

Section 8. FINANCIAL ASSESSMENT

THE FINANCIAL ANALYSIS SECTION OF THE WSIP SUMMARIZES THE FUTURE CAPITAL FACILITIES IDENTIFIED IN THE PREVIOUS SECTIONS FOR EACH OF THE THREE STUDY AREAS (I.E., NSA, CSA, AND SSA) AND PLACES AN ESTIMATE OF WHEN AND HOW MUCH EACH FACILITY WILL COST. THE CAPITAL IMPROVEMENT PROGRAM (CIP) LAID OUT IN THIS SECTION IS AN IMPORTANT ELEMENT IN ESTABLISHING A BASELINE FOR ESTIMATING PLANNED EXPENDITURES AND IDENTIFYING METHODS OF FINANCING AVAILABLE TO SCWA. THE INFORMATION INCLUDED IN THIS SECTION IS THE BEST AVAILABLE INFORMATION BASED ON THE CIP CONTEMPLATED IN THE WSIP. THERE ARE ON-GOING DISCUSSIONS WITHIN SCWA REGARDING FINANCE STRATEGIES FOR THE FRWA PROJECT AND THE VINEYARD SWTP THAT CREATE FUNDAMENTAL CHANGES IN CERTAIN ASPECTS OF THE CIP. THE ULTIMATE FINANCIAL STRATEGY THAT IS ADOPTED WILL BE INCLUDED AS AN AMENDMENT TO THE NEXT VERSION OF THE WSIP.

8.1 Introduction

This section provides the necessary information to fully describe the Zone 40 Development Fee and User Fee Program showing a direct nexus between the fee and rate programs and the facilities required under the WSIP CIP. It also describes the Zone 40 Development Fee Program and how capital projects are funded and provides a clear methodology for financing capital facilities. It is the purpose of this section that it contains sufficient information, including spreadsheet tools, to be used in the acquisition of additional debt financing for the construction of listed CIP projects over the next five years.

This section discusses the following topics:

- Background: frames the Zone 40 WSIP facilities and costs.
- Existing Rate Structure: summarizes the existing rate structure.
- CIP: estimates the cost and probable phasing of capital facilities over the planning period.
- Future Rate Methodology: describes the approach used to calculate the user rates

and connection fees needed to support the proposed CIP and related O&M costs.

- **Financial Analysis:** summarizes the assumptions used to model the finance program and summarizes the model results.
- **Principal Findings:** identifies key findings in the financial analysis and pertinent issues that may affect the results.

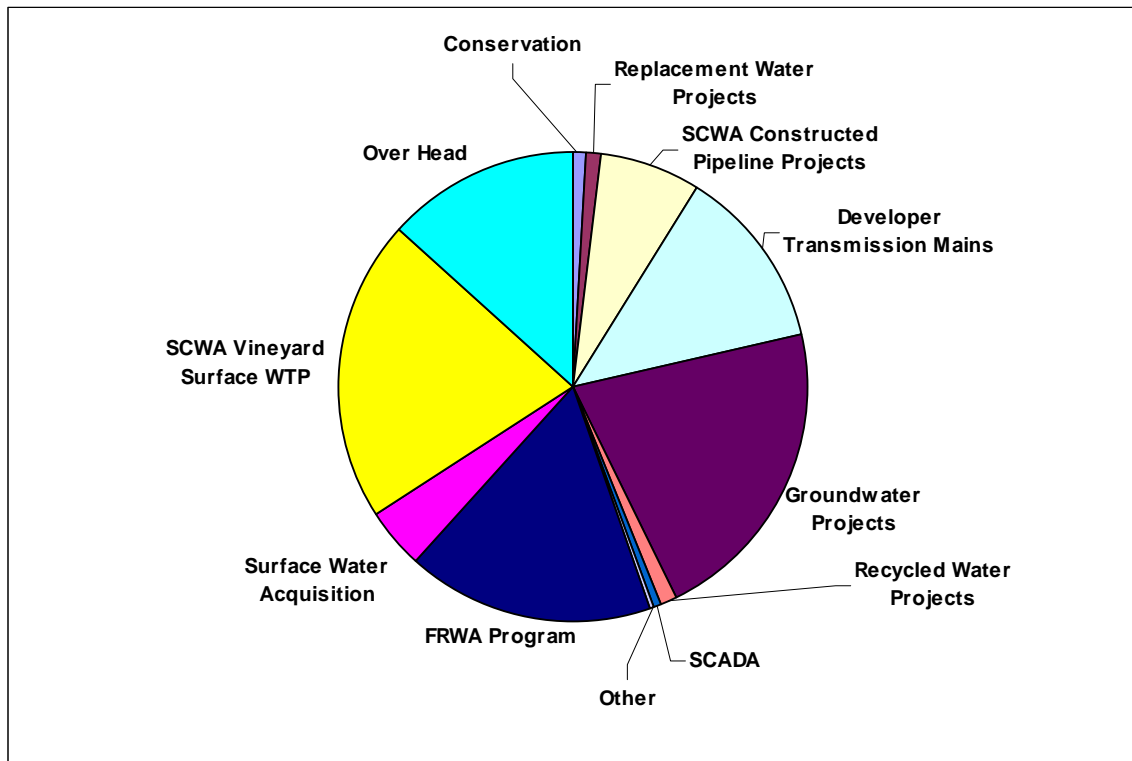
One aspect of this section that is important to recognize is the use of a 45 year build-out period extending the phasing from previous sections from 2030 to 2050. This is done in the financial section only because of the need to look at a worst case scenario if development were to slow down. The slow development scenario reflects reduced revenue generation affecting payment of outstanding bonds. One example of the importance of this method is the first phase of the Vineyard SWTP where construction will take place in 2010/11 regardless of water demands with the issuance of revenue bonds. In this example, Zone 40 constructs a significant amount of water treatment and delivery capacity significantly greater than actual demands in 2010/11 to provide for growth to beyond 2020. If growth slows down for any number of reasons, Zone 40's ability to pay back the bonds through development fees and user charges becomes significantly reduced. The 2050 build-out provides a higher level of certainty that, if this scenario were to occur, the impact to Zone 40's ability to continue to make payments on outstanding debt will not be reduced.

8.2 Background

As earlier stated in the WSIP, SCWA Zone 40 was created by SCWA Resolution No. 663 in May 1985 and defines the projects to be undertaken as "... the acquisition, construction, maintenance and operation of facilities for the production, conservation, transmittal, distribution and sale of ground or surface water or both for the present and future beneficial use of the lands or inhabitants within the zone." To this end, Zone 40 includes capital facilities required for the treatment, storage, and conveyance of the groundwater, surface water, and recycled water supply components as well as water conservation.

To date Zone 40 has paid for capital facilities using its accumulated reserves on a pay-as-you-go basis and more recently using debt financing. In the case of developer-constructed Zone 40 facilities (e.g., T-mains), reimbursement of costs incurred by the developer is through fee credits (the reimbursement amount is deducted from the amount of Zone 40 water development fees owed for the development(s)) with any remaining balance reimbursed through agreement with payment up to five years or through direct payment upon acceptance of the facilities by SCWA. A breakdown of the various fee components is presented in **Figure 8-1**. Each slice of the pie chart in **Figure 8-1** represents the relative percentage of the specific component to the overall fee program. In addition to capital facility construction, Zone 40 has planning related activities related to the development and operations of the Zone 40 conjunctive use system.

Figure 8-1. Breakdown of Zone 40 Fee Components



It was understood in 1985 that development of surface water supplies would take time and money, both of which have only been realized in this decade with the completion of

the WFA, obtaining sufficient surface water supplies through CVP contracts and appropriative water rights, and having a sufficient customer base to support the cost of needed redundancy in groundwater facilities required for conjunctive use. The level of redundancy is measured by how much maximum day capacity is needed over and above that of simply meeting the water demands to account for the wet and dry year hydrologic conditions. The total expected water facility capacity for groundwater and surface water is based on a total 2030 maximum day water demand of approximately **211** mgd. The total groundwater capacity estimated through the WSIP is **127** mgd and the total surface water capacity is **130** mgd (i.e., Vineyard SWTP plus City intertie connections) totaling **257** mgd or approximately **20** percent redundancy at build-out (See **Section 6.1** for detailed description of components). Between 2005 and build-out the level of redundancy fluctuates based on the phasing of the Vineyard SWTP and water demands.

8.3 WSIP Capital Cost Estimates

The capital cost estimate for each of the Zone 40 WSIP proposed future facilities are provided in **Table 8-1** listed by category and project. This list is comprehensive of all projects included in the WSIP. The total WSIP capital program cost is estimated to be \$933M not including non-specific project costs such as SCWA labor and other related incidental costs that are not associated with a specific project. This is estimated to be approximately 17 percent of the total program cost or \$159M. **Table 8-2** provides descriptions for the major pipeline and transmission mains in **Table 8-1**. **Figure 8-2**, **Figure 8-3**, and **Figure 8-4** show these project locations.

