=(Not Applicable); COS=(City of Stockton); ODS=(Owners, Developers and/or Successors-in-Interest); CDD=(Community Development Department); CD-P=(Community Development-Planning Division); CD-B=(Community Development-Building Division); PW=(Public Works Department); CM=(City Manager); CA=(City Attorney); P&R=(Parks and Recreation Department); HR=(Housing and Redevelopment Department); MUD=(Municipal Utilities Department); FD=(Fire Department); PD=(Police Department); PC=(Planning Commission); CC=(City Council); SJC=(San Joaquin County); ALUC=(Airport Land Use Commission).
3. Related Notes:

FINDINGS AND LEVEL OF SIGNIFICANCE AFTER MITIGATION

Findings for significant and potentially significant impacts identified in the Final EIR or Negative Declaration/Initial Study are listed as follows:

1. Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect identified in the Final EIR or Negative Declaration/Initial Study, or
2. Such changes or alterations are within the responsibility and jurisdiction of another public agency and not the City of Stockton. Such changes have been adopted by such other agency, or
3. The City of Stockton is adopting, or has previously adopted, specific economic, social, or other considerations which make infeasible the mitigation measures and project alternatives identified in the Final EIR or Negative Declaration/Initial Study.

The level of significance (LS) of each impact after mitigation is listed as: S= (significant), PS=(potentially significant), SU=(significant and unavoidable), or NS=(not significant). The basis for Finding 1 and/or 2 is provided in applicable sections of the Final EIR or Negative Declaration/Initial Study and any basis for Finding 3 (Statement of Overriding Considerations) is attached or enclosed with this document.

RESPONSIBLE AGENCY

CITY OF STOCKTON

c/o Community Development Dept./Planning Division

345 North El Dorado Street, Stockton, CA 95202-1997

(209) 937-8266

(DATE FINDINGS/MONITORING PROGRAM ADOPTED)

ISSUE/IMPACT AND MITIGATION MEASURES	MITIGATION MONITORING/REPORTING RESPONSIBILITY AND TIMING	SIGNIFICANCE OF FINDINGS/LS AFTER MITIGATION
4.1 WATER RESOURCES		
Issue 4.1.1: Implementation of the proposed project would result in a decrease of return flows to the Stanislaus River which would result in a reduction in water levels.	N/A	LS
No mitigation required.		
Issue 4.1.2: Implementation of the proposed project would result in a decrease of return flows to the Stanislaus River which would result in a reduction in water levels in the San Joaquin River.	N/A	LS
No mitigation required.		
Issue 4.1.3: Implementation of the proposed project would result in a decrease of return flows to the Stanislaus River that would result in exceedences of TDS water quality standards which could adversely affect agricultural productivity of downstream water users.	N/A	LS
No mitigation required.		
Issue 4.1.4: Implementation of the proposed project includes additional groundwater pumping which would result in a reduction of groundwater supplies in the Modesto Groundwater Basin.	N/A	LS
No mitigation required.		
Issue 4.1.5: Implementation of the proposed project includes additional groundwater pumping which would result in a reduction of groundwater levels in the Modesto Groundwater Basin which could result in a decrease in groundwater quality.	N/A	LS
No mitigation required.		
Issue 4.1.6: Implementation of the proposed project in combination with cumulative diversions on the Stanislaus and San Joaquin Rivers would result in a decrease of return flows which would result in a reduction in water levels.	N/A	LS
No mitigation required.		
Issue 4.1.7: Implementation of the proposed project in combination with cumulative diversions on the Stanislaus and San Joaquin Rivers would result in a decrease of return flows which would result in exceedences of TDS water quality standards which could adversely affect agricultural productivity of downstream water users.	N/A	LS
No mitigation required.		
Issue 4.1.8: Cumulative increases in groundwater pumping including the proposed project of the Eastern San Joaquin County Groundwater Basin and the Modesto Groundwater Basin would lower groundwater levels which could adversely effect the amount and quality of groundwater.	N/A	LS
No mitigation required.		

