

**SAN GORGONIO PASS WATER AGENCY**  
**1210 Beaumont Avenue, Beaumont, CA**  
**Board of Directors Engineering Workshop**  
**Agenda**  
**February 12, 2018 at 1:30 p.m.**

1. **Call to Order, Flag Salute and Roll Call**
2. **Public Comment:**  
Members of the public may address the Board at this time concerning items relating to any matter within the Agency's jurisdiction. To comment on specific agenda items, please complete a speaker's request form and hand it to the board secretary.
3. **Review of 2018 Water Bond Initiatives\* (p. 2)**
4. **Review of Proposed Water Conservation Regulations**
5. **Discussion of Required Water Quality Modeling for 2018\* (p. 29)**
6. **Informational Only – General Manager Dan Jagger's (BCVWD) PowerPoint Slides and White Papers presented to San Gorgonio Pass Water Alliance on Strategy to Secure and Fund Water Supply for the SGPWA to Ensure Sustainability to the Year 2050 \* (p. 56)**
7. **Announcements**
  - A. Office closed Monday, February 19, 2018 in observance of Presidents' Day
  - B. Regular Board Meeting, **Tuesday**, February 20, 2018 at 1:30 p.m.
  - C. EBX II Grand Opening, **Thursday**, February 22, 2018  
- Citrus Reservoir and Pump Station, 10:00 a.m. – 12:00 p.m.  
(Shuttle Parking: Redlands Sports Park – Soccer Complex  
\*Do not park at Citrus Reservoir)
  - D. Finance and Budget Workshop, February 26, 2018 at 1:30 p.m.
  - E. San Gorgonio Pass Regional Water Alliance, February 28, 2018  
at 5:00 p.m. – Banning City Hall
8. **Adjournment**

**\*Information included in Agenda Packet**

(1) Materials related to an item on this Agenda submitted to the Board of Directors after distribution of the agenda packet are available for Public inspection in the Agency's office at 1210 Beaumont Avenue, Beaumont during normal business hours. (2) Pursuant to Government Code section 54957.5, non-exempt public records that relate to open session agenda items and are distributed to a majority of the Board less than seventy-two (72) hours prior to the meeting will be available for public inspection at the Agency's office, located at 1210 Beaumont Avenue, Beaumont, California 92223, during regular business hours. When practical, these public records will also be made available on the Agency's Internet Web site, accessible at <http://www.sgpwa.com>. (3) Any person with a disability who requires accommodation in order to participate in this meeting should telephone the Agency (951 845-2577) at least 48 hours prior to the meeting in order to make a request for a disability-related modification or accommodation.



*Bringing  
Water  
Together*

# Statewide Issues Forum

Park and Water Bonds – What Will California Voters be Considering in 2018?

Thursday, Nov. 30, 2017

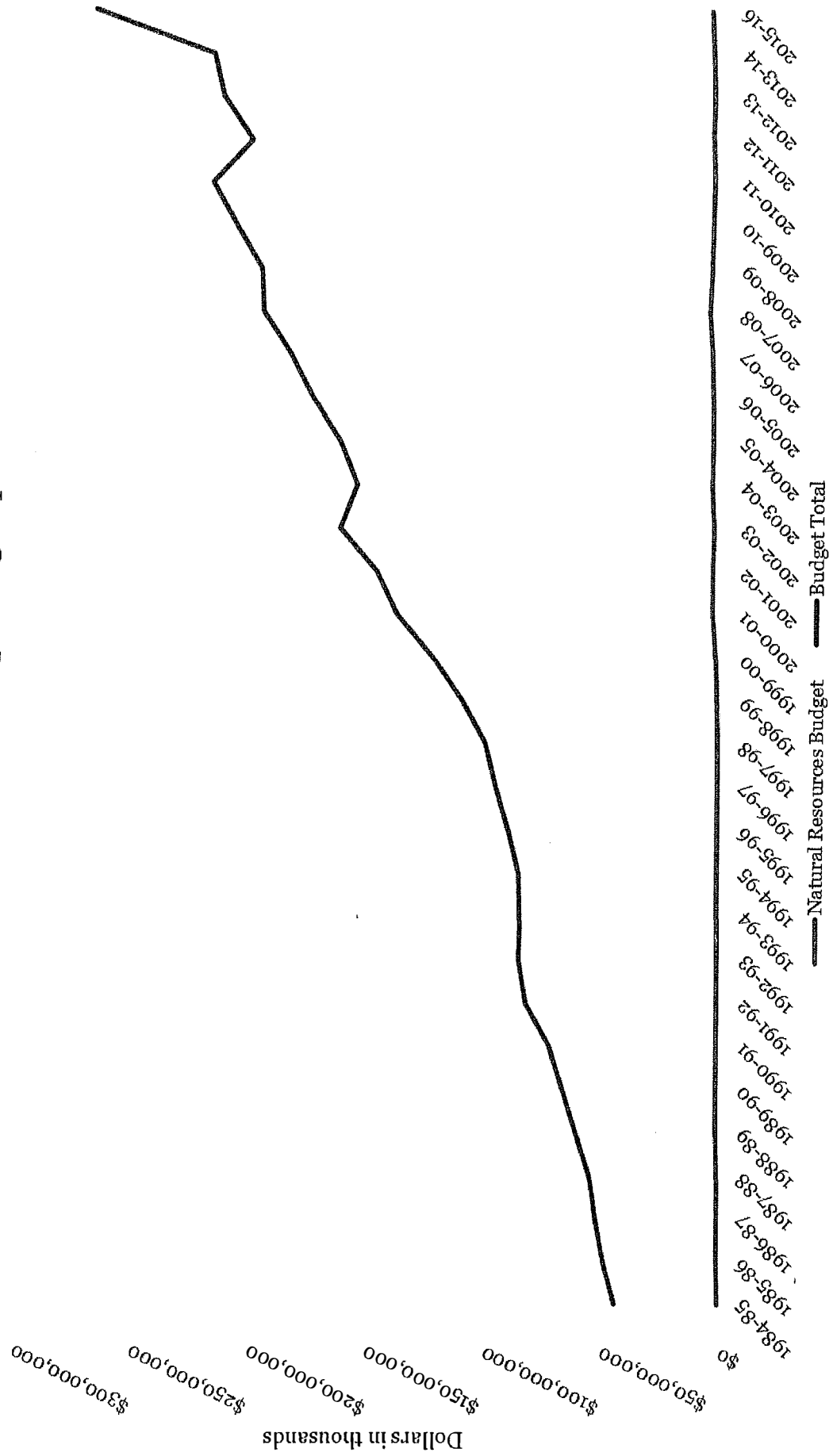
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[www.acwa.com](http://www.acwa.com)

# Factors Leading to SB 5 Enactment – June 2018 Ballot... \$4 Billion in New Investment

- **“New Legislature” – Conservation Investments Lagging...**
- **Environmental & Mitigation Funding Sources – Difficult to Create...**
  - Proposition 64 – Legalization of marijuana allocates 20% of state tax proceeds to environmental restoration
  - AB 398/AB 109 – Framework for Greenhouse Gas Reduction Funds for Natural and Working Lands
  - SB 1 – State Parks budget and Advance Mitigation
- **Chronic Budget Challenges for State Parks, Department of Fish & Wildlife, Resources Agency...**

# Natural Resources Spending Gap



# Funding Categories in Senate Bill 5

Environmental & Social Equity Investments	\$725 million
Regional and Local Parks	\$285 million
State Parks, Natural & Cultural Legacy	\$218 million
Trails & Greenway Programs	\$30 million
Rural Recreation, Tourism, & Economic Enrichment	\$25 million
Rivers, Creeks, & Waterways	\$162 million
Ocean & Coastal Protection	\$175 million
Groundwater Sustainability	\$80 million
Clean Drinking Water & Drought Preparedness	\$250 million
Conservancies & Wildlife	\$772 million
Climate Preparedness & Habitat Resiliency	\$443 million
Flood Protection & Repair	\$550 million
Regional Water Sustainability	\$390 million



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# 2018 Water Bond Act Initiative

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# History of voting on California Water Bonds

<b>1960</b>	burns porter act. Bond. Established state water project.
<b>1970</b>	recreation at state water project; fish and wildlife enhancement clean water bond act
<b>1974</b>	clean water bond act
<b>1976</b>	safe drinking water bond act
<b>1978</b>	clean water and water conservation bond
<b>1980</b>	amend safe drinking water bond act of 1976
<b>1984</b>	safe drinking water bond act clean water bond act
<b>1986</b>	water conservation and water quality bond safe drinking water bond act
<b>1988</b>	water conservation bond act clean water and water reclamation bond act safe drinking water bond act
<b>1990</b>	water resources bond act
<b>1996</b>	safe reliable water supply bond act
<b>2000</b>	parks, water, air coast bond act water bond act
<b>2002</b>	parks, water, air, coast bond act water quality supply safe drinking water initiative
<b>2006</b>	water bond act initiative Disaster preparedness and flood prevention
<b>2014</b>	water Quality, Supply, Treatment, Storage

## KEY CATEGORIES, WATER BOND

<b>Safe Drinking Water</b>	<b>\$500 million</b>
<b>Wastewater for DACs</b>	<b>\$250 million</b>
<b>Urban Water Conservation</b>	<b>\$300 million</b>
<b>Agricultural Water Conservation</b>	<b>\$50 million</b>
<b>Wastewater Recycling</b>	<b>\$400 million</b>
<b>Desalting (inland)</b>	<b>\$400 million</b>
<b>SGMA Compliance</b>	<b>\$675 million</b>
<b>Flood Management</b>	<b>\$500 million</b>
<b>Oroville Dam Repair</b>	<b>\$200 million</b>
<b>Repair Friant Kern Canal</b>	<b>\$750 million</b>
<b>Salton Sea</b>	<b>\$200 million</b>
<b>Stormwater</b>	<b>\$550 million</b>
<b>Fish Habitat &amp; Waterfowl Habitat</b>	<b>\$1450 million</b>
<b>Watershed restoration</b>	<b>\$2400 million</b>



- **Prop. 1 water bond statewide (2014: 67%)**
- **Measure AA SF Bay Restoration (2016: 70%)**
- **Governor position; candidates for Governor**
- **Strong inter-sector support**
  - **CBIA**
  - **Ducks Unlimited, California Waterfowl Association**
  - **Association of California Water Agencies**
  - **Rice, Fresh Fruit, Pistachio, Dairy**
- **Opposition: Sierra Club, NRDC**

# California Proposition 68, Parks, Environment, and Water Bond (June 2018)

Following California's 2018 initiative process?