Table 8-1. Estimated Total Cost of WSIP Capital Facilities

Project	Capital Facilities	Total Cost (2005 Dollars)
Meter Retrofit	Conservation	\$ 8,000
Subtotal		\$ 8,000
RWSP Raw Water Facilities from GETs	Replacement Water Projects	\$ 10,190
RWSP Costs to Cal-Am/American States		\$ 4,000
RWSP for Environmental		\$ 1,000
RWSP Studies		\$ 1,000
Other Payments to SMUD for RWSP		\$ 3,123
USBR for deferred Capital Costs on FSC		\$ 6,337
Subtotal		\$ 25,650

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Project	Capital Facilities	Total Cost (2005 Dollars)
Franklin Intertie	Proposed Pipeline Projects	\$ -
Wheeling Agreement Water Pipeline		\$ 1,890
CSA Backbone Pipeline Waterman to HWY99		\$ 1,134
West Stockton Blvd Pipeline		\$ 2,331
Sheldon Road Pipeline		\$ 1,103
East Pipeline-CWTP *		\$ 51,200
West Pipeline-CWTP *		\$ 10,800
Bradshaw Widening Project		\$ 2,651
POU Pipeline within Zone 40 *		\$ 3,230
Gerber Road-WildHawk Pipeline		\$ 1,260
Subtotal		\$ 75,599
Gerber Road-Diamond Ranch Drive Pipeline	Transmission Mains	\$ 2,117
Excelsior Raw Pipeline		\$ 11,642
Sunrise Blvd Pipeline		\$ 2,419
Douglas Road Pipeline		\$ 5,204
Sunrise Blvd (36 in) Pipeline		\$ 1,134
Sunrise Blvd (18 in) Pipeline		\$ 189
Kiefer Road Pipeline		\$ 1,386
Jaeger Pipeline		\$ 3,074
North Douglas Tank Pipeline		\$ 1,134
Edington Drive Pipeline		\$ 1,436
Big Horn Blvd Pipeline		\$ 1,197
Whitelock Pipeline		\$ 1,310
POU Pipeline outside Zone 40 *		\$ 4,374
Other Portions of Network		\$ 92,332
Subtotal	\$ 128,948	
Lakeside WTP	Groundwater Projects	\$ 7,046
Wildhawk WTP		\$ 14,743
Calvine Meadows WTP		\$ 12,827
East Elk Grove WTP		\$ 19,501
Poppy Ridge WTP		\$ 19,659
Big Horn WTP		\$ 17,323
North Douglas Tank		\$ 8,986
Suncreek WTP		\$ 8,332
North Vineyard Tanks		\$ 7,562
White Rock Road Tanks		\$ 6,461
Douglas Road Tanks		\$ 8,581
Sheldon WTP		\$ 9,783
Whitelock WTP		\$ 18,388
Eagles Nest		\$ 4,737
Sunrise Douglas 2 Tanks		\$ 7,637
Bond WTP		\$ 11,079
Franklin Non-Potable Tank		\$ 810
Franklin WTP		\$ 13,519
East Park WTP		\$ 3,088
Anatolia WTP		\$ 26,010

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Project	Capital Facilities	Total Cost (2005 Dollars)
Subtotal		\$ 226,072
Recycled Water Storage and Pumps	Recycled Water Projects	\$ 4,841
Recycled Water Conveyance		\$ 6,798
Recycled Water In-System Conveyance Costs		\$ -
Subtotal		\$ 11,639
SCADA	SCADA	\$ 7,000
Subtotal		\$ 7,000
Payments to Sacramento County HCP	Other	\$ 1,000
Payments to Contra Costa		\$ 1,000
Right of Way Acquisition		\$ 1,000
Subtotal		\$ 3,000
FRWA Administrative Costs	FRWA Program	\$ 55,400
Freeport Diversion Structure		\$ 43,136
FRWA Raw Water Pipeline (Seg 1 and 2)		\$ 68,197
SCWA Raw Water Pipeline (Seg 4)		\$ 16,456
Subtotal		\$ 183,189
Cost of SMUD Contract	Surface Water Acquisition	\$ 3,000
Capital Cost Component of City Wheeling Water at Franklin Blvd		\$ 8,000
Capital Cost Component of POU Water in POU Area		\$ 32,000
Subtotal		\$ 43,000
Vineyard WTP Preliminary Design	SCWA Vineyard Surface WTP	\$ 333
Vineyard WTP Final Design		\$ 12,274
Vineyard Surface WTP Construction		\$ 207,970
Subtotal		\$ 220,577
Total Cost (2005 Dollars w/o Overhead)		\$ 932,674

Table 8-2. Proposed Pipelines and Transmission Mains Projects

Project #	Project	Description
1	Wheeling Agreement Water Pipeline	Franklin Connection to Franklin Blvd to Dwight Road to Western Pacific Railroad to Dwight Road Storage Tanks
2	CSA Backbone Pipeline Waterman to HWY99	From Waterman To HWY99
3	West Stockton Blvd Pipeline	West Stockton Blvd from Elk Grove Auto Mall to Promenade
4	Sheldon Road Pipeline	Sheldon Road between HWY 99 and Brunceville Road
5	Gerber Road-Diamond Ranch Drive Pipeline	From Elk Grove-Florin To Diamond Ranch Drive

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Project #	Project	Description
6	Excelsior Raw Pipeline	Excelsior well site To Excelsior Road To Kiefer Road To Sunrise Blvd To Anatolia GWTP
7	Sunrise Blvd Pipeline	From Anatolia WTP To Douglas Road
8	Douglas Road Pipeline	"Backbone" pipeline from west to east, and fill the North Douglas Storage Tanks
9	Sunrise Blvd (36 in) Pipeline	From Douglas Road To Mechanical Drive
10	Sunrise Blvd (18 in) Pipeline	From Douglas Road To Mechanical Drive
11	Kiefer Road Pipeline	Sunrise Blvd to Jaeger
12	Jaeger Pipeline	Jaeger Rd between Douglas Rd and Kiefer Rd.
13	North Douglas Tank Pipeline	From Douglas Road and Americanos Blvd to North Douglas Tanks
14	Edington Drive Pipeline	Edington Drive in North Douglas
15	Big Horn Blvd Pipeline	Big Horn Blvd from Elk Grove Blvd to Kammerer Road
16	Whitelock Pipeline	Whitelock Road between Bruceville Road and West Stockton Blvd
17	East Pipeline-CWTP *	From CWTP to Eagles Nest Road
18	West Pipeline-CWTP *	From CWTP to Bradshaw Road
19	Bradshaw Widening Project	Bradshaw Road from Florin Rd to Calvine Rd.
20	POU Pipeline within Zone 40 *	From NSA storage Tanks To Elk Grove Florin Road
21	POU Pipeline outside Zone 40 *	From Elk Grove Florin Road To City Florin Reservoir
22	Gerber Road-WildHawk Pipeline	From Gerber at Bradshaw To Wildhawk WTP

8.4 Existing rate structure

SCWA Ordinance No. 18, adopted in 1986, empowered SCWA to establish fees, charges, credits, and regulations for the wholesale supply of water to zones within SCWA.

Zone 40's two revenue sources for capital improvements are a development fee and a user/service fee. The development fee is a one-time charge levied against new development through the building permit process. The user/service fee is a monthly fee

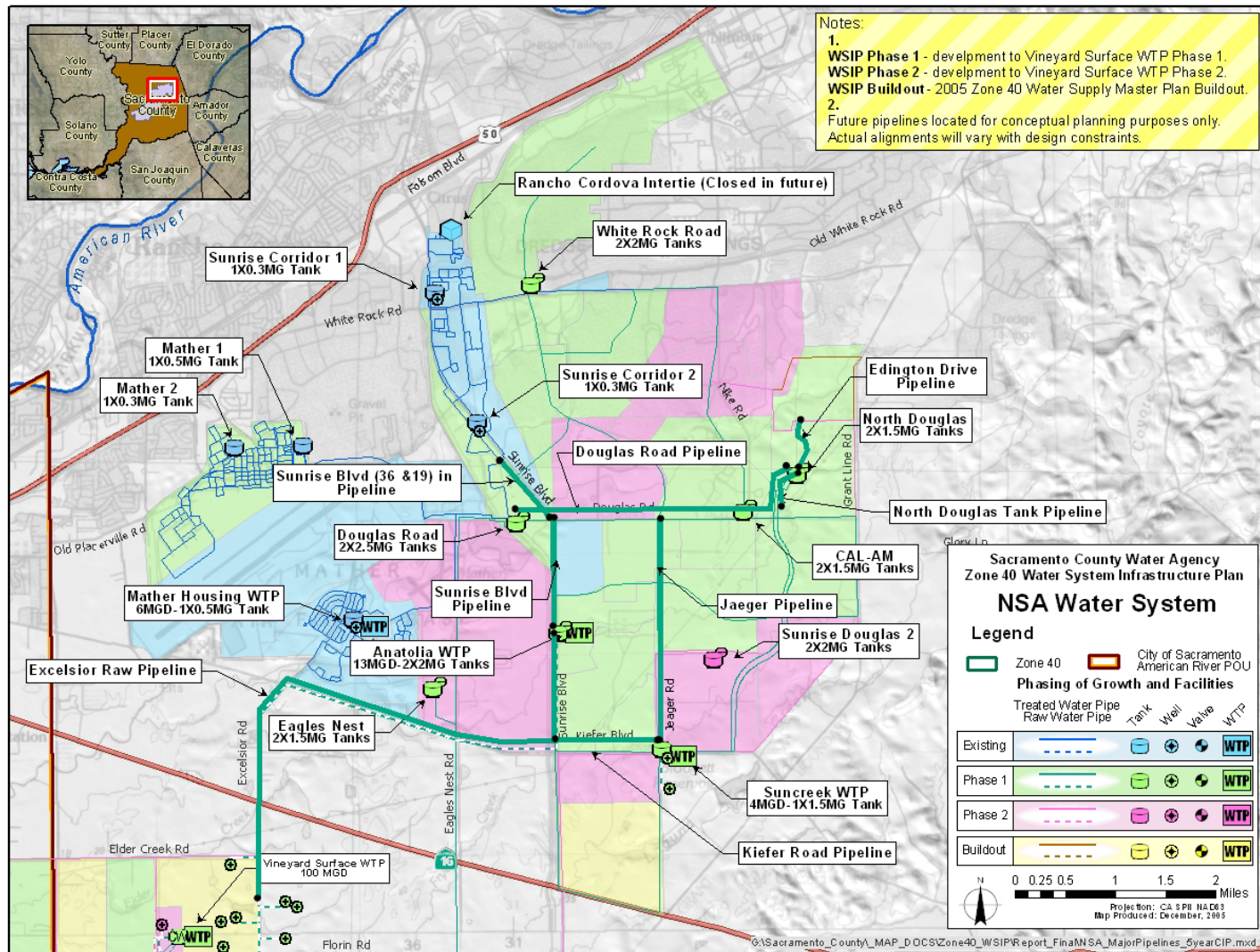
that is charged to all customers in the Zone 40 service area that receive water through the various retail agencies (i.e., Zone 41, EGWS, Cal-Am). This charge is collected through the monthly or bimonthly billing process.