ISSUE/IMPACT AND MITIGATION MEASURES	MITIGATION MONITORING/REPORTING RESPONSIBILITY AND TIMING	SIGNIFICANCE OF FINDINGS/LS AFTER MITIGATION
4.2 FISHERIES		
Issue 4.2-1: Implementation of the proposed project would result in a decrease of return flows to the Stanislaus River which could affect fisheries habitat.	N/A	LS
No mitigation required.		
Issue 4.2-2: Implementation of the proposed project would result in a decrease of return flows to the Stanislaus River which would result in elevated temperatures which could affect juvenile salmonids.	N/A	LS
No mitigation required.		
Issue 4.2-3: Implementation of the proposed project would result in a decrease of return flows to the Stanislaus River which would result in elevated TDS levels which could affect resident and migratory fish.	N/A	LS
No mitigation required.		
Issue 4.2-4: Implementation of the proposed project in combination with cumulative diversions on the Stanislaus and San Joaquin Rivers would result in a decrease of flows to the San Joaquin River which could affect fisheries habitat.	N/A	LS
No mitigation required.		
Issue 4.2-5: Implementation of the proposed project in combination with cumulative diversions on the Stanislaus and San Joaquin Rivers would result in a decrease of return flows to the San Joaquin River which would result in elevated temperatures which could affect resident warm water fish.	N/A	LS
No mitigation required.		
Issue 4.2-6: Implementation of the proposed project in combination with cumulative diversions on the Stanislaus and San Joaquin Rivers would result in a decrease of return flows to the San Joaquin River which would result in elevated level of TDS which could affect resident and migratory fish.	N/A	LS
No mitigation required.		

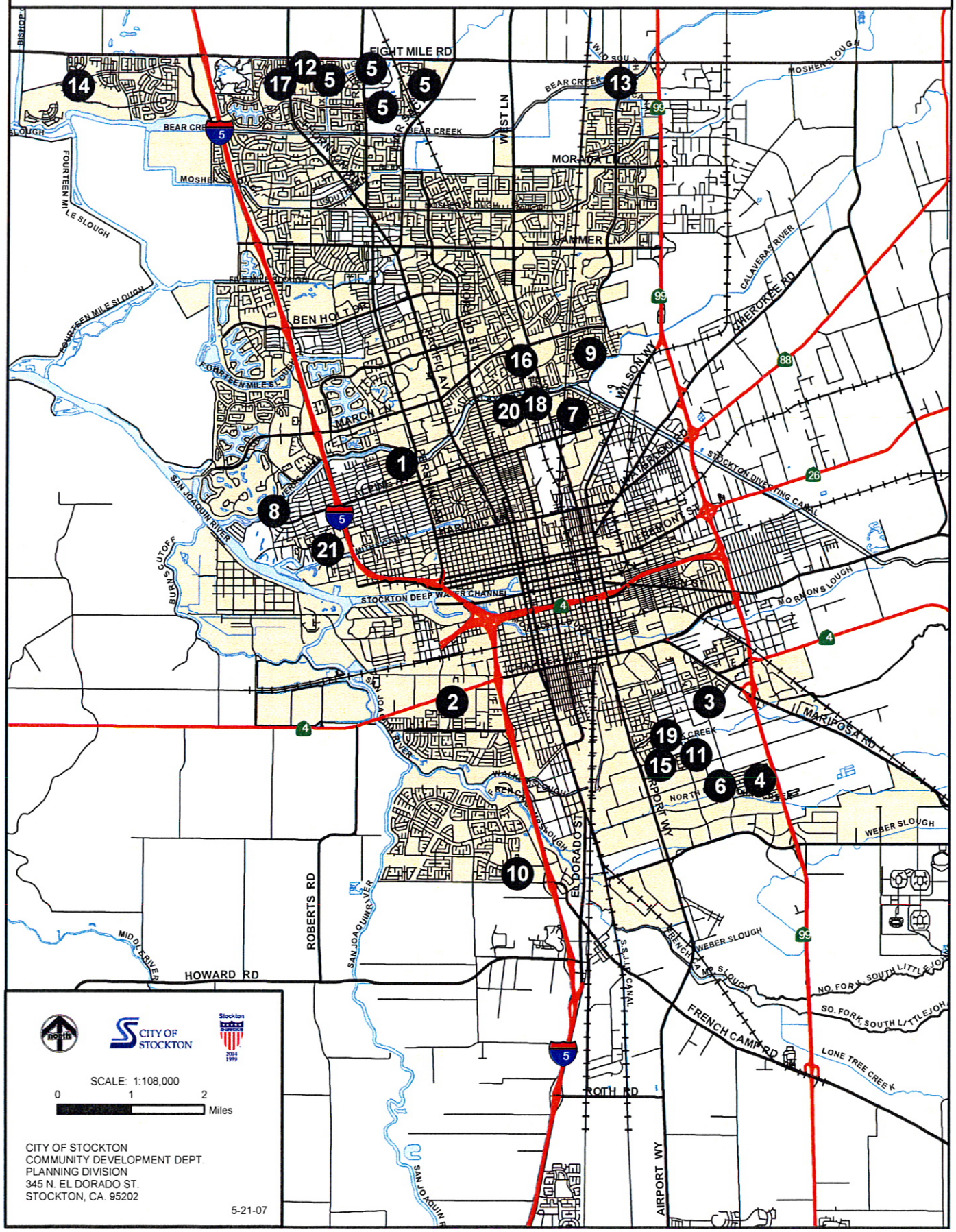
EXHIBIT "C"