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Get weekly updates from Ballotpedia on: actions by the state legislature, new filings, related lawsuits, breaking news emails & more.

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California Proposition 68, the Parks, Environment, and Water Bond, is on the ballot in California as a legislatively-referred bond act on June 5, 2018.<sup>[1]</sup>

A "yes" vote supports this measure to authorize \$4 billion in general obligation bonds for state and local parks, environmental protection projects, water infrastructure projects, and flood protection projects.

A "no" vote opposes this measure to authorize \$4 billion in general obligation bonds for state and local parks, environmental protection projects, water infrastructure projects, and flood protection projects.

## California Proposition 68: California Parks, Environment, and Water Bond



### Election date

June 5, 2018

### Topic

Bond issues and Forests and parks

### Status

On the ballot

### Type Origin

Bond State issue Legislature

## Overview

### Measure design

Proposition 68 would authorize \$4 billion in general obligation bonds for state and local parks, environmental protection and restoration projects, water infrastructure projects, and flood protection projects. Assuming a 3.5 percent interest rate over a 30-year period, the bond issue would generate \$2.53 billion in interest, meaning the state would spend \$6.53 billion to pay off the bond issue.<sup>[1]</sup>

The measure would require that between 15 and 20 percent of the bond's funds, depending on the type of project, be dedicated to projects in communities with median household incomes less than 60 percent of the statewide average; that 60 percent threshold amounted to about \$39,980 in 2016. The largest amount of bond revenue—\$725 million—would go toward neighborhood parks in *park-poor neighborhoods* in accordance with the Statewide Park Development and Community Revitalization Act of 2008's competitive grant program. The measure would also reallocate \$100 million in unissued bonds that voters approved via Proposition 1 (2014), Proposition 84 (2006), and Proposition 40 (2002). The measure would distribute bond revenue as follows:<sup>[1]</sup>

Click **show** to expand the bond revenue table.

Proposition 68 (2018)

[show]

## Bonds on the ballot in California

In California, the state sells general obligation bonds to investors, who are in effect providing funds to the state

that the state repays the investors with interest over a period of time. The state repays bondholders through revenue in the General Fund.<sup>[2]</sup> The California Constitution requires that general obligation bond issues of \$300,000 or more be referred to voters for approval or rejection. Between 1993 and 2018, voters of California cast ballots on 39 bond issues, approving 31 of them.

## State of ballot measure campaigns

As of February 1, 2018, there were five committees registered to support Proposition 68. The committees in support of the measure had raised a combined \$1.35 million. The top contributors included the Peninsula Open Space Trust (\$300,000), The Wildlands Conservancy (\$200,000), and the Save The Redwoods League (\$200,000). There were no committees registered to oppose the ballot proposition.<sup>[3]</sup>

## Text of the measure

### Full text

The full text of the measure is as follows:<sup>[1]</sup>

SB 5, De León. California Drought, Water, Parks, Climate, Coastal Protection, and Outdoor Access For All Act of 2018.

SECTION 1. Section 5096.611 is added to the Public Resources Code, to read:

5096.611. Notwithstanding any other law, two million five hundred fifty-seven thousand dollars (\$2,557,000) of the unissued bonds authorized for the purposes of subdivision (b) of Section 5096.610, and eight hundred thousand dollars (\$800,000) of the unissued bonds authorized for the purposes of subdivisions (b) and (c) of Section 5096.652 from the amount allocated pursuant to subdivision (d) of Section 5096.610 are reallocated to finance the purposes of, and shall be authorized, issued, and appropriated in accordance with, Division 45 (commencing with Section 80000).

SEC. 2. Section 75089.5 is added to the Public Resources Code, to read:

75089.5. Notwithstanding any other law, twelve million dollars (\$12,000,000) of the unissued bonds authorized for the purposes of subdivisions (a) of Section 75062

## Support

Senate President Kevin de León (D-24), a candidate for the U.S. Senate in 2018, was the lead author of the bond measure in the California State Legislature.<sup>[1]</sup>

## Supporters

### Officials

- Sen. Kevin de León (D-24)<sup>[1]</sup>
- Sen. Anthony Portantino (D-25)<sup>[4]</sup>
- Rep. Eduardo Garcia (D-56)<sup>[4]</sup>

### Organizations

- California Chamber of Commerce<sup>[5]</sup>
- Association of California Water Agencies<sup>[6]</sup>
- The Trust for Public Land<sup>[7]</sup>

## Arguments

**Susana Reyes**, vice president of the Sierra Club, and **Sen. Anthony Portantino** (D-25) wrote an opinion article advocating for the measure in the *Los Angeles Daily News*. Reyes and Sen. Portantino stated:<sup>[4]</sup>

“ California has always been an environmental leader, and our public spaces, forests, lakes and beaches are recreational destinations for millions. Five years of severe drought followed by heavy rains have magnified the lingering aftermath of the 2008 economic downturn, leaving our state with a substantial need to invest in deteriorating local and regional parks and aging water infrastructure, dams, reservoirs, and flood protection.<sup>[8]</sup> ”

**Senate President Kevin de León** (D-24), lead author of the bond measure, said:<sup>[9]</sup>

“ Clean and reliable water resources, including secure flood control systems, and access to parks and recreational space, are vital to our economy and wellbeing as a state. This bond allows us to invest in critical priorities that have been neglected for years, while lifting people up with good jobs and livable, healthy communities.<sup>[8]</sup> ”

**Mary Creasman**, California Director of Government Affairs for The Trust for Public Land, stated:<sup>[7]</sup>

“ Most importantly, it is a win for millions of California children and families, who will soon have access to a quality park within a 10-minute walk of their home. Park access should not be considered a luxury. It is a right, along with the clean air, clean water, and protection from climate impacts that result from these investments.<sup>[8]</sup> ”

## Opposition Arguments

- **David Wolfe**, legislative director of the Howard Jarvis Taxpayers Association, said the state should use the general fund to maintain parks, not bonds. He stated, "If you are using bond money to fill potholes, you are paying the interest off for 30 years."<sup>[10]</sup>



## Campaign finance

See also: *Campaign finance requirements for California ballot measures*

As of February 1, 2018, there were five ballot measure committees registered in support of the measure. The committee *Conservation Action Fund for Clean Water and Parks, Sponsored by Environmental Organizations* had raised the most funds at \$605,000. Together, the five committees received \$1.35 million and expended \$304,993.<sup>[3]</sup>

The largest contributor to the committees was Peninsula Open Space Trust (POST), a nonprofit organization that acquires land for conservation in the San Francisco Peninsula area.<sup>[13]</sup> The organization donated \$300,000.<sup>[3]</sup>

As of February 1, 2018, there were no committees registered in opposition to the initiative.<sup>[3]</sup>

<b>Total campaign contributions<sup>[11]</sup></b> <i>as of February 1, 2018<sup>[12]</sup></i>	
 <b>Support:</b>	<b>\$1,352,755.82</b>
 <b>Opposition:</b>	<b>\$0.00</b>

## Support

The contribution and expenditure totals for the committees in support of the initiative were current as of February 1, 2018.<sup>[3]</sup>

<b>Committees in support of Proposition 68</b>				<b>Totals in support</b>	
<i>Updated as of February 1, 2018</i>				<b>Total raised:</b>	<b>\$1,352,755.82</b>
<b>Supporting committees</b>	<b>Cash contributions</b>	<b>In-kind services</b>	<b>Cash expenditures</b>	<b>Total spent:</b>	<b>\$304,992.54</b>
Conservation Action Fund for Clean Water and Parks, Sponsored by Environmental Organizations	\$605,000.00	\$0.00	\$203,834.99		
Committee for Clean Water Natural Resources and Parks	\$128,400.00	\$29,530.42	\$19,723.23		
California Park & Recreation Society Inc. Supporting Clean Water, Natural Resources & Parks	\$9,825.40	\$0.00	\$7,723.59		
Californians for Clean Water and Safe Parks, Sponsored by Conservation Groups	\$530,000.00	\$0.00	\$41,344.35		
Fund for a Better Future, Committee for 2018 Clean Water and Safe Parks Bond	\$50,000.00	\$0.00	\$2,835.96		
<b>Total</b>	<b>\$1,323,225.40</b>	<b>\$29,530.42</b>	<b>\$275,462.12</b>		

## Donors

The following were the top six donors who contributed to the support committees as of February 1, 2018:<sup>[3]</sup>

<b>Donor</b>	<b>Cash</b>	<b>In-kind</b>	<b>Total</b>
Peninsula Open Space Trust	\$300,000.00	\$0.00	\$300,000.00
The Wildlands Conservancy	\$200,000.00	\$0.00	\$200,000.00
Save The Redwoods League	\$200,000.00	\$0.00	\$200,000.00
The Big Sur Land Trust	\$125,000.00	\$0.00	\$125,000.00
Sempervirens Fund	\$80,000.00	\$0.00	\$80,000.00
Los Angeles Waterkeeper	\$80,000.00	\$0.00	\$80,000.00

## Reporting dates

In California, ballot measure committees file a total of four campaign finance reports in 2018. The filing dates for reports are as follows:<sup>[14]</sup>

**Campaign finance reporting dates for June 2018 ballot** [\[show\]](#)

## Methodology

Ballotpedia calculates campaign finance based on the political committees registered to support or oppose a measure and independent expenditures, when relevant and available. When a committee is registered to support or oppose multiple measures it is impossible to distinguish between funds used for one measure and funds used for the other.

In calculating campaign finance for supporting and opposing committees, Ballotpedia does not count donations or expenditures from one ballot measure committee to another since that would amount to counting the same money twice. This method is used to give the most accurate information concerning how much funding was actually provided to and spent by the opposing and supporting campaigns.

Ballotpedia subtracts out committee-to-committee contributions—both cash donations and in-kind contributions. Because of this, it is possible for certain committees to have negative contributions. Negative contributions mean that a committee has provided more contributions to other committees than it has received. If expenditures exceed contributions, it means the committee has accrued unpaid bills, has unpaid or unforgiven loans, or has contributed a certain amount of in-kind services to another committee.