The development fee is calculated for each customer connection based on the size of the water meter. The water meter is equated to a number of equivalent dwelling units (EDUs) (e.g., a ¾-inch service is 1 EDU). Funds collected go towards construction for all Zone 40 water facilities necessary to deliver surface water, groundwater, recycled water, and implementation of water conservation measures. The acreage development fee portion is paid only by commercial connections to fund peaking facility capacity required for higher levels of fire protection for commercial and industrial customers.

Per Section 67 of Ordinance 18, the development fee is adjusted annually for inflation; the index is the average Engineering News Record Construction Cost Index (ENRCCI) for San Francisco and the 20 Cities as published in the January edition of the Engineering News Record each year. The development fee can also be increased in response to new programs or design standards that increase the total capital cost of system facilities. A plot of development fees vs. time is shown in **Figure 8-5**.

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Figure 8-2. NSA Proposed Pipelines and Transmission Mains Projects



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Figure 8-3. CSA Proposed Pipelines and Transmission Mains Projects

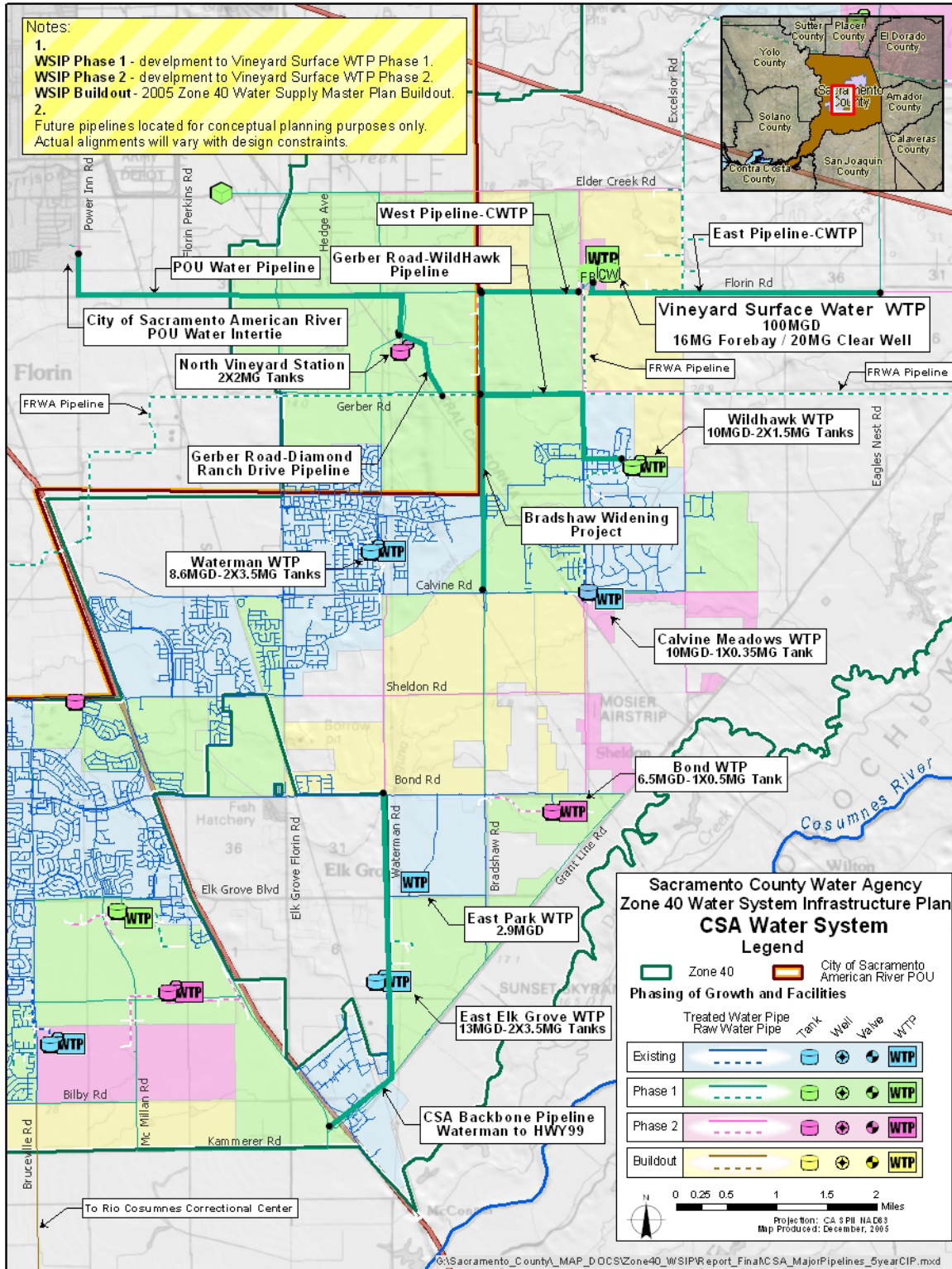
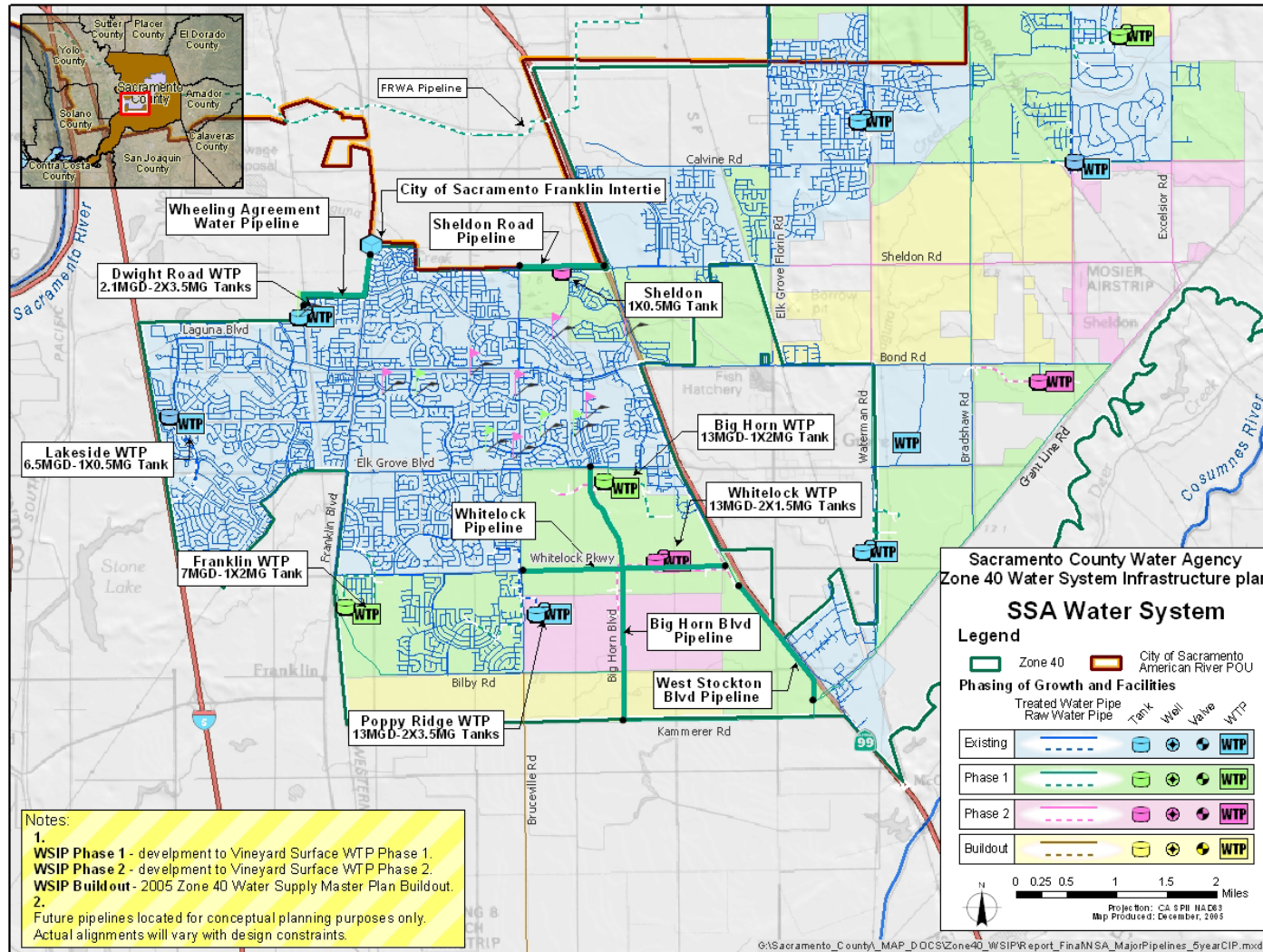


Figure 8-4. SSA Proposed Pipelines and Transmission Mains Projects



8.4.1 Development Fees

Development fees are based on the number of EDUs and, for commercial users, acreage of developed land area. All new residential and commercial developments pay a portion of the development fee when improvement plans are submitted for review and the remaining portion at the time a water connection and building permit are issued (unless developer has a credit agreement based on reimbursement policies as set forth in Ordinance 18). Rates and connection fees are based on the conceptual rate design shown in **Figure 8-6**.