LIST of PENDING DEVELOPMENTS

EXHIBIT “D”

LIST of PENDING DEVELOPMENTS

RESIDENTIAL SUBDIVISIONS



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CITY OF STOCKTON

CITY OF STOCKTON
RESIDENTIAL DEVELOPMENT

LINK TO MAP

Map #	Residential Subdivison Project Name	Tentative Map #	TM Acres	Map Units	Bdg Permits Issued	Lots Remain	% Project Completion
1	Riverwalk	TM13-05	10	113	27	86	24%
2	Moss Garden: Moss Garden East, Moss Garden West	TM24-05	50	359	82	277	23%
3	Windstone	TM33-04	8	66	0	66	0%
4	Little John Creek	TM13-90	151	853	790	63	93%
5	North Stockton Projects: Elkhorn Country Club, Waterford Estates West and East, Beck Ranch, Beck Estates, Fairway Greens, Windmill Park, Meadowlands, Destinations, Northbrook	TM1-98, TM2-98, TM3-98, TM4-98, TM14-98, TM5-98, TM15-03, TM6-03, TM 24-04	393	2,503	1,743	760	70%
6	Seabreeze I and II	TM5-03 & TM21-03	50	249	167	82	67%
7	Montego I & II	TM9-03, TM7-04	82	347	168	179	48%
8	Mariana Estates (Darrah)	TM33-03, SU01-03 (County TM#)	25	73	0	73	0%
9	Riverbend & Riverbend West	TM14-04 & TM15-04	168	584	261	323	45%
10	Cornerstone II	TM25-03	14	186	2	184	1%
11	Simbad Estates	TM9-04	5	28	8	20	29%
12	Silver Springs / Gold Springs	TM28-03 & TM10-04	96	305	272	33	89%
13	Cannery Park	TM8-04	450	1,100	40	409	9%
14	Westlake Villages (SPW)	TM18-04	680	2,630	266	2,364	10%
15	Malisa Manor	TM25-04	4	16	7	9	44%
16	Charlotte's Oaks	TM6-05	15	105	43	62	41%
17	The Enclave at Spanos Park East	TM9-05	6	47	47	0	100%
18	Dama Estates	TM37-04	3	17	0	17	0%
19	Old Oak Estates	TM23-04	14	62	2	60	3%
20	Calaveras Estates #3	TM36-04	13	77	15	62	19%
21	Tuscany Cove	TM42-04	4	14	0	14	0%
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
	SINGLE FAMILY TOTAL:		**2,240**	**9,734**	**3,940**	**5,143**	**40%**
	MULTIFAMILY TOTAL:		**83**	**1,537**	**801**	**736**	**52%**

"TM Acres" refers to the gross acreage listed in the approved Tentative Map

"Building Permits" represent the number of permits issued to date

"Multi Family Projects" are four attached units or more

"Lots Remaining" are the lots with out building permits issued in that project

Based on Tentative Maps of 15 parcels or more

Updated: 11/15/07