Ballotpedia provides information about all reported in-kind donations. In-kind contributions are also counted toward total expenditures since, with in-kind gifts, the contribution and services or goods are provided simultaneously. Ballotpedia does this to provide the most accurate information about the cash-on-hand of supporting and opposing campaigns.

## Background

### Bond issues on the ballot in California

See also: *Bond issues on the ballot*

Voters of California cast ballots on 39 bond issues, totaling \$154.829 billion in value, from January 1, 1993, through January 1, 2018. Voters approved 31 (79.49 percent) of the bond measures—a total of \$143.409 billion. Six of the measures were citizen's initiatives; four of six were approved. Thirty-three of the measures were legislative referrals; 25 of 33 were approved. The most common purposes bond measures during the 25 years between 1993 and 2018 were water infrastructure and public education, for which there were seven bond measures each. There were four bond measures related to parks or environmental conservation between 1993 and 2018, for which three of four were approved.

Prior to the election on June 5, 2018, the most recent bond issue that citizens voted on was a \$9 billion public education bond titled Proposition 51.

Click **show** to expand the bond revenue table.

Year [show]	Measure	Amount	Primary purpose	Origin	Outcome
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### Bond debt in California

As of December 1, 2017, California had \$73.33 billion in debt from general obligation bonds. The state had \$31.09 billion in unissued bonds, including \$2.19 billion for natural resources and environment-related bonds.<sup>[15]</sup>

### Budgets

The state budget for fiscal year 2017-2018, which was signed into law on June 27, 2017, included \$183.3 billion in state funds. Most—\$125.1 billion—came from the General Fund and less than two percent—\$3.3 billion—came from bond funds. The 2017-2018 budget included \$3.2 billion for the state's Environmental Protection Agency and \$5.2 billion for the state's Natural Resources Agency.<sup>[16]</sup>

On January 10, 2018, Gov. Brown (D) released a \$190.3 billion budget plan for the state's fiscal year 2018-2019.<sup>[17]</sup> Around \$2.5 billion of the proposed spending would be derived from bonds. The proposed 2018-2019 budget would include \$2.9 billion for the state's Environmental Protection Agency, a 9.4 percent decrease from the prior budget, and \$4.7 billion for the state's Natural Resources Agency, a 9.6 percent decrease from the prior budget.<sup>[18]</sup> The budget requires the approval of the California State Legislature, which votes on amendments and other changes to the budget.

Gov. Brown's proposed budget would allocate \$1.02 billion of the Parks, Environment, and Water Bond in fiscal year 2018-2019.<sup>[19]</sup> As the proposed budget included allocations from the Parks, Environment, and Water Bond, rejecting the bond measure would decrease the spending on natural resources in the 2018-2019 budget, unless the budget is amended before enactment to increase spending.

## Path to the ballot

See also: *Authorizing bonds in California*

Section 1 of Article XVI of the California Constitution requires that general obligation bond issues of \$300,000 or more be referred to voters for approval or rejection. The California State Legislature is required to pass bond acts by a two-thirds vote of all the members in both legislative chambers. The governor must also sign the bond act.

The bond act was introduced into the legislature as Senate Bill 5 (SB 5) on December 5, 2016. On May 30, 2017, the California Senate passed the bill 31 to 9. The bill was amended in the California State Assembly, increasing the bond amount from \$3.832 billion to \$4 billion.

On September 15, 2017, the state Assembly voted 56 to 21, with two members not voting, to pass the bill. Three Republicans voted with 53 Democrats to approve the bill. As one Democrat abstained from voting, at least one Republican vote was needed to pass SB 5. On September 16, 2017, the state Senate voted 27 to 9, with four members not voting, to pass the final version of SB 5. In the state Senate, the bill received just enough votes to pass as Democrats supported SB 5 and Republicans either voted against SB 5 or abstained.<sup>[1]</sup> September 15, 2017, was the last day of the 2017 regular legislative session that the state Legislature was allowed to pass bills.

On October 15, 2017, Gov. Jerry Brown (D) signed the bill, certifying the measure for the ballot in 2018.<sup>[1]</sup>

Vote in the California State Assembly September 15, 2017				Vote in the California State Senate September 16, 2017		
<i>Requirement: Two-thirds (66.67 percent) vote of all members in each chamber</i>				<i>Requirement: Two-thirds (66.67 percent) vote of all members in each chamber</i>		
<i>Number of yes votes required: 54</i> ▼				<i>Number of yes votes required: 27</i> ▼		
	Yes	No	Not voting		Yes	No
Total	56	21	2	Total	27	9
Total percent	70.00%	26.25%	2.50%	Total percent	67.50%	22.50%
Democrat	53	0	1	Democrat	27	0
Republican	3	21	1	Republican	0	9

## See also

### 2018 measures



- 2018 ballot measures
- Bond issues on the ballot
- Environment on the ballot
- 2018 legislative sessions

### California



- California ballot measures
- California ballot measure laws
- Environmental policy in California

### News and analysis



- Ballot measure lawsuits
- Ballot measure readability
- Ballot measure polls

## External links

- California Senate Bill 5

# Everything You Need To Know About...

# Prop 68

(de León) California Drought, Water, Parks, Climate, Coastal Protection and Outdoor Access for All Act of 2018

## June 2018

## The Basics

- ▶ On the June 2018 ballot, voters will decide whether to approve a **\$4.1 billion bond** that will provide funding for parks, drought preparedness, water investments and flood protection throughout the state.
- ▶ Authored by Senate Pro Tem Kevin de León, this bond places a high priority on funding for low-income communities.
- ▶ At least **20 percent of the funds** in each of the eleven chapters must be allocated to projects serving severely disadvantaged communities.



**\$1.47 Billion**

### Parks

**\$725 MILLION** for the creation and expansion of safe parks in park-poor communities

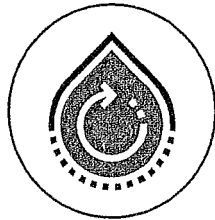
**\$290 MILLION** to local and regional outdoor spaces

**\$218 MILLION** to existing state parks facilities

**\$180 MILLION** to state conservancies

**\$30 MILLION** for trail maintenance and development

**\$25 MILLION** for rural areas



**\$1.47 Billion**

### Water

**\$550 MILLION** for flood protection and repair

**\$290 MILLION** for regional sustainability

**\$250 MILLION** for clean drinking water & drought preparedness

**\$200 MILLION** to the Salton Sea

**\$100 MILLION** for water recycling

**\$80 MILLION** for groundwater sustainability



**\$1.12 Billion**

### Environment

**\$320 MILLION** for wildlife conservation and habitat restoration

**\$300 MILLION** to the California Natural Resources Agency and California Conservation Corps

**\$215 MILLION** for coastal protection

**\$162 MILLION** for river and urban stream restoration


**\$60 MILLION** for watershed restoration

**\$50 MILLION** to the Department of Forestry

**\$30 MILLION** for climate resiliency

## Supported by

- ▶ League of California Cities
- ▶ League of Women Voters
- ▶ Association of California Water Agencies
- ▶ California Chamber of Commerce
- ▶ California State Parks Foundation
- ▶ TreePeople
- ▶ The Nature Conservancy
- ▶ Audubon California
- ▶ American Heart Association
- ▶ The Wildlands Conservancy

 **SCWC**  
**Endorsed**

"Proposition 68 will provide the funding to protect, enhance and secure California's most valuable resource: water."

-Charles Wilson, Executive Director



SOUTHERN CALIFORNIA WATER COALITION

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@SocalWaterComm

January 2018



# Everything You Need To Know About...

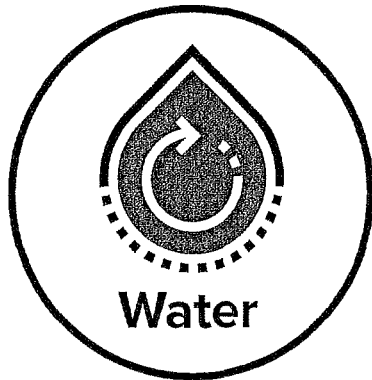
# Water Supply and Water Quality Act of 2018

**November 2018**

## The Basics

- ▶ On the November 2018 ballot, voters may be asked to consider a **\$8.9 billion bond** that will provide funding for major water infrastructure projects, drought preparedness, water recycling and water quality protection.
- ▶ In the past 12 years, Californians have passed two water bonds—Prop 1 in 2014 and Prop 84 in 2006. By 2019, the remaining funds in both of these bonds will likely be exhausted.

## Where Will the Money Go?



**\$8.9 Billion**

**\$2.4 BILLION**  
for watershed restoration

**\$1.45 BILLION**  
for fish habitat & waterfowl habitat restoration/protection

**\$750 MILLION**  
for Friant-Kern canal repair

**\$675 MILLION**  
for Sustainable Groundwater Management Act (SGMA) compliance

**\$550 MILLION**  
for stormwater

**\$500 MILLION**  
for flood management

**\$500 MILLION**  
for safe drinking water

**\$400 MILLION**  
for wastewater recycling

**\$400 MILLION**  
for inland desalting

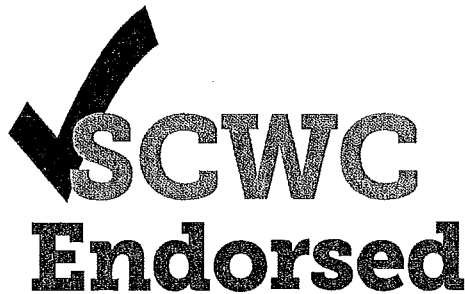
**\$300 MILLION**  
for urban water conservation

**\$250 MILLION**  
for wastewater for disadvantaged communities

**\$200 MILLION**  
for Oroville Dam repair

**\$200 MILLION**  
for the Salton Sea

**\$50 MILLION**  
for agricultural water conservation



"This bond addresses California's dire need to invest in and update our state's infrastructure to secure a safe and reliable water supply."

*-Charles Wilson, Executive Director*

## Supported by

- ▶ California Chamber of Commerce
- ▶ California Building Industry Association
- ▶ Association of California Water Agencies
- ▶ Agricultural Council of California
- ▶ Environmental Science Associates
- ▶ Regional Council of Rural Counties
- ▶ Community Water Center



SOUTHERN CALIFORNIA WATER COALITION

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@SocalWaterComm

January 2018

# Potential Major Benefits of the Water Supply and Water Quality Bond Act Initiative for State Water Contractors

The Bond act will appear on the November, 2018 California statewide ballot. It is not in conflict with the legislative park and environmental bond, which will appear on the June California statewide ballot. The two measures are complementary.