Figure 8-5. Zone 40 Development Fee History

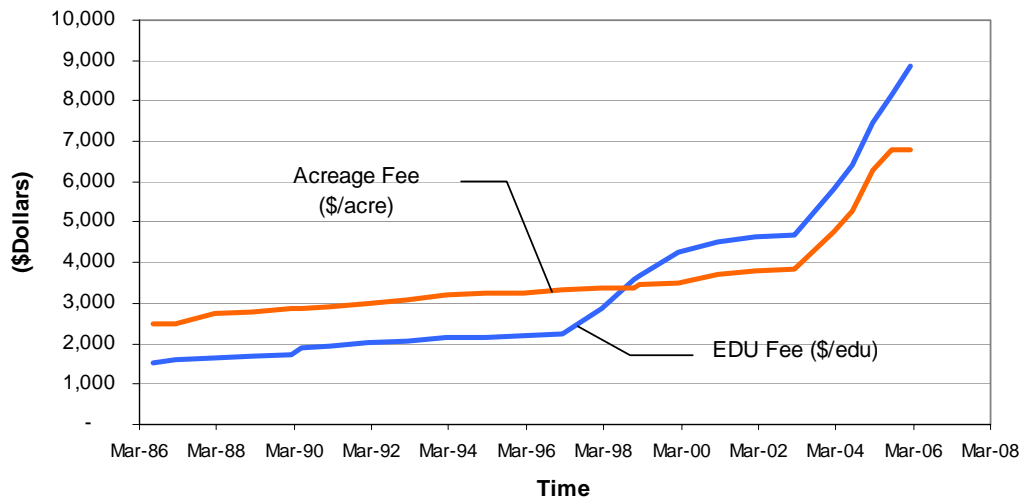
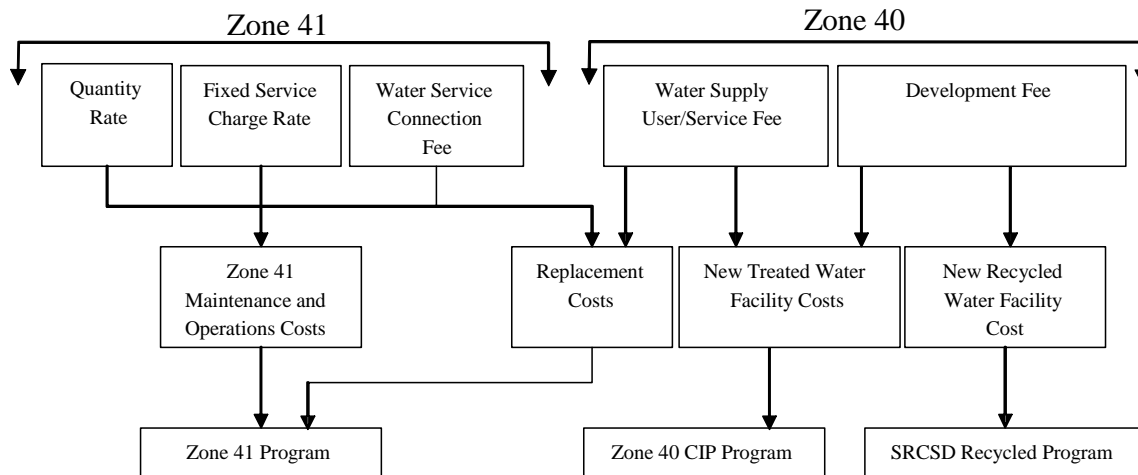


Figure 8-5 illustrates the increase that has occurred in the development fees over time. In March 1990, the EDU development fee was increased to account for groundwater treatment requirements. Then, from 1998 through 2006, the EDU development fee underwent significant increases to pay for costs related to the following:

- land acquisition
- deep well construction
- surface water acquisitions

- outside services related to billing and mapping
- changed assumptions in revenue sources
- demand management/water conservation
- SCADA systems used to automate operations of water facilities
- recycled water systems
- lost revenues from the Sacramento County Fee Deferral and Waiver Program.
- higher overall costs for construction (i.e., ENRCCI was not keeping up with local inflation)

Figure 8-6. Conceptual Rate Design



In May 2003, MWH prepared a comprehensive evaluation of the Zone 40 capital improvement financing program to support the sale of Sacramento County Water Financing Authority Revenue Bonds. This Feasibility Report for the 2003 Sacramento County Water Financing Authority Revenue Bonds (SCWA Zones 40 and 41 Water System Projects) - the “Feasibility Report” - concluded that significant Zone 40 development fee increases were required.

These fee increases show up in **Figure 8-5** between 2003 and 2006 and support the CIP included in the Feasibility Report that was based on the best available data on projects, programs, contract obligations, and costs at that time. This WSIP has updated these items in anticipation that a second feasibility report will be needed in 2006/07 for revenue bonds to pay for the FRWA pipeline and the Vineyard SWTP. This is discussed later in the section.

8.4.2 User/Service Fee

The user/service fee is a monthly charge for domestic services and for commercial and other services. For commercial, this is a percentage of the metered monthly charge. The user/service fee is used in tandem with the development fee to finance the construction of major water supply infrastructure required to meet current and future water demands in the Zone 40 service area. The nexus argument for having existing customers continue to pay into a capital fee program is based on the implementation of the conjunctive use water system that will benefit all Zone 40 water retail customers. For example, the acquisition of surface water contracts that are taking place in 2006 will benefit all customers who receive Zone 40 water. The user/service fee is accounted for in the calculation of the development fee to avoid double charging the customer. The development fee can be said to pay for the majority of the necessary infrastructure costs, while the user fee continues to contribute to the capital fund until the conjunctive use program is fully implemented. Per the terms of the Recycled Water Agreement between SRCSD and SCWA, part of the user/service fee collected from recycled water customers is transferred to SRCSD for funding of the tertiary treatment facilities (i.e., one water supply element of the Zone 40 conjunctive use program).

When authorized, the user/service fee was set at \$5 per month for residential services and 33-percent of the metered commercial/industrial monthly charge. The user/service fee was increased to \$5.50 per month for residential services in 2002. Ordinance WAO-0048, approved August 13, 2003, amended Title 3 Chapter 3.50 of the SCWA Code to include the user/ service fee, removing it from Ordinance No. 18. This same action increased the user/service fee to \$7 per month for residential services.

The Feasibility Report concluded that increases in the user/service fee would be required. As with the development fee, the proposed increases were to fund a portion of Zone 40's CIP.

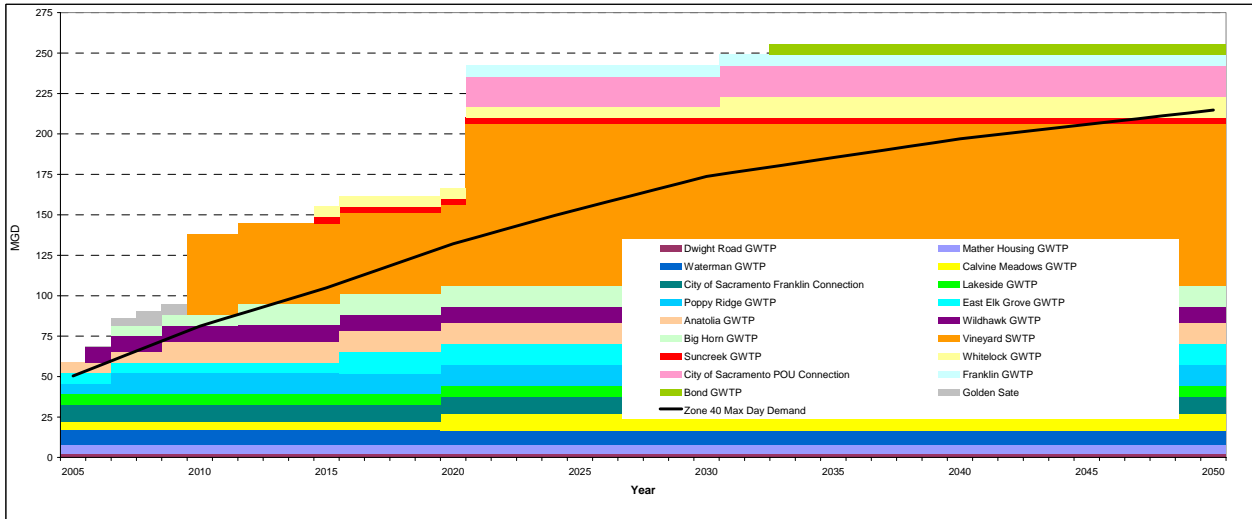
User rates and connection fees are an indicator of the acceptability of a capital program to the public. To attract development, growing communities need to maintain rates and fees at levels that are competitive with other nearby communities. The current average monthly rate in the Zone 40 is approximately \$33 assuming an average annual volume of water for a single family home to be approximately two thirds of an acre foot.

8.5 Capital Improvement Program (CIP)

Zone 40's CIP consists of four phases: Existing, Phase 1, Phase 2, and Build-out. Groundwater wells, groundwater treatment capacity, storage, and T-Mains are assumed to be constructed throughout the first three phases to satisfy the expected water demands. **Figure 8-7** is similar to **Figure 6-1** by illustrating how water supply sources are added as water demands increase over time. The shaded blocks represent the different groundwater and surface water sources and phases, and the line represents the maximum day water demand based on a 50 year build-out period (see Introduction to Finance Section on the use of 2050 as the build-out period rather than 2030 as used in other portions of the WSIP). From **Figure 8-7**, there are several points to mention. The first is looking at water supply capacity that is above the water demand line. Any area above the water demand line is considered to be redundancy in the water system for use in the conjunctive use program. In the 2050 build out scenario, the highest level of redundancy occurs in approximately 2020 when there is 215 mgd of capacity and only 130 mgd of water demand (65 percent redundancy). This is needed to maintain a two phase approach to the Vineyard SWTP; the first phase occurring in 2010/11 and the second phase occurring when water demands come close to exceeding dry year water supplies showing the need for an additional 50 mgd increment of the Vineyard SWTP around 2022. The need for new water supplies is dictated by when the water supply areas approach the water demand line under normal and dry hydrologic conditions. Since **Figure 8-7** is the aggregated growth of the three service areas, it is difficult to identify the subtleties of

why increases in water supply occur when they are shown. In many cases, there are constraints occurring in the service areas that are driving the need for the next phase of a groundwater or surface water source of water supply.

Figure 8-7. Aggregated Water Supply and Water Demand for Zone 40 Service Areas



8.6 Future Fee and Rate Planning Methodology

Financial planning for the future depends on many variables – some of which are within Zone 40’s control, others are not. As clearly shown in **Figure 8-7**, new development drives the need for new water facilities by increasing water demands. However as an underlying goal, Zone 40 must secure and optimize surface water deliveries. The greatest difference between solely planning for new growth and optimizing surface water is the timing of facilities relative to the revenue. Because the majority of revenue is generated as growth occurs, construction of larger surface water projects is dependent upon borrowing money to finance earlier program implementation. Historically, SCWA has paid for these improvements using a “pay-as-you-go” system where facilities are constructed by SCWA or by a developer (and reimbursed by SCWA). With developer constructed facilities, payment (reimbursement) is made through fee credits where the credit amount is deducted from the amount of fees owed, or through a direct

reimbursement process upon acceptance of the facilities by SCWA. SCWA constructed facilities, such as groundwater treatment plants, have historically been paid for through accumulated reserves.

In order to assist in a comparative evaluation of various financing options, estimates of probable capital cost have been developed. Capital cost is examined based on the following assumptions:

- Total capital costs are in 2005 dollars.
- Methods of payment for new capital facilities can be through pay-as-you-go, debt financing, developer reimbursement agreements, and developer development fee credit agreements.
- Sources of revenue include monies collected through the development fee program, the user/service fee program, and any revenue bond financing issuances. State and Federal Grants may also be used if they become available; however, for purposes of financial planning, no grant monies are included as a revenue source. The total cost over the planning period includes the cost of bonded debt.

8.6.1 Determination of Overall Cost

A cost estimate is established for each of the WSIP facilities with confirmation on unit and total costs by SCWA staff. Due to the abundance of data, one of many tools developed for the WSIP is a database of facilities that includes the necessary design parameters that can be used to assess a total capital cost estimate based on the design solutions presented in this WSIP. The costs of the Groundwater WTPs, Storage Tanks, and Water Distribution System are formulated using the WSIP Infrastructure Cost Estimation Tool (ICET) (**Appendix G**). All costs, future and past, are adjusted to 2005 dollars within the tool.

8.6.1.1 WSIP Infrastructure Cost Estimation Tool (ICET)

8.6.1.1.1 Overview

Foremost, the WSIP ICET is a data management tool to estimate the capital cost of water supply facilities. Secondary benefits are that data from ICET can be exported in a format that can be integrated into Zone 40's existing financial model for development fee and user/service fee determinations (the Zone 40 financial model is described later in this section). The ICET database stores Zone 40 infrastructure details and unit cost information of all infrastructure components identified in the WSIP. The Windows-based user interface provides utilities for cost estimation of components and facilities, as well as data editing, export to Excel spreadsheet utilities, and graphical translation of data.

The cost of each infrastructure component in the database is calculated using adopted unit cost information and assumptions. The unit cost information is generated based on similar facilities constructed in the Sacramento County area over the last five years and through discussions with SCWA staff. The total cost of each WSIP water facility is then developed from its component costs and the variable Engineering & Environmental and Construction Cost Contingency (EECCC). The EECCC is based on recent costs incurred on projects related to engineering design, environmental documentation, and standard contingency practices for the various types of projects.

The ICET summary of costs includes all facilities identified as being constructed after 2000 and distributes these costs over the 50 years from 2000 to 2050. Phasing of each facility is done according to the phasing described in the Zone 40 WSIP and through discussions with SCWA staff.

8.7 Zone 40 Financial Model

The costs presented in **Table 8-1** are the total capital costs in 2005 dollars. **Figure 8-1** illustrates how these costs are split between the major capital elements for the WSIP. The funding requirements are identified by spreading the proposed capital projects over the period from 2000 to 2050 (note: only 2005 to 2050 data is used in the financial evaluation. Preceding years allow for a certain level of calibration.) with all needed projects being spread over a 45-year timeline, phased according to need. Projects that

occurred prior to 2005 were phased according to actual expenditures. As mentioned earlier in this section, the 50-year timeline is used only to model a slower growth scenario than the planned 2030 build-out. A slower growth rate is considered to be more conservative relative to paying for facilities and bonded debt.

8.7.1 Financial Modeling

The financial model used for this analysis is a real time model that accounts for the timing of facilities and includes debt financing, inflation, and interest on money in reserve accounts. The approach used in this analysis includes calibration of the model, an analysis of the needed development fee and user/service fee, and takes a cursory look at the adequacy of the maintenance and operations costs versus current user rates to insure that the addition of any new capital facility proposed in this WSIP does not create a cash flow problem in keeping the water system operational.

The need for water facilities corresponds directly with increased water demands. For example, required groundwater capacity fluctuates in response to increases in surface water capacity and water demand. Therefore, the timing of surface water projects reflects the following goals: 1) maintain the long-term average sustainable groundwater yield; 2) meet development needs for water supply in a timely manner; and 3) stabilize rates and minimize development fees. The financial model was used to spread the capital costs presented in **Table 8-1** over the planning period according to the phase diagram for the WSIP, (see **Figure 8-7**). Inputs to the financial model include growth rates, inflation, cost of debt, bond amounts, connection fees, and user fees. Each input was established through discussions with SCWA staff and according to current planning assumptions.

Use of debt financing allows for timely construction of needed facilities and spreads the cost over the entire planning period. For larger facilities, such as the Vineyard SWTP or major conveyance pipelines, SCWA cannot collect sufficient revenues in the timeframe needed without charging excessively high development fees and user/service fees.

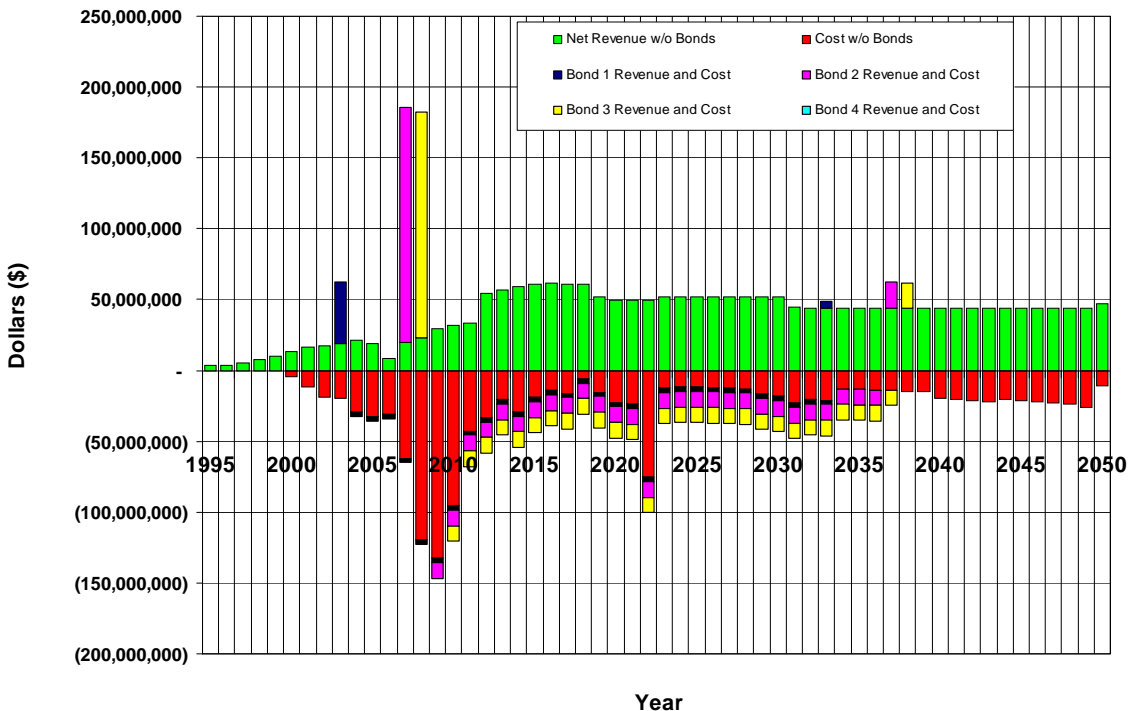
The financial model is used to run various debt financing alternatives that spread the capital costs over the 50-year planning period. **Figure 8-8** provides an example of

expenditures and revenues over the 50-year planning period including costs for debt financing. The large revenue spikes depict the periodic issuance of bonds for debt financing of large capital projects. The first set of bonds (2003 Bonds) was issued in June 2003.

Figure 8-9 depicts Zone 40's reserve balance over the period to 2035 illustrating the cycling of the fund balance with the larger projects and a positive end fund balance slightly above the beginning balance representing that revenues collected over the planning period are spent on projects that benefit the development that took place and paid for the facilities constructed within the planning period. The end period is truncated to 2035 since very little project construction is taking place and the fund balance increases significantly. It is likely that in the future (i.e., beyond 2030) there will be additional growth or the development fee will be reduced to cover replacement costs and water system enhancements.

This analysis assumes that a uniform rate and connection fee are applied over the entire service area to provide revenue for the needed CIP cost.

Figure 8-8. Zone 40 Expenditure and Revenue over 50Year Planning Period (Actual Year Dollars)



The financial planning assumptions are presented in **Table 8-3**. Growth rates are consistent with the level of growth seen in Zone 40 over the period from 1998 to the present and projected build-out at year 2050. The financial model findings for needed Revenue Bonds and Fees are presented in **Table 8-4** and **Figure 8-10**, respectively.