The following provisions are of particular interest to the agencies who are State Water Project contractors.

## Oroville Dam Spillway Repairs

The initiative includes \$200,000,000 for this purpose. These funds are justified, because the flood control facilities at Oroville were paid for by the federal government. If the State Water Project contractors have to pay this amount, it will probably be in proportion to the Table A amounts for each contractor.

## AB 32: Greenhouse Gas Reduction

The State Water Project must make payments due to emission of greenhouse gases as a result of energy used to pump water throughout the state. At present the payments are allocated by the Legislature for a variety of programs and projects. A provision of the initiative requires use of these payments for water and energy conservation in SWP system, and by the contractors. At present these payments are about \$20,000,000 per year. They could go as high as \$50,000,000 per year in future years.

## Water Supply Categories

The initiative includes a variety of traditional water supply categories, which will be available to many SWP contractors. These include the following:

- Wastewater recycling: \$400,000,000
- Desalting inland supplies: \$400,000,000
- Urban Water Conservation: \$300,000,000

## Increased Delta inflow from agricultural water conservation

Agricultural water conservation which leaves water in streams tributary to the Delta will improve Delta water quality, help restore fisheries, and will allow for increased exports. The initiative includes \$50,000,000 for agricultural water conservation in watersheds tributary to the Delta, if the conserved water is allowed to remain instream.

## **Fish Habitat**

Reduced diversion of water from the Delta to the California Aqueduct is caused in part by regulations protecting endangered fish species.

Recent science demonstrates that improved fish habitat can result in more and healthier fish production. If successful, this should lead to increased fish numbers, and reduced pressure on exports. The initiative makes a major investment in fish restoration, focused mainly on listed species

**Delta Conservancy: \$100,000,000**

**Fish Screens, Delta Tributaries: \$100,000,000**

**Fish habitat restoration: \$383,000,000**

## **Watershed Restoration**

Increasing scientific evidence from the Sierra Nevada demonstrates that healthier forests mean improved water quantity and water quality downstream. This is vital to the State Water Project, which derives export water from the entire watershed, not just the Feather River. The initiative funds restoration of forest watersheds, including post fire recovery.

**Sierra Nevada Conservancy Watershed Restoration: \$250,000,000**

## **Oroville: response to local concerns.**

During the Oroville spillway event, Butte County officials found it hard to communicate. The initiative includes funding for **Butte County Emergency Communications Equipment: \$1,000,000**

**Sediment in Feather River causing wildlife and flow problems.** Massive amounts of material below Oroville Dam were washed into the Feather River channel and wildlife areas. The initiative includes funds to remove these sediments. This is done through grants to the

**Sutter Butte Flood Management Agency**

\$15 million for sediment removal Feather River

\$6 million Oroville Wildlife Area Improvement

and the Wildlife Conservation Board. Feather River improvements: \$7 million

## **Changing diversion point for North Bay Aqueduct**

Water quality in Barker Slough must be maintained through storage releases from Shasta, Oroville, and Folsom Reservoirs, because of the North Bay Aqueduct diversions to State Water Project Solano and Napa County water users from this dead end slough, which is in the middle of delta Smelt habitat. A grant to the **Solano County Water Agency of \$5,000,000** will allow for the study of the relocation of this diversion to the Sacramento River. Relocation would relieve pressure on Delta Smelt, and on maintaining drinking water quality in Barker slough.

## Benefits for Southern California from Water Bond Initiative

Southern California Counties: Imperial, Kern, Los Angeles, Orange, Riverside, San Bernardino, San Diego, Santa Barbara, Ventura,

**Safe Drinking Water and Wastewater treatment:** \$750 million. There are several communities in Imperial and other Southern California counties that can apply for these funds.

**Wastewater Recycling:** \$400 million. Every county in Southern California will have a project eligible for these funds.

**Groundwater Desalination:** \$400 million. These funds will be especially useful in Riverside, San Bernardino, Ventura and other Southern California counties.

**Water Conservation for urban areas:** \$300 million. All Southern California counties will be eligible for these funds.

**Water and Energy Technology program:** \$15 million. Of great importance to help all water districts save energy and water.

**Flood control reservoir repair:** \$100 million. Corps of Engineers and other flood control reservoirs needing repair in Los Angeles, Riverside and other counties are eligible for these funds, which will allow increased water yield.

**Improved water measurement and research:** \$60 million. Every Southern California county will be eligible for these funds.

**Stormwater management for water supply and water quality improvement:** \$510 million. Of these funds, \$80 million are earmarked for Los Angeles County, and \$40 million for San Diego County. All southern California counties can compete for the State Water Resources Control Board allocation of \$400 million, and the coastal counties can compete for the \$40 million allocated to the Coastal Conservancy.

**Intergrated Regional Water Management:** \$5 million. All IRWM agencies can compete for these funds, to continue IRWM coordination.

### **Allocations to regional agencies for better watershed management:**

**Coastal Conservancy:** \$135 million. San Diego, Orange, Los Angeles, Ventura, and Santa Barbara Counties eligible.

**Los Angeles and San Gabriel River and Mountain Conservancy:** \$60 million

**Santa Monica Mountains Conservancy:** \$60 million

**Santa Ana River (Coastal Conservancy):** \$30 million

**Baldwin Hills Conservancy:** \$30 million

**San Diego River Conservancy:** \$40 million

**Coachella Valley and Mountains Conservancy** \$25 million

**River Parkways: \$70 million** all Southern California counties eligible.

The following are in addition to the statewide allocation:

**Santa Clara River (Coastal Conservancy)** \$10 million

**Tijuana River (Coastal Conservancy):** \$10 million

**San Diego Bay (Coastal Conservancy)** \$15 million

**Santa Margarita River (Coastal Conservancy):** \$15 million

**Los Angeles River (Equally divided by River and Mountain Conservancy and Santa Monica Mountains Conservancy):** \$150 million

**Natural Community Conservation Plan implementation:** \$60 million. All Southern California counties eligible.

**Wildlife Conservation Board:** \$240 million. All Southern California Counties eligible.

**State Parks watershed restoration and water systems:** \$150 million. All Southern California Counties eligible.

**Department of Conservation watershed restoration and ag land program** \$60 million. All Southern California Counties eligible.

**Ocean Protection** \$100 million. San Diego, Orange, Los Angeles, Ventura and Santa Barbara counties eligible.

**Salton Sea habitat and dust control** \$200 million. This directly benefits Imperial, Riverside, San Bernardino, Los Angeles, and San Diego Counties due to the dust control elements.

**Urban Streams** \$50 million. All Southern California Counties eligible.

**Urban Forestry** \$20 million. All Southern California Counties eligible.

**Non motorized river and lake access** \$20 million. All Southern California Counties eligible.

**Matilija Dam Removal** \$80 million. Benefits Ventura County.

**UC Natural Reserves** \$25 million. All Southern California Counties eligible.

**Sierra Nevada Conservancy fire and watershed mitigation** \$50 million. Kern County eligible.

**Cal Fire fire and watershed mitigation** \$50 million. All Southern California Counties eligible.

**Land management for water supply.** \$100 million. All Southern California Counties eligible.

**Conservation Corps** \$40 million. All Southern California Counties eligible.

**Sustainable Groundwater Management Act implementation** \$640 million. There are a number of areas throughout Southern California that do not have adjudicated groundwater basins. All these areas would be eligible for funding in this category.

**Borrego Groundwater stabilization** \$35 million. San Diego County.

**Waterfowl enhancement** \$280 million. There are waterfowl areas in all Southern California Counties that would be eligible for these funds.

**Friant Kern Canal restoration** \$750 million. Kern County would be a major beneficiary of these funds.

**Use of fees paid pursuant to AB 32 (greenhouse gas reduction)** Fees currently paid by Metropolitan Water District, Kern County Water Agency and other southern California State Water Project contractors would be used for water and energy conservation projects within Southern California. This will amount to as much as \$50 million per year in future years.

**There are additional funds which would be spent north of Southern California, but which would be of major benefit to Southern California. These include**

**Oroville Dam Repair** \$200 million. To the extent that these costs end up falling on State Water Project contractors, 80% of these costs would fall on the Kern County Water Agency, Metropolitan Water District of Southern California and the other State Water Project contractors in Southern California.

**Fisheries restoration** \$1.15 billion. Export of water to Southern California from the Delta is restricted due to fish flow requirements, largely for rare and endangered species. Fisheries habitat restoration in tributaries to the Delta, and in the Delta itself, should increase populations of these fish, thus relieving pressure to reduce Delta exports.

**Sierra Nevada Conservancy and Department of Forestry and Fire Protection.** \$300 million. These funds will go to improving watershed health and water productivity of the watersheds which are the source of a third of Southern California's water.

# Official Endorsement List for the Water Supply and Water Quality Act of 2018

## Conservation Groups

- American River Conservancy
- American Woodland Conservancy
- Anza-Borrego Desert Natural History Association
- Bear-Yuba Land Trust
- California Invasive Plant Council
- California Native Plant Society
- California Urban Streams Partnership
- California Waterfowl Association
- California Watershed Network
- California Wildlife Foundation/California Oaks Fund
- Carrizo Plain Conservancy
- Delta Waterfowl
- Dry Creek Conservancy
- Ducks Unlimited
- Foothill Watershed Collaborative
- Friends of Corte Madera Creek
- Friends of Orinda Creeks
- Friends of San Leandro Creek
- Friends of the Napa River
- Friends of the Santa Clara River
- Friends of Wild Cherry Canyon
- Lower Putah Creek Coordinating Committee
- Mattole Salmon Group
- National Wild Turkey Foundation
- Natural Heritage Institute
- Nor-Cal Guides & Sportsmens Association
- Noyo Headlands Urban Design Group, Fort Bragg
- Pheasants Forever
- Placer Land Trust
- Putah Creek Council
- Quail Forever
- Sacramento River Watershed Program
- Sacramento Urban Creeks Council



- Salmonid Restoration Foundation
- Santa Barbara Urban Creeks Council
- Santa Clara River Conservancy
- Save the Bay (formerly Save San Francisco Bay Association)
- Save the Waves
- Sierra Foothill Conservancy
- Sierra Nevada Alliance
- Sonoma Ecology Center
- Transition Habitat Conservancy
- Truckee Donner Land Trust
- Tubb Canyon Desert Conservancy
- Wildcat San Pablo Creeks Watershed Council
- Worth a Dam

**Agricultural organizations**

- Agricultural Council of California
- California Dairies
- California Fresh Fruit
- American Pistachio Growers
- California Rice Commission
- California Rice Industry Association

**Environmental Justice Organizations**

- Community Water Center
- Grassroots Ecology
- The Watershed Project
- Center for Sustainable Neighborhoods

**Water agencies**

- Arvin Edison Water Storage District
- Association of California Water Agencies
- Bear Valley Basin Groundwater Sustainability Agency
- Big Bear Municipal Water District

- Borrego Water District
- City of Big Bear Lake, Department of Power and Water
- Colusa Groundwater Authority
- Friant Water Authority
- Kern-Tulare Water District
- Lindmore Irrigation District
- Lindsay-Strathmore Irrigation District
- Madera Irrigation District
- Northern California Water Association
- Porterville Irrigation District
- San Joaquin River Exchange Contractors Water Authority
- Saucelito Irrigation District
- Solano County Water Agency
- Solano Irrigation District
- Tulare Irrigation District

## **Individuals**

- Edwin Camp
- Brigadier General Gerald Galloway, United States Army (Retired)
- Ron Gastelum, Former CEO and GM of the Metropolitan Water District of Southern California
- Brian Jordan, Vice President, Tetra Tech
- Peter B Moyle, Distinguished Professor Emeritus, University of California, Davis
- Ann L. Riley, Ph.D.