Figure 8-9. Zone 40 Reserve Balance over Planning Period (Actual Year Dollars)

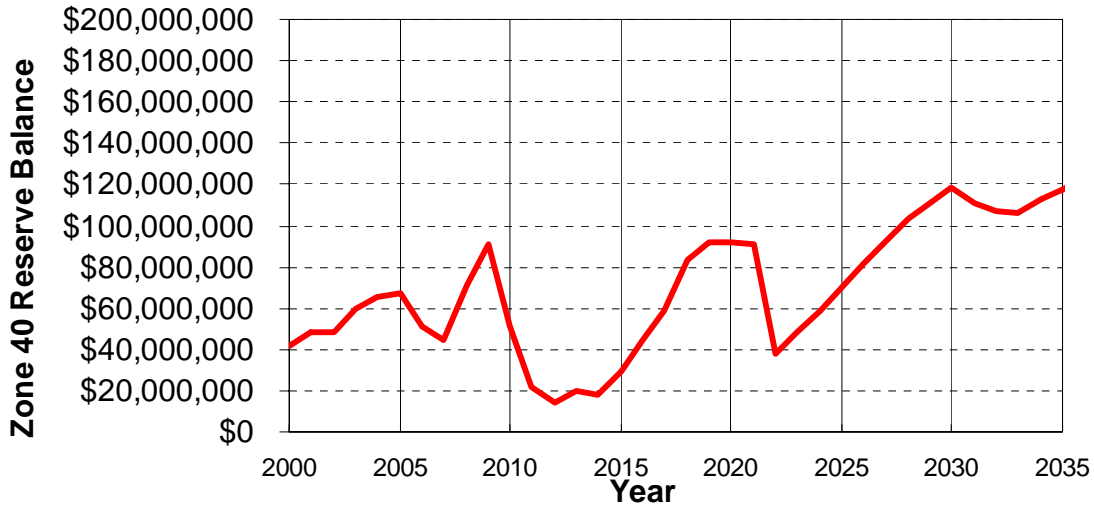


Table 8-3. Financial Planning Assumptions

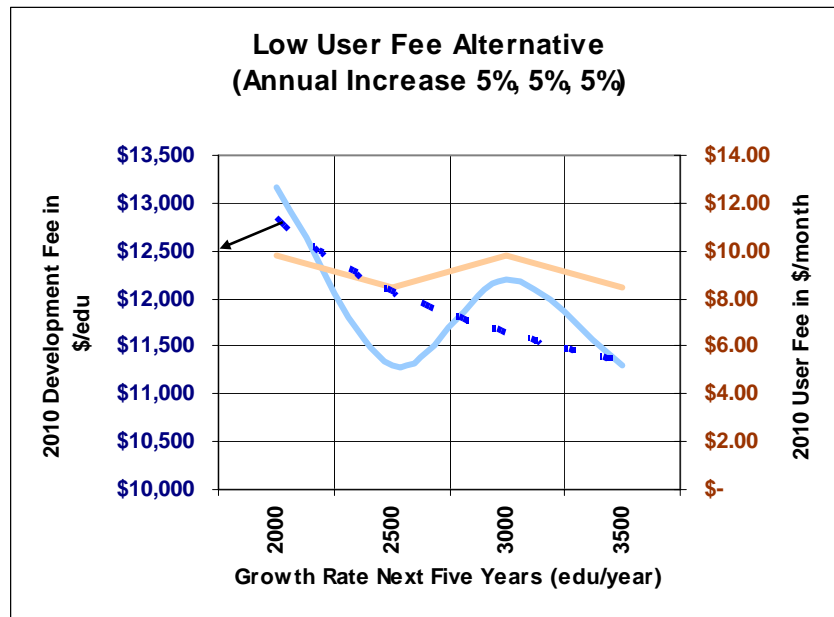
Financial Assumptions	
Bond Payment Interest	5.00%
Bond Issue Costs	1.00%
Inflation	3.00%
Zone 40 Reserve & Bond Reserve Interest Earning	4.00%

Table 8-4. Financial Planning Finding (Bonds)

Bonded Debt (30 Year Term)	
Bond 1 Issued in 2003	\$50,000,000
Bond 2 Issued in 2007	\$170,305,947
Bond 3 Issued in 2008	\$158,543,408
Total Bonded Debt	\$378,849,354

Given the uncertainty in growth rates over the next five years, a relationship between growth rate and needed fee structure is needed to illustrate the variability in needed revenue given a slow or fast growth projection. **Figure 8-10** illustrates a low user/service fee increase by increasing the fee by 5 percent over three consecutive years. If the program does not warrant the increase or does not need the full amount, a lesser amount is indicated in the figure. The dashed line represents the best fit line for the development fee. Based on **Figure 8-10**, if only 2,000 edus per year is the assumed growth rate, the Development Fee would need to be approximately \$13,000/edu and the User/Service Fee approximately \$10.00 a month. The Development Fee increased to the full amount in 2007 and the User/Service Fee increased over the period from 2006 to 2009.

Figure 8-10. Development Fee and User/Service Fee Requirements as a Function of Growth



8.7.3 Maintenance and Operations Cost Evaluation

Another important element of the financial model is determining how well the current rates meet the estimated maintenance and operations proposed by the WSIP. An estimate of staffing requirements, operations costs, and overhead costs is shown in **Table 8-5** and **Table 8-7**. As shown in **Figure 8-11**, there are two components of user costs that are paid on a monthly basis: a fixed rate component, and a variable or quantity rate component. The fixed rate component is set based on fixed costs including, but not exclusive of the following:

- fixed asset costs like buildings, desks, computers, cars
- portion of labor costs that are present regardless of the amount of water produced
- replacement costs of water supply facilities over time or sinking fund
- maintenance requirements such equipment and staffing

Variable costs are dependent on the amount of water that is being produced through the water treatment system and conveyed through the water distribution system. These costs include, but are not limited to, the following:

- power costs for pump stations and treatment processes
- chemical costs for treatment and chlorination
- solids handling and disposal of sludge after treatment
- discharge of wastewater to sanitary sewer system.

Currently the fixed monthly rate is \$19.18 per month and the variable rate is \$0.62 per one hundred cubic feet (\$/CCF) of water used based on a metered quantity for each home or business. This equates to a cost of \$270.07 per acre foot (i.e., a single family home typically uses two-thirds of an acre foot per year). The evaluation of how well these rates support the WSIP program are evaluated in the model based on the build-up of water demand and water supplies over time and how much fixed and variable costs are assumed to occur as the water system is built-out. **Figure 8-11** shows how well the revenue from

both the fixed and variable components keep up with actual costs over time. Of interest is how well does the current rate system hold up in the initial years of the first and second phases of the Vineyard SWTP when capacity is high where fixed costs become much higher without a large surge of new growth. The figure shows that costs in 2010/11 and 2022 (i.e., the time frame for the two phases of the Vineyard SWTP construction) are less than the total revenue received based on demands in the years preceding the Vineyard SWTP construction. The figure does show some periods where costs may exceed revenue, however, these time periods are short in duration or can be explained due to the expected rise in both fixed and variable costs due to inflation. It is at these times when a more detailed rate study will be required.

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Zone 40 Water System Infrastructure Plan

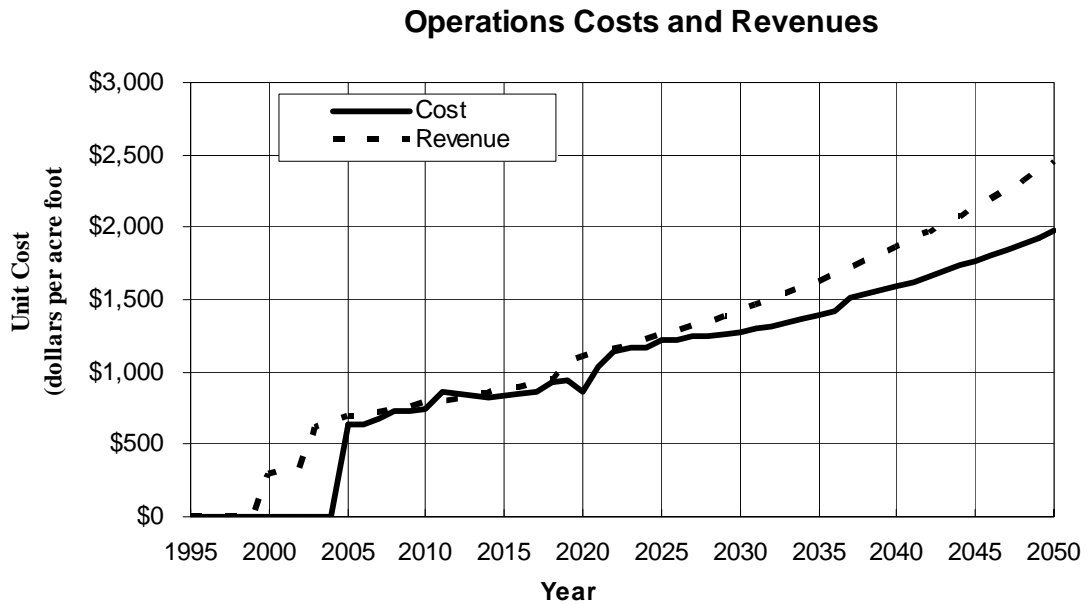
Table 8-5. Estimated Maintenance and Operations Labor Cost

Staffing ID	Positions	Burdened Hourly Rate	Total Cost
1	Chief/Director	\$151	\$313,331
2	Principal Civil Engineer	\$126	\$261,643
3	Senior Civil Engineer	\$110	\$227,926
4	Shift Distribution Operator	\$90	\$187,200
5	Associate Civil Engineer	\$86	\$179,774
6	Assistant Engineer	\$70	\$144,997
7	Engineering Technician	\$82	\$170,352
8	Clerical	\$62	\$129,480
9	Administrative Assistant	\$99	\$204,901
10	Plant Superintendent	\$107	\$223,392
11	Chief Operator	\$101	\$211,078
12	Shift Operator	\$74	\$153,546
13	Instrument Technician	\$84	\$175,490
14	Electrician	\$74	\$154,211
15	Lab Person	\$74	\$154,211
16	Treatment Operators	\$90	\$187,200
17	Security	\$45	\$93,600
18	Chief Distribution Operator	\$101	\$211,078
19	Underground Distribution Operators	\$74	\$153,546
20	Other Overhead Costs	\$ -	\$ -
21	Unscheduled Maintenance		\$7,000,000
22	Scheduled Preventative Maintenance		\$600,000
Labor Cost Sub Total per Year			\$11,136,957

Table 8-6. Estimated Fixed and Variable Maintenance and Operations Costs for Water Supply Treatment

Item	Annual Cost (220 mgd)
Power (Variable)	\$10,032,600
Chemicals (Variable)	\$5,827,632
Maintenance/Materials (Fixed)	\$500,000
Solids Disposal (Variable)	\$1,308,600
Discharge to Sanitary Sewer (Variable)	\$654,300
Miscellaneous (Fixed)	\$150,000
Contingencies at 5%	\$1,681,871

Figure 8-11. Operations Costs and Revenues



8.8 Zone 40 5-Year CIP

The Zone 40 5-year detailed CIP for the next 5 years is distilled from the financial model. A comprehensive breakdown of costs and sources of revenue and/or programs to pay for each project is listed in **Table 8-7** and **Figure 8-12**.