## **Business**

- California Building Industry Association
- California Chamber of Commerce
- DM Camp & Sons
- ESA (Environmental Science Associates)
- Kern Machinery Inc
- Sierra Business Council
- Western Power Products, Inc.

- Northern California Water Association Water Bond Support (November 2017), and members:
  - Anderson-Cottonwood Irrigation District
  - B&B Ranch
  - Brophy Water District
  - Browns Valley Irrigation District
  - City of Colusa
  - City of Redding
  - Crain Orchards, Inc.
  - Danna & Danna Inc.
  - Edwards Ranch
  - Feather Water District
  - Fedora Farms
  - G&K Farms, LLC.
  - Garden Highway Mutual Water Co.
  - Garner, Garner & Stoy
  - Glenn Colusa Irrigation District
  - Hallwood Irrigation District
  - Henle Family Limited Partnership
  - Hershey Land Row Crop, LLC.
  - J.A. Driver
  - Joint Water Districts Board
    - Biggs-West Gridley Water District
    - Butte Water District
    - Richvale Irrigation District
    - Sutter Extension Water District
  - Knaggs Ranch
  - Larry Pires Farms
  - Lindauer River Ranch, Inc.
  - Llano Seco Rancho
  - M&T Ranch
  - Maxwell Irrigation District
  - Meridian Farms Water Co.
  - Natomas Mutual Water Co.
  - North Yuba County Water District

Oji Brothers Farms, Inc.  
Pacific Farms & Orchards  
Pacific Gold Agriculture  
Paul Bertagna  
Pelger Mutual Water Company  
Pleasant Grove-Verona Mutual Water Co.  
Plumas Mutual Water Co.  
Princeton-Codora-Glenn Irrigation Dist.  
Provident Irrigation District  
R. Gorrill Ranch Enterprises  
Ramirez Water District  
Reclamation District 1004  
Reclamation District 108  
Reclamation District 2035  
Richter Brothers, Inc.  
Rising Eagle Ranch  
River Garden Farms  
Riverview Land & Equipment, Inc.  
South Sutter Water District  
South Yuba Water District  
Sutter Bypass-Butte Slough WUA  
Sutter Mutual Water Company  
Sycamore Trust  
Taylor Brothers Farms  
Tehama Angus Ranch, Inc.  
Thermalito Irrigation District  
Tudor Mutual Water Co.  
Tuttle Ranches  
Western Canal Water District  
William P. Locket  
Yolo County Flood Control & WCD  
Yuba County Water Agency

## **Members of Congress**

John Garamendi

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**COOPERATIVE AGREEMENT  
TO PROTECT WATER QUALITY AND ENCOURAGE THE CONJUNCTIVE USES OF IMPORTED  
WATER IN THE SANTA ANA RIVER BASIN**

This Cooperative Agreement to Protect Water Quality and Encourage the Conjunctive Uses of Imported Water in the Santa Ana River Basin ("Agreement") is entered into and effective this 18 day of January, 2007 by and among the California Regional Water Quality Control Board, Santa Ana Region (the "Regional Board") and the entities listed in paragraph 11(n) below. The Regional Board and each of the entities listed in paragraph 11(n) below are individually referred to as a "Party" and are collectively referred to as the "Parties."

Recitals

A. Water imported to the Santa Ana River Region, as defined in Water Code section 13200(e) (the "Region"), from the State Water Project, the Colorado River and other sources, and to groundwater basins within the Region from other groundwater basins within the Region, is vital to meet present and future demands for water within the Region. Such water is directly used; injected or percolated within groundwater basins; stored in a groundwater basin for later use; may be combined with or used in addition to the native groundwater supplies in a basin; may be exported/imported from one basin to another; and after consumptive use may form a portion of the wastewater that is treated, recharged and reused within the Region. Such conjunctive uses of surface water and groundwater within the Region have been contemplated by the State of California at least since the issuance of the original California Water Plan in 1957 and the adoption by the State Water Quality Control Board of Resolution No. 64-1.

B. The Regional Board is charged by statute with adopting such water quality objectives as may be required to protect the beneficial uses of water within the Region. In particular, the long-term conjunctive use of groundwater in the Region requires that the quality of water in groundwater basins in the Region be managed to meet the water quality objectives for nitrogen and total dissolved solids (collectively, the "Salinity Objectives") adopted by the Regional Board in the 1995 Water Quality Control Plan for the Santa Ana River Basin, as amended in 2004 by R8 2004-0001 (the "Basin Plan").

C. The Salinity Objectives presently included in the Basin Plan are the result of a multi-year, multi-million dollar cooperative effort among many of the Parties. The Salinity Objectives are a product of the best scientific and technical information available.

D. The Legislature has declared that the facilitation of voluntary transfers of water and water rights is the established policy of the State. The Legislature has further declared that voluntary water transfers between water users can result in a more efficient use of water and can allow more intensive use of developed water resources so as to conserve all available water resources. The Legislature has directed the Regional Board to encourage voluntary transfers of water and water rights.

46 E. The Parties disagree whether the Regional Board may regulate the conjunctive  
47 uses of imported water in the Region by means of general waste discharge requirements. Some  
48 of the Parties believe the Regional Board lacks authority to regulate the conjunctive uses of  
49 water in the Region because, they contend, such water does not constitute "waste" as defined in  
50 Water Code section 13050(d); the Regional Board and other Parties believe the Regional Board  
51 has such authority.

52  
53 F. To avoid costly and time-consuming litigation brought to resolve the scope of the  
54 Regional Board's authority to regulate imported water and without prejudice to the Parties'  
55 competing views on this question, the Parties wish to act cooperatively with the goal of  
56 achieving compliance with the Salinity Objectives without the necessity of general waste  
57 discharge requirements.

58  
59 G. The Parties wish to memorialize the terms of their cooperative effort by means of  
60 this Agreement.

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64

## Agreements

### 65 1. *Purpose of Agreement*

66 This Agreement is intended to allow the Parties to monitor and improve water quality  
67 within the Santa Ana River Region in a manner that is consistent both with adopted water quality  
68 objectives and with the needs of the inhabitants of the Region for a reliable supply of water.  
69 This Agreement is limited in scope to compliance with and implementation of the Salinity  
70 Objectives.

### 71 2. *Parties*

72 The Regional Board or any public agency or non-profit mutual water company that  
73 imports water to the Region, exports/imports water between basins within the Region, recharges  
74 such imported water within the Region, delivers such imported water for potable use within the  
75 Region, or treats and/or recharges wastewater within the Region that includes imported water  
76 may become a Party to this Agreement.

77  
78

### 3. *Term of Agreement*

79 This Agreement will have an initial term of 10 years and shall automatically renew for  
80 subsequent 10-year periods, *provided* that any Party may withdraw at any time by providing one  
81 year's written notice of withdrawal to all other Parties.

### 82 4. *Preparation of Triennial Water Quality Report*

83 The Parties that intentionally recharge imported water within the Santa Ana Region (the  
84 "Recharging Parties") agree voluntarily to collect, compile and analyze the N/TDS water  
85 quality data necessary to determine whether the intentional recharge of imported water in the  
86 Region may have a significant adverse impact on compliance with the Salinity Objectives within

87 the Region. To that end, the Recharging Parties will collect, compile and analyze such N/TDS  
88 water quality data and prepare, within eighteen months from the effective date of this Agreement  
89 and every three years thereafter, a report containing the following information:

90 a. A summary of the then-current ambient water quality in each groundwater  
91 management zone and a comparison of that ambient water quality with the  
92 Salinity Objectives. The Recharging Parties shall calculate ambient water quality  
93 for each groundwater management zone in a manner that allows for a technically  
94 valid comparison with the Salinity Objectives.

95 b. A summary of the amount and quality of imported water recharged in each  
96 groundwater management zone during the previous three-year period.

97 c. The initial report and each report prepared at six-year intervals thereafter will } When  
98 include a projection of ambient water quality in each groundwater management } is  
99 zone for the subsequent 20 years. } this?

100 (1) The projection of ambient water quality for each groundwater  
101 management zone will be based upon professionally accepted modeling  
102 techniques, will reasonably account for surface fluxes of salt input, will  
103 reflect the effects of all existing and reasonably foreseeable recharge  
104 projects for which there is a certified environmental document and will  
105 compare baseline ambient water quality with the Salinity Objectives.

106 (2) The projections for different groundwater management zones may be  
107 based on different modeling techniques.

108 (3) Each report that includes a 20-year projection of ambient water quality  
109 will also present a comparison of then-current water quality in each  
110 groundwater management zone with the ambient water quality projection  
111 made six years earlier, together with an evaluation of the reason(s) for any  
112 differences.

113 The Recharging Parties will agree among themselves regarding the manner in which they will  
114 prepare the report and the manner in which they will share the cost of preparing the report. The  
115 Recharging Parties will circulate a draft version of each report to all other Parties for review and  
116 written comments for at least a 45-day period. The Recharging Parties shall consider written  
117 comments received on the draft report in preparing the final report. Upon completion of the final  
118 report, the Recharging Parties shall promptly lodge the final report with the Regional Board.

119 5. *CEQA Review of Proposed Projects*

120 Each Recharging Party agrees that, when it serves as a lead agency under the California  
121 Environmental Quality Act ("CEQA") for a proposed project involving the recharge of imported  
122 water within the Region, it will analyze that project as follows:  
123

- 124 a. The environmental document will include the water quality data compiled in the  
 125 most recent triennial report to the Regional Board (see paragraph 4 above) in the  
 126 analysis of the potential impacts of the proposed project.
- 127 b. The environmental document will incorporate professionally acceptable modeling  
 128 techniques. The Parties agree that the following models meet this standard:
- 129 (1) The Wildermuth models used to establish maximum benefit objectives.
- 130 (2) The Orange County Basin Groundwater Model.
- 131 (3) The USGS/Geoscience/Secor model of the Bunker Hill Groundwater  
 132 Basin.
- 133 (4) The Chino Basin Watermaster/Inland Empire Utilities Agency model.
- 134 (5) The Beaumont-Cherry Valley model for the Beaumont management zone
- 135 (6) Eastern Municipal Water District's San Jacinto Groundwater Model.
- 136 (7) Elsinore Valley Municipal Water District's Elsinore Basin Groundwater  
 137 Model.
- 138 (8) The USGS model of the Beaumont Basin (with MT3D package or  
 139 equivalent added).
- 140 Updates/refinements of these models are presumed to be professionally  
 141 acceptable.
- 142 c. A Recharging Party may base its environmental analysis on a model other than  
 143 those described above if that model has been presented to the Regional Board at  
 144 least 180 days prior to the release of the draft environmental document and there  
 145 has been a determination by the Regional Board or its staff that the alternative  
 146 model is acceptable.
- 147 (1) The Regional Board agrees that an alternative model is acceptable for  
 148 purposes of this Agreement if the proponent of that model can  
 149 demonstrate with reasonable certainty that the relative error of the model's  
 150 calibration for the groundwater management zones in question for a  
 151 reasonable base period is  $\pm 10\%$  or less when compared with existing  
 152 groundwater data.
- 153 (2) The provisions of the immediately preceding paragraph are not to be  
 154 construed to preclude other means or methodologies for an alternative  
 155 model's proponent to demonstrate to the Regional Board that an  
 156 alternative model is acceptable for purposes of this Agreement.



157 (3) If an alternative model has not been deemed acceptable by the Regional  
158 Board or its staff and a lead agency wishes to include results from that  
159 model in the environmental document, the lead agency shall include  
160 results from both the alternative model and one of the pre-approved  
161 models in the environmental document.

162 d. The environmental document will include the following analyses:

163 (1) A summary of the condition of the groundwater management zones, as  
164 reflected in the most recent triennial report to the Regional Board, that  
165 might be affected by the project.

166 (2) A 20-year projection of water quality in the groundwater management  
167 zone with the proposed project and a comparison of that water quality with  
168 conditions expected without the project.

169 (3) A comparison of the 20-year water quality projection for conditions with  
170 the proposed project with the Salinity Objectives for the groundwater  
171 management zone.

172 (4) A description and evaluation of any measures proposed to mitigate the  
173 potential effects of the proposed project.

174 e. The draft environmental document will be circulated to all Parties.

175 f. Each Recharging Party agrees to adopt the operative guidelines contained in this  
176 paragraph 5 as part of its CEQA implementing procedures pursuant to section  
177 15022 of the CEQA Guidelines.

178 g. The environmental document shall include, if required under CEQA, an effective  
179 mitigation monitoring and reporting plan that enables the lead agency to  
180 demonstrate compliance with applicable regulatory standards and any  
181 performance standards adopted in the environmental document.

## 182 6. *Basin Planning Updates*

183 The Regional Board will review and, if appropriate, revise water quality objectives for  
184 the purpose of facilitating the recharge of imported water in groundwater management zones  
185 within the Region. The Parties agree to cooperate in such efforts and agree to work  
186 cooperatively to develop a program that addresses the use and allocation of assimilative capacity  
187 as part of overall Basin planning and management.

## 188 7. *Enforcement*

189 If the Recharging Parties fail timely to prepare the triennial report described in paragraph  
190 4 above or if a Recharging Party fails to include the analyses described in paragraph 5 above in  
191 an environmental document prepared in connection with a proposed project involving the  
192 recharge of imported water, then any other Party may enforce the terms of this Agreement as

193 follows.

194 If the dispute relates to the triennial report on water quality, the Regional Board will hold  
195 a hearing asking the Recharging Parties to provide an explanation for the delay or failure to  
196 prepare the report. Such a hearing will precede an action for specific performance of the terms  
197 of this Agreement by the Regional Board. In the event that the dispute relates to the failure of a  
198 Party to provide the appropriate analysis in an environmental document, that dispute will be  
199 addressed by the Party(ies) using the remedies available under CEQA.

200 The Parties recognize that nothing in this Agreement can or is intended to divest the  
201 Regional Board of its authority under the Porter-Cologne Water Quality Control Act.  
202 Furthermore, nothing in this Agreement shall be construed as a waiver by any Party of any  
203 remedies it may have against a non-Party for interference with the implementation of this  
204 Agreement.

205 8. *Books and Records*

206 Each Party shall have access to and the right to examine any of the other Parties'  
207 pertinent books, documents, papers or other records (including, without limitation, records  
208 contained on electronic media) relating to the performance of that Party's obligations pursuant to  
209 this Agreement. The Parties shall each retain all such books, documents, papers or other records  
210 for at least four years after the termination of this Agreement to facilitate such review. Access  
211 to each Party's books and records shall be during normal business hours only. Nothing in this  
212 paragraph shall be construed to operate as a waiver of any applicable privileges.

213 9. *No Admissions*

214 Nothing in this Agreement shall be construed as an admission by any Party regarding any  
215 subject matter of this Agreement, including but not limited to the authority of the Regional Board  
216 to regulate the importation of water to the Region. The Parties agree that Evidence Code  
217 sections 1152 and 1154 render this Agreement inadmissible as evidence against any of the  
218 Parties in any adjudicative proceeding, except a proceeding to enforce or interpret the terms or  
219 conditions of this Agreement.

220 10. *Preservation of Rights*

221 The Parties agree that this Agreement is in settlement of a dispute and preserves all rights  
222 of the Parties as they may exist as of the effective date of this Agreement.

223 11. *General Provisions*

224 a. *Authority.* Each signatory of this Agreement represents that s/he is authorized to  
225 execute this Agreement on behalf of the Party for which s/he signs. Each Party  
226 represents that it has legal authority to enter into this Agreement and to perform  
227 all obligations under this Agreement.

228 b. *Amendments.* This Agreement may only be amended with the approval of all  
229 Parties.

- 230 c. *Jurisdiction and Venue.* This Agreement shall be governed by and construed in  
231 accordance with the laws of the State of California, except for its conflicts of law  
232 rules. Any suit, action, or proceeding brought under the scope of this Agreement  
233 shall be brought and maintained to the extent allowed by law in the County of  
234 Riverside, California.
- 235 d. *Representations and Warranties.* Each representation and warranty contained  
236 herein or made pursuant hereto shall be deemed to be material and to have been  
237 relied upon and shall survive the execution, delivery and termination of this  
238 Agreement.
- 239 e. *Entire Agreement.* This Agreement constitutes the entire agreement of the Parties  
240 with respect to the subject matter of this Agreement and supersedes any prior oral  
241 or written agreement, understanding, or representation relating to the subject  
242 matter of this Agreement.
- 243 f. *Successors and Assigns.* This Agreement shall be binding on and inure to the  
244 benefit of the successors and assigns of the respective Parties to this Agreement.  
245 No Party may assign its interests in or obligations under this Agreement without  
246 the written consent of the other Parties, which consent shall not be unreasonably  
247 withheld or delayed.
- 248 g. *Advice of Counsel; Drafting by Negotiations.* This Agreement has been arrived at  
249 through negotiations and each Party has had a full and fair opportunity to revise  
250 the terms of this Agreement. As a result, the normal rule of construction that any  
251 ambiguities are to be resolved against the drafting Party shall not apply in the  
252 construction or interpretation of this Agreement. Each Party represents that it has  
253 sought and obtained any legal advice it deems necessary from its own separate  
254 counsel before entering into this Agreement.
- 255 h. *Waiver.* No waiver of any violation or breach of this Agreement shall be  
256 considered to be a waiver of any other violation or breach of this Agreement, and  
257 forbearance to enforce one or more of the remedies provided in this Agreement  
258 shall not be deemed to be a waiver of that remedy.
- 259 i. *Severability.* If, after the date of execution of this Agreement, any provision of  
260 this Agreement is held to be illegal, invalid, or unenforceable under present or  
261 future laws effective during the term of this Agreement, such provision shall be  
262 fully severable. However, in lieu thereof, there shall be added a provision as  
263 similar in terms to such illegal, invalid or unenforceable provision as may be  
264 possible and be legal, valid and enforceable.
- 265 j. *Compliance with Laws.* In performing their respective obligations under this  
266 Agreement, the Parties shall comply with and conform to all applicable laws,  
267 rules, regulations and ordinances.