Over the next five years, approximately \$557M will be spent on the various capital facility categories shown in **Table 8-7**. These include:

- Replacement Water Projects
- Proposed Pipeline Projects
- Transmission Mains(T-Mains)
- Groundwater Projects
- Recycled Water Projects

- SCADA
- Other
- FRWA Program
- Surface Water Acquisition
- SCWA Vineyard SWTP
- Over Head

The split in how these costs will be financed are \$182 M, \$178M, and \$128 M, for SCWA Bonds, FRWA/SCWA Bonds, and pay-as-you-go (includes credits and reimbursement agreements for developer constructed facilities), respectively. **Table 8-7** represents the five year CIP and is prepared such that it can be integrated readily into Zone 40's next feasibility study for revenue bonds in 2006. This information was extracted from the Zone 40 financial model that spans the period from 2000 to 2050.

In reading **Table 8-7**, the first column from the left represents the funding program. The abbreviations and their meanings are provided in the notes for the table. The next two columns are the project name(s) and the capital facility program category that the project(s) has been assigned. The next column is the total cost for the project(s) over the 5-year planning period and the remaining columns disaggregate these costs over the proceeding five years. Methods of Payments are as follows:

“cip” – payment through the available reserves and built by Zone 40

“re” – payment to developers through credits and reimbursement agreements.

“fp” – payment through FRWA revenue bonds

“wt” – payment through SCWA Zone 40 Revenue Bonds for the Vineyard SWTP and appurtenant infrastructure

“oh” – payment through available reserves for overhead and miscellaneous non-specific project costs

Table 8-7. 5-Year Zone 40 CIP List

Method of Payment	Projects	Capital Facility Category	Total	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	
cn	Meter Retrofit	Conservation	\$5,968	\$500	\$1,030	\$1,061	\$1,093	\$1,126	\$1,159	
rp	RWSP Raw Water Facilities from GETs	Replacement Water Projects	\$10,976	\$0	\$1,749	\$3,604	\$3,712	\$1,911	\$0	
rp	RWSP Costs to Cal-Am/American States		\$2,296	\$0	\$0	\$0	\$0	\$751	\$1,545	
rp	RWSP for Environmental		\$1,078	\$100	\$206	\$212	\$219	\$225	\$116	
rp	RWSP Studies		\$1,078	\$100	\$206	\$212	\$219	\$225	\$116	
rp	Other Payments to SMUD for RWSP		\$3,267	\$521	\$1,072	\$1,104	\$569	\$0	\$0	
rp	USBR for deferred Capital Costs on FSC		\$2,372	\$0	\$142	\$292	\$300	\$310	\$1,329	
cp	Franklin Intertie		SCWA Constructed Pipeline Projects	\$0	\$0	\$0	\$0	\$0	\$0	\$0
cp	Wheeling Agreement Water Pipeline	\$630		\$630	\$0	\$0	\$0	\$0	\$0	
cp	CSA Backbone Pipeline Waterman to HWY99	\$1,186		\$0	\$584	\$602	\$0	\$0	\$0	
cp	West Stockton Blvd Pipeline	\$2,438		\$0	\$1,201	\$1,237	\$0	\$0	\$0	
cp	Sheldon Road Pipeline	\$1,152		\$0	\$568	\$585	\$0	\$0	\$0	
cp	East Pipeline-CWTP *	\$2,285		\$0	\$0	\$0	\$0	\$1,126	\$1,159	
cp	West Pipeline-CWTP *	\$1,374		\$0	\$0	\$0	\$0	\$563	\$811	
cp	Bradshaw Widening Project	\$2,899		\$0	\$0	\$938	\$966	\$995	\$0	
cp	POU Pipeline within Zone 40 *	\$0		\$0	\$0	\$0	\$0	\$0	\$0	
cp	Gerber Road-WildHawk Pipeline	\$960		\$0	\$0	\$0	\$0	\$473	\$487	
tm	Gerber Road-Diamond Ranch Drive Pipeline	Developer Transmission Mains		\$2,212	\$0	\$1,090	\$1,122	\$0	\$0	\$0
tm	Excelsior Raw Pipeline			\$0	\$0	\$0	\$0	\$0	\$0	\$0
tm	Sunrise Blvd Pipeline			\$0	\$0	\$0	\$0	\$0	\$0	\$0
tm	Douglas Road Pipeline		\$3,522	\$1,735	\$1,787	\$0	\$0	\$0	\$0	
tm	Sunrise Blvd (36 in) Pipeline		\$567	\$567	\$0	\$0	\$0	\$0	\$0	
tm	Sunrise Blvd (18 in) Pipeline		\$95	\$95	\$0	\$0	\$0	\$0	\$0	
tm	Kiefer Road Pipeline		\$1,407	\$693	\$714	\$0	\$0	\$0	\$0	
tm	Jaeger Pipeline		\$3,120	\$1,537	\$1,583	\$0	\$0	\$0	\$0	
tm	North Douglas Tank Pipeline		\$1,203	\$0	\$389	\$401	\$413	\$0	\$0	
tm	Edington Drive Pipeline		\$1,525	\$0	\$493	\$508	\$523	\$0	\$0	
tm	Big Horn Blvd Pipeline		\$1,270	\$0	\$411	\$423	\$436	\$0	\$0	
tm	Whitelock Pipeline		\$1,391	\$0	\$450	\$464	\$478	\$0	\$0	
tm	POU Pipeline outside Zone 40 *		\$0	\$0	\$0	\$0	\$0	\$0	\$0	
tm	Other Portions of Network		\$11,947	\$1,847	\$1,902	\$1,959	\$2,018	\$2,079	\$2,141	
gw	Lakeside WTP		Groundwater Projects	\$625	\$0	\$308	\$317	\$0	\$0	\$0
gw	Wildhawk WTP	\$14,927		\$10,746	\$2,704	\$728	\$750	\$0	\$0	
gw	Calvine Meadows WTP	\$1,734		\$854	\$880	\$0	\$0	\$0	\$0	
gw	East Elk Grove WTP	\$1,897		\$1,897	\$0	\$0	\$0	\$0	\$0	
gw	Poppy Ridge WTP	\$5,925		\$1,917	\$1,975	\$2,034	\$0	\$0	\$0	
gw	Big Horn WTP	\$13,726		\$3,168	\$4,559	\$4,696	\$1,304	\$0	\$0	
gw	North Douglas Tank	\$8,986		\$8,986	\$0	\$0	\$0	\$0	\$0	