- 268 k. *No Third-Party Beneficiaries.* This Agreement shall not create any right or  
269 interest in any non-Party or in any member of the public as a third party  
270 beneficiary.
- 271 l. *Necessary Actions.* Each Party agrees to execute and deliver additional  
272 documents and instruments and to take any additional actions as may be  
273 reasonably required to carry out the purposes of this Agreement.
- 274 m. *Counterparts.* This Agreement may be executed in one or more counterparts,  
275 which may be executed and delivered via facsimile transmission, each of which  
276 shall be deemed to be an original, but all of which together shall constitute but  
277 one and the same instrument.
- 278 n. *Notices.* All notices, requests, demands or other communications required or  
279 permitted under this Agreement shall be in writing unless provided otherwise in  
280 this Agreement and shall be deemed to have been duly given and received on:  
281 (i) the date of service if served personally or served by facsimile transmission on  
282 the Party to whom notice is to be given at the address(es) provided below, (ii) on  
283 the first day after mailing, if mailed by Federal Express, U.S. Express Mail, or  
284 other similar overnight courier service, postage prepaid, and addressed as  
285 provided below, or (iii) on the third day after mailing if mailed to the Party to  
286 whom notice is to be given by first class mail, registered or certified, postage  
287 prepaid, addressed as follows:

288 CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

289 California Regional Water Quality Control Board  
290 Santa Ana Region  
291 3737 Main St., Suite 500  
292 Riverside, CA 92501  
293 (951) 782-4130 ph  
294 (951) 781-6288 fax

295 CITY OF CORONA

296 City of Corona  
297 400 S. Vicentia Avenue  
298 Corona, CA 92882-2187  
299 (951) 736-2239 ph  
300 (951) 736-2231 fax

301 CITY OF RIVERSIDE

302 City of Riverside  
303 5950 Acorn Street  
304 Riverside, CA 92504-1036  
305 (951) 351-6080 ph  
306 (951) 351-6267 fax

307 EASTERN MUNICIPAL WATER DISTRICT

308 Eastern Municipal Water District  
309 2270 Trumble Road  
310 Perris, CA 92570  
311 P.O. Box 8300  
312 Perris, CA 92572-8300  
313 (951) 928-3777 ph  
314 (951) 928-6177 fax

315 ELSINORE VALLEY MUNICIPAL WATER DISTRICT

316 Elsinore Valley Municipal Water District  
317 31315 Chaney Street  
318 Lake Elsinore, CA 92530  
319 P.O. Box 3000  
320 Lake Elsinore, CA 92531-3000

321 ORANGE COUNTY WATER DISTRICT

322 Orange County Water District  
323 10500 Ellis Avenue  
324 Fountain Valley, CA 92708-6921  
325 P.O. Box 8300  
326 Fountain Valley, CA 92728-8300  
327 (714) 378-3200 ph  
328 (714) 378-3371 fax

329 SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT

330 San Bernardino Valley Municipal Water District  
331 1350 South "E" Street  
332 San Bernardino, CA 92408-2725  
333 P.O. Box 5906  
334 San Bernardino, CA 92412-5906  
335 (909) 387-9200 ph  
336 (909) 387-9247 fax

337 SAN GORGONIO PASS WATER AGENCY


338 San Gorgonio Pass Water Agency  
339 1210 Beaumont Avenue  
340 Beaumont, CA 92223  
341 (951) 845-2577 ph  
342 (951) 845-0281 fax

343 WESTERN MUNICIPAL WATER DISTRICT

344 Western Municipal Water District  
345 450 E. Alessandro Blvd.  
346 Riverside, CA 92508-2449  
347 P.O. Box 5286  
348 Riverside, CA 92517-5286  
349 (951) 789-5000 ph  
350 (951) 780-3837 fax

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CALIFORNIA REGIONAL WATER  
QUALITY CONTROL BOARD

By:   
Title: Executive Officer

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CITY OF CORONA

By:   
Title: CITY MANAGER  
Beth Groves

371 APPROVED AS TO FORM ONLY:  
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373  
374 By:   
Best Best & Krieger, LLP  
City of Corona Counsel

337 SAN GORGONIO PASS WATER AGENCY

338 San Gorgonio Pass Water Agency  
339 1210 Beaumont Avenue  
340 Beaumont, CA 92223  
341 (951) 845-2577 ph  
342 (951) 845-0281 fax

343 WESTERN MUNICIPAL WATER DISTRICT

344 Western Municipal Water District  
345 450 E. Alessandro Blvd.  
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CALIFORNIA REGIONAL WATER  
QUALITY CONTROL BOARD

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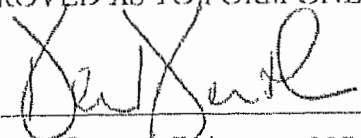
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CITY OF CORONA

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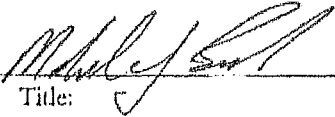
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Beth Groves

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Best Best & Krieger, LLP  
City of Corona Counsel

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CITY OF RIVERSIDE

By:   
Title: \_\_\_\_\_

APPROVED AS TO FORM ONLY:

By: *Susan Wilson*  
*Deputy City Attorney*

Attest:   
City Clerk

EASTERN MUNICIPAL WATER DISTRICT

By: \_\_\_\_\_  
Title: \_\_\_\_\_

APPROVED AS TO FORM ONLY:

By: \_\_\_\_\_

ELSINORE VALLEY MUNICIPAL WATER DISTRICT

By: \_\_\_\_\_  
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EASTERN MUNICIPAL WATER DISTRICT

By:  \_\_\_\_\_

Title: *GENERAL MANAGER*

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ELSINORE VALLEY MUNICIPAL WATER DISTRICT

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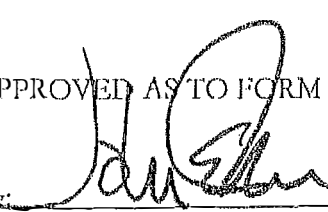
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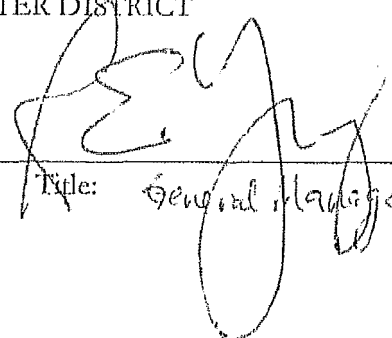
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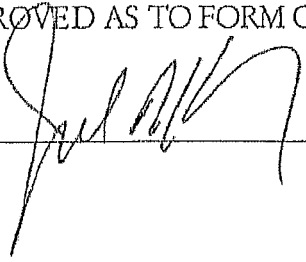
ELSINORE VALLEY MUNICIPAL WATER DISTRICT

By:  \_\_\_\_\_

Title: General Manager

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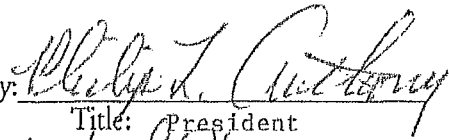
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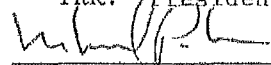
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ORANGE COUNTY WATER DISTRICT

By:  \_\_\_\_\_  
Title: President

By:  \_\_\_\_\_  
Title: Acting General Manager

SAN BERNARDINO VALLEY  
MUNICIPAL WATER DISTRICT

By: \_\_\_\_\_  
Title: \_\_\_\_\_

SAN GORGONIO PASS WATER  
AGENCY

By: \_\_\_\_\_  
Title: \_\_\_\_\_

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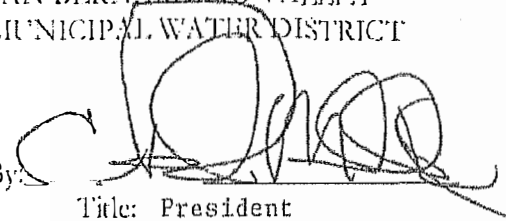
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SAN BERNARDINO VALLEY  
MUNICIPAL WATER DISTRICT

By:  \_\_\_\_\_

Title: President

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SAN GORGONIO PASS WATER  
AGENCY

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ORANGE COUNTY WATER DISTRICT

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SAN BERNARDINO VALLEY  
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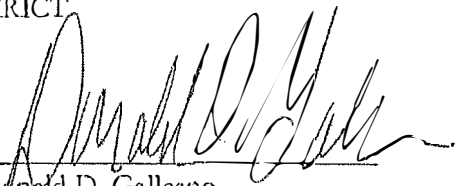
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AGENCY

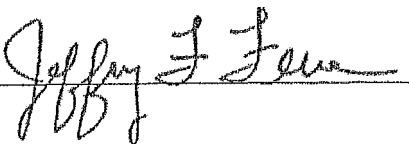
By: Joseph W. Ooms  
Title: General Manager

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WESTERN MUNICIPAL WATER  
DISTRICT

By:   
Donald D. Gallano  
President, Board of Directors

APPROVED AS TO FORM ONLY:

By: 

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CITY OF SAN BERNARDINO  
MUNICIPAL WATER DEPARTMENT

By: *Stacy Alsdorf*  
Title: GENERAL MANAGER

APPROVED AS TO FORM ONLY:

By: \_\_\_\_\_

## Memorandum of Understanding to Implement the Cooperative Agreement

*Accepted: Wednesday, January 14, 2009*

The Cooperative Agreement to Protect Water Quality and Encourage the Conjunctive Uses of Imported Water in the Santa Ana River Basin states, in part, that:

*"The Parties that intentionally recharge imported water within the Santa Ana Region (the "Recharging Parties") agree voluntarily to collect, compile and analyze the N/TDS water quality data necessary to determine whether the intentional recharge of imported water in the Region may have a significant adverse impact on compliance with the Salinity Objectives with the Region. To that end, the Recharging Parties will collect, compile and analyze such N/TDS water quality data and prepare, within eighteen months from the effective date of this agreement, and every three years thereafter, a report... The Recharging Parties will agree among themselves regarding the manner in which they will prepare the report and the manner in which they will share the cost of preparing the report."*

The remainder of this document describes the agreed upon manner in which the report(s) will be prepared and costs will be shared.

- 1) Each individual Recharging Party will be responsible for preparing the report for all groundwater basins where the Recharging Party is intentionally recharging imported water or intends to recharge imported water at any time between January 18, 2008 and July 18, 2012. If a Recharging Party has no plans to recharge imported water during the aforementioned period, it should so state in a letter to the other signatories to the Cooperative Agreement mailed on or before March 31, 2009.
- 2) The final report(s) must be submitted to the Santa Ana Regional Water Quality Control Board on or before July 18, 2009 in accordance with Resolution No. R8-2008-0019. However, the Recharging Parties have concluded that it is not necessary to "integrate" the individual reports into a single document for submission in July of 2009.
- 3) Each Recharging Party preparing a report will circulate a draft version of the first report(s) to all other Parties to the Cooperative Agreement on or before March 31, 2009. SAWPA will convene and coordinate a meeting approximately 30 days later at which meeting the draft reports will be discussed.
- 4) Each Recharging Party will bear its own costs to prepare the report(s). In addition, the Recharging Parties will share SAWPA's direct administrative costs to implement the Cooperative Agreement equally.