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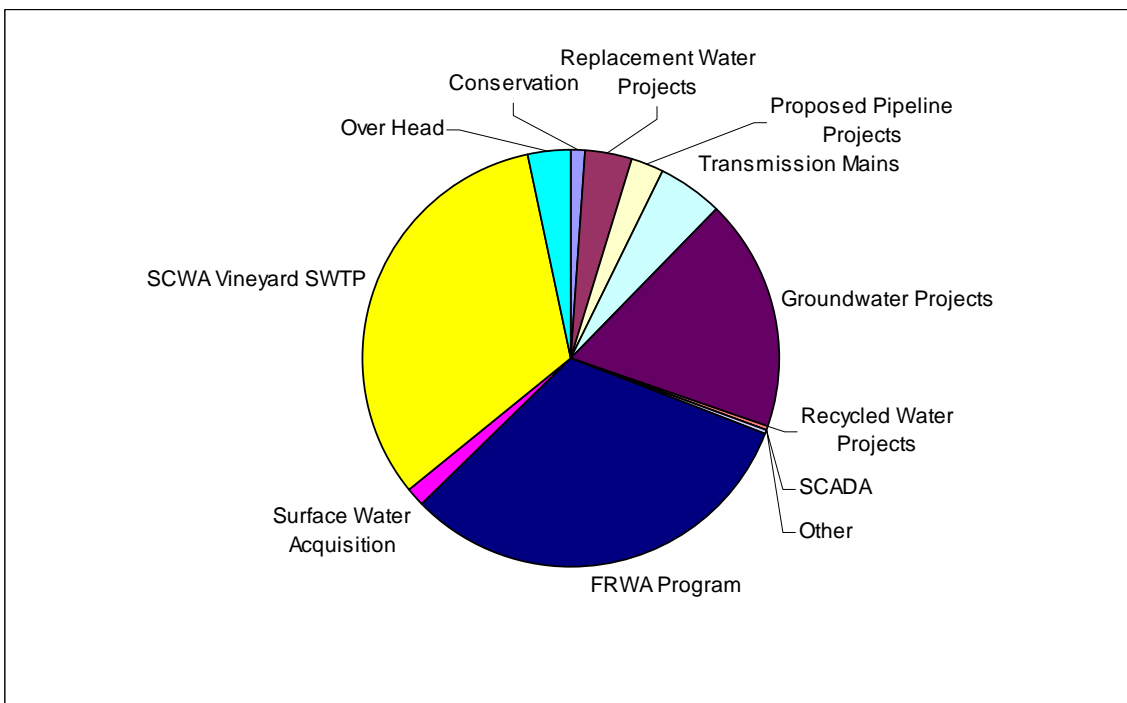
Method of Payment	Projects	Capital Facility Category	Total	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	
gw	Suncreek WTP		\$0	\$0	\$0	\$0	\$0	\$0	\$0	
gw	North Vineyard Tanks		\$8,267	\$0	\$0	\$2,675	\$2,755	\$2,837	\$0	
gw	White Rock Road Tanks		\$6,536	\$0	\$0	\$0	\$4,016	\$1,241	\$1,279	
gw	Douglas Road Tanks		\$8,826	\$0	\$0	\$0	\$0	\$4,348	\$4,478	
gw	Sheldon WTP		\$0	\$0	\$0	\$0	\$0	\$0	\$0	
gw	Whitelock WTP		\$7,471	\$0	\$0	\$0	\$2,607	\$3,759	\$1,105	
gw	Eagles Nest		\$0	\$0	\$0	\$0	\$0	\$0	\$0	
gw	Sunrise Douglas 2 Tanks		\$0	\$0	\$0	\$0	\$0	\$0	\$0	
gw	Bond WTP		\$0	\$0	\$0	\$0	\$0	\$0	\$0	
gw	Franklin Non-Potable Tank		\$0	\$0	\$0	\$0	\$0	\$0	\$0	
gw	Franklin WTP		\$0	\$0	\$0	\$0	\$0	\$0	\$0	
gw	East Park WTP		\$0	\$0	\$0	\$0	\$0	\$0	\$0	
gw	Anatolia WTP		\$21,662	\$5,146	\$4,425	\$4,696	\$4,836	\$2,559	\$0	
rc	Recycled Water Storage and Pumps		Recycled Water Projects	\$936	\$0	\$0	\$0	\$0	\$0	\$936
rc	Recycled Water Conveyance			\$0	\$0	\$0	\$0	\$0	\$0	\$0
rc	Recycled Water In-System Conveyance Costs	\$0		\$0	\$0	\$0	\$0	\$0	\$0	
sc	SCADA	SCADA	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
ot	Payments to Sacramento County HCP	Other	\$647	\$100	\$103	\$106	\$109	\$113	\$116	
ot	Payments to Contra Costa		\$943	\$0	\$0	\$0	\$182	\$375	\$386	
ot	Right of Way Acquisition		\$495	\$0	\$52	\$106	\$109	\$113	\$116	
fp	FRWA Administrative Costs	FRWA Program	\$37,498	\$8,000	\$9,270	\$5,132	\$7,039	\$6,592	\$1,465	
fp	Freeport Diversion Structure		\$47,641	\$0	\$0	\$10,275	\$15,386	\$15,847	\$6,134	
fp	FRWA Raw Water Pipeline (Seg 1 and 2)		\$75,168	\$0	\$0	\$9,844	\$36,693	\$24,841	\$3,790	
fp	SCWA Raw Water Pipeline (Seg 4)		\$17,739	\$0	\$0	\$9,357	\$7,096	\$1,285	\$0	
sw	Cost of SMUD Contract	Surface Water Acquisition	\$3,045	\$1,500	\$1,545	\$0	\$0	\$0	\$0	
sw	Capital Cost Component of City Wheeling Water at Franklin Blvd		\$3,963	\$0	\$412	\$849	\$874	\$900	\$927	
sw	Capital Cost Component of POU Water in POU Area		\$0	\$0	\$0	\$0	\$0	\$0	\$0	
wt	Vineyard WTP Preliminary Design	SCWA Vineyard Surface WTP	\$333	\$333	\$0	\$0	\$0	\$0	\$0	
wt	Vineyard WTP Final Design		\$10,151	\$0	\$1,648	\$7,957	\$546	\$0	\$0	
wt	Vineyard Surface WTP Construction		\$171,555	\$0	\$88	\$1,900	\$38,417	\$65,167	\$65,984	
oh	Planning and Environmental Costs	Over Head	\$18,015	\$2,785	\$2,869	\$2,955	\$3,043	\$3,135	\$3,229	
Projects Eligible for Debt Financing										
Subtotal for CIP above			\$128,907	\$31,019	\$19,294	\$21,356	\$19,784	\$21,389	\$16,065	
Total for FRWA Program			\$178,046	\$8,000	\$9,270	\$34,608	\$66,214	\$48,566	\$11,389	
Total for SCWA Vineyard Surface WTP			\$182,039	\$333	\$1,736	\$9,857	\$38,963	\$65,167	\$65,984	
Total Cost Eligible for Debt Financing			\$488,992	\$39,352	\$30,300	\$65,820	\$124,961	\$135,122	\$93,437	
Total Non-Specific Project Costs (e.g., overhead, planning)			\$18,015	\$2,785	\$2,869	\$2,955	\$3,043	\$3,135	\$3,229	

Figure 8-12. Zone 40 CIP Cash Flow Table

		Total (Inflated Dollars)	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011
Initial Cash Balance at Beginning of Fiscal Year (w/ \$10M Rate Stabilization Fund)			66,613	\$68,950	\$82,489	\$98,800	\$128,998	\$124,648
Bond 1	\$50,500	Project Costs Paid applied with 2003 Bond Proceeds (Bond 1)	(\$25,513)	(\$21,332)	(\$2,704)	(\$728)	(\$750)	\$0
Construction Proceeds	\$46,000	Bond Sale Cost	\$0	\$0	\$0	\$0	\$0	\$0
Capitalized Interest Fund	(0)	Reserve Interest Earnings	\$792	\$132	\$132	\$132	\$132	\$132
Reserve Amount	4,000	Bond Revenue	\$25,513	(\$845)	\$2,704	\$728	\$750	\$0
Issuance Costs	500	Bond Debt Service Payments	(\$18,141)	(\$3,023)	(\$3,023)	(\$3,023)	(\$3,023)	(\$3,023)
Bond 2	\$172,009	Project Costs Applied To Bond 2	(\$170,046)	\$0	(\$9,270)	(\$34,608)	(\$66,214)	(\$48,566)
Construction Proceeds	\$137,797	Bond Sale Cost	\$1,703	\$0	\$1,703	\$0	\$0	\$0
Capitalized Interest Fund	\$20,306	Reserve Interest Earnings	\$2,024	\$0	\$0	\$506	\$506	\$506
Reserve Amount	\$12,203	Bond Revenue	\$137,797	\$0	\$9,270	\$34,608	\$66,214	\$27,706
Issuance Costs	\$1,703	Bond Debt Service Payments	(\$33,581)	\$0	\$0	\$0	(\$11,194)	(\$11,194)
Bond 3	\$160,129	Project Costs Applied To Bond 3	(\$171,555)	\$0	(\$88)	(\$1,900)	(\$38,417)	(\$65,167)
Construction Proceeds	\$128,615	Bond Sale Cost	\$1,585	\$0	\$0	\$1,585	\$0	\$0
Capitalized Interest Fund	\$18,543	Reserve Interest Earnings	\$1,455	\$0	\$0	\$0	\$485	\$485
Reserve Amount	\$11,385	Bond Revenue	\$128,615	\$0	\$0	\$1,900	\$38,417	\$65,167
Issuance Costs	\$1,585	Bond Debt Service Payments	(\$21,466)	\$0	\$0	\$0	\$0	(\$10,733)
Net Costs of Bonded Projects Funded with Zone 40 Operating Revenues (Total of Bond Transactions Above, Includes Bond Debt Service Costs)			(\$25,069)	(\$1,276)	(\$800)	(\$13,094)	(\$44,687)	(\$78,069)
Project Costs Funded with Zone 40 Operating Revenues			(\$121,878)	(\$18,020)	(\$18,238)	(\$28,585)	(\$19,581)	(\$21,389)
Reimbursements - Credits Applied			(\$22,575)	(\$9,291)	(\$5,226)	(\$3,720)	(\$1,753)	(\$1,293)
Non-Specific Project Costs			(\$18,015)	(\$2,785)	(\$2,869)	(\$2,955)	(\$3,043)	(\$3,135)
Reimbursement Agreements Payments			\$36,485	\$2,347	\$1,108	\$1,834	\$13,470	\$12,744
Development Fee Revenue - Credits Applied			\$22,575	\$9,291	\$5,226	\$3,720	\$1,753	\$1,293
Development Fee Revenue Cash Paid (minus credits)			\$178,918	\$15,814	\$23,343	\$30,365	\$33,409	\$37,094
User Fee Revenue			\$31,858	\$4,415	\$4,773	\$5,131	\$5,489	\$5,847
Supplemental Fee Revenue			\$4,172	\$55	\$250	\$795	\$1,072	\$1,000
Aerojet/Boeing Agreement	\$25,000		\$24,992	\$751	\$4,163	\$7,578	\$8,333	\$4,167
Grants	\$0		\$0	\$0	\$0	\$0	\$0	\$0
Retained Earnings Interest				\$1,765	\$3,208	\$3,834	\$4,994	\$4,826
Cash Balance at End of Fiscal Year				\$45,885	\$60,347	\$77,544	\$108,593	\$105,059

Figure 8-13 provides a relative summary of the costs in terms of how much of the total cost (\$557M) is split amongst the various program requirements over the next five years. **Figure 8-8** illustrates the cash flow in terms of contributions and expenditures with debt financing separated out to visualize costs and revenues attributed to the purchase of Revenue Bonds.

Figure 8-13. Cost Breakdown of the 5-Year CIP



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