- 5) The Recharging Parties acknowledge that different modeling methods will be used to develop the 20-year projections for groundwater quality in various management zones. Given the complexity of the modeling effort and the acknowledged differences in modeling approaches, the Recharging Parties agree that it would be prudent to assemble a Technical Committee (TC) to assure a high level of quality and consistency between the separate reports. Attendance and participation in the TC is not mandatory and the TC recommendations are not binding. The Recharging Parties have asked SAWPA to coordinate meetings of the Technical Committee. The Regional Water Quality Control Board staff has also agreed to participate on the Technical Committee. Each signatory to the Cooperative Agreement is entitled to name its own representative(s) to the Technical Committee.
  
- 6) Future integration will be accomplished by staggering delivery dates for the 20-year projections in a manner that assures that long-term estimates of upgradient groundwater quality have been completed and accepted well before a similar projection must be made for each downgradient management zone. Therefore, the Recharging Parties and the Regional Board have agreed that the second set of projection reports will be due in accordance with the schedule shown in Table 1.

**Table 1: Due Dates for Second Report Projecting Future Groundwater Quality**

<b>Recharging Areas</b>	<b>Report Due Date</b>
Beaumont, Yucaipa and San Timoteo Management Zones	July 18, 2012 and every six years thereafter
Bunker Hill A, Bunker Hill B, Lytle, Rialto and Colton Management Zones	July 18, 2013 and every six years thereafter
Riverside A thru Riverside E and Elsinore Management Zones	July 18, 2014 and every six years thereafter
San Jacinto Area Management Zones	July 18, 2014 and every six years thereafter
Orange County Management Zone	July 18, 2015 and every six years thereafter

- 7) The Santa Ana Regional Water Quality Control Board has agreed that the document entitled: "Recomputation of Ambient Water Quality in the Santa Ana Watershed for the Period 1987 to 2006" (a technical memorandum prepared by Wildermuth Environmental, Inc. for SAWPA's Basin Monitoring Program Task Force) meets all of the obligations identified in Section 4(a) of the Cooperative Agreement for the reports due on July 18, 2009. However, any Recharging Party may also elect to prepare its own independent analysis and submit a separate report as described in Section 4(a) of the Cooperative Agreement.

- 8) For the first report, due in July of 2009, the signatories to the Cooperative Agreement acknowledge that the data needed to estimate future subsurface boundary inflows from upgradient groundwater basins adjacent to their own management zones may not be available. Therefore, the Recharging Parties may elect to assume that TDS and nitrate-nitrogen concentrations are equal to the applicable water quality objective for the upgradient management zone or use the estimated ambient TDS and nitrate-nitrogen concentrations for the upgradient management zone whichever is higher. Where a Recharging Party elects to rely on the estimated ambient TDS or nitrate-nitrogen concentration in the upgradient groundwater management zone to calculate projected water quality in its own management zone such values should be taken from the same report the Recharging Party submitted to fulfill its obligation under section 4(a) of the Cooperative Agreement.
- 9) The Recharging Parties agree that the reports must include a detailed description of the initial water quality conditions (e.g. nitrate-nitrogen concentration and TDS concentration) in the saturated zone of each groundwater management zone for which a 20-year projection is estimated. For the first report, due in July of 2009, the initial conditions will be estimated as of January, 2008. Where actual data is not available for January, 2008 the Recharging Parties may estimate the volume of groundwater and/or salt concentrations from one of the calibrated and validated computer models identified in Section 5(b) the Cooperative Agreement.
- 10) At a minimum, the Recharging Parties agree to prepare and report future water quality projections using the estimated subsurface boundary outflows from the upgradient projections as the estimated subsurface boundary inflows for their own management zone projections. However, nothing in the Cooperative Agreement precludes any Recharging Party from also preparing additional alternative future projections of groundwater quality using different assumptions about the estimated subsurface boundary inflows from upgradient groundwater basins adjacent to their own management zone.
- 11) The Recharging Parties agree that any report submitted pursuant to the Cooperative Agreement will be prepared in accordance with commonly accepted professional standards such as those described in the Board of Geologists and Geophysicist's "Guidelines for Groundwater Investigation Reports" and the California Department of Conservation's Division of Mines and Geology's "Guidelines for Preparing Geologic Reports for Regional-Scale Environmental Resource Management Planning (aka Note 52)."

- 12) Section 4(c)1 of the Cooperative Agreement states that the *"projection of ambient water quality for each groundwater management zone will ... reasonably account for surface fluxes of salt input..."*

The Recharging Parties agree that the following salt in-fluxes must be accounted for when and where they are known to exist:

- \* Storm water recharge (incidental and deliberate)
- \* Artificial recharge of imported water (incl. State Project Water and Colorado River Water)
- \* Artificial recharge from on-site wastewater disposal (e.g. septic systems)
- \* Deep percolation of precipitation and agricultural and landscape irrigation water
- \* Subsurface boundary inflows from upgradient groundwater basins adjacent to their own management zone
- \* Routing recharge flows from all influxes through the vadose zone

The Recharging Parties also agree that the following salt out-fluxes must be accounted for when and where they are known to exist:

- \* Groundwater pumping
- \* Rising groundwater
- \* Evapotranspiration
- \* Subsurface boundary outflows to downgradient groundwater basins adjacent to their own management zone

The Recharging Parties agree to certify in the report(s) that each of the salt in-fluxes and out-fluxes identified above have been accounted for in their 20-year projections and to provide a brief explanation as to how each of these fluxes is addressed in the relevant calculations and to provide more detailed technical documentation upon request of any signatory to the Cooperative Agreement.

- 13) The Recharging Parties acknowledge that the obligations of the Cooperative Agreement and the principles described in this Memorandum of Understanding apply only to the signatories to the Cooperative Agreement and have no binding effect on other persons or agencies in the region that may be engaged in similar water resource management activities.

## MEETING SUMMARY

# Imported Water Recharge Technical Committee

June 7, 2012

Signatories to the Cooperative Agreement  
City of Corona / EMWD / EVMWD / OCWD / City of Riverside  
City of San Bernardino MWD / SGPWA / SBVMWD / WMWD

### ATTENDEES

Lyndy Lewis, EMWD	Norris Brandt, EVMWD
Greg Woodside, OCWD	Cindy Li, CRWQCB
Marsha Westropp, OCWD	Jack Nelson, YVWD
Johnson Yeh, Geoscience/SBVMWD	Jeff Davis, SGPWA
Brian Villalobos, Geoscience/SBVMWD	Samantha Adams, WEI
Sam Fuller, SBVMWD	Mark Norton, SAWPA
Rebecca Franklin, SBMWD	Regina Patterson, SAWPA

### Call to Order / Introductions

The Imported Water Recharge Technical Committee meeting was called to order at 1:32 p.m. at the Santa Ana Watershed Project Authority located at 11615 Sterling Avenue, Riverside, California. Introductions were made.

### Review Meeting Summary

Mark Norton presented meeting notes from March 29, 2011 for review. The meeting summary was deemed acceptable as presented.

Mark Norton said because most of the task forces are not on the formal level where detailed documentation would be needed, we will be transitioning to a "meeting action item" format. The agendas will continue to be prepared and distributed as usual.

### Draft Lump Parameter Model Outline Update

Mark Norton and Greg Woodside reported that City of Corona is the only signatory that has responded and that they have no comments.

### Review Process of Upstream Basin Model Distribution and Submittal

Mark Norton presented the list of the lead agencies and modelers for the projection of the groundwater quality reports. Approximately 18 months ago, all the recharging parties submitted their report on nitrogen and TDS water quality data. That report is due every three years. As we approach that July 18, deadline, 1) a summary of the ambient water quality in the groundwater basin (this is already being done every three years by the BMP Task Force); 2) a summary of the amount and quality of imported recharge in each groundwater management zone (MZ). A report is needed from each agency indicating the amount and the quality of the imported water recharged. If no recharging was done, please indicated that no recharge occurred and provide that to Mark Norton by July 1. It was also clarified that the summary of

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imported water recharge over the past three years would be the volume of water recharged over three prior calendar years, 2009 through 2011, and would be based on the monthly TDS and nitrate data as flow weighted concentrations. Following discussion, it was determined that the summary reports would be submitted on CD to Cindy Li and Mark Norton no later than July 2, 2012 to be placed on SAWPA's FTP site. Deadline to the Regional Board is July 18, 2012.

Johnson Yeh reported the Geoscience report will be provided soon. Once received, Mark Norton stated it will be placed on SAWPA's FTP site for review and comment.

#### Review Status of Modeling and Study Updates by Basin

Beaumont Management Zone (SGPWA) - Jeff Davis

Geoscience did an additional modeling run. A meeting discussing the modeling run took place with him, Sam Gershon, and Cindy Li. The additional modeling run was done at the request of City of Banning and YVWD who did not participate in that meeting. Cindy Li said SGPWA did above and beyond what was required.

Yucaipa and San Timoteo Management Zones (SBVMWD) - Sam Fuller and Johnson Yeh

Work is in progress for the Yucaipa Basin and the San Timoteo MZ and will be circulated soon.

Bunker Hill A and B, Lytle, Rialto and Colton Management Zones (SBVMWD) - Sam Fuller

Regarding Bunker Hill, they are currently spreading 15,000 acre-feet of state project water over the next few months. Last year it was approximately 10,000 acre-feet. Lytle, Rialto and Colton MZs will all be included in the report and provided together as it was previously. Work is in progress. It was modeled before and we will see updates.

Riverside A through F Management Zones (SBVMWD/WMWD/City of Riverside)

No representative from City of Riverside was present. Rebecca Franklin reported that they have discussed that at some point in the future they are putting in a clean water factory that would stay and the water reclamation plant would be going back up to the top of the basins - no longer in the MZ.

Temescal Management Zone (City of Corona)

No representative from City of Corona was present.

Elsinore Management Zone (EVMWD) - Norris Brandt

EVMWD has completed the targeted 4,000 acre-feet of injection this year into the Elsinore Basin. MWD has contacted EVMWD indicating that CUP (conjunctive use program) water is available for next year. Water quality is so good this year it has improved the basin.

San Jacinto Area Management Zone (EMWD) - Lyndy Lewis

On May 23, began construction of conjunctive use ponds in the San Jacinto area. Prior to construction, trapping to relocate the K-rats had to end. Only about 40 were caught and relocated out of the expected 300. Biologists monitoring the site discovered hummingbird and sparrow nests which are covered under the migratory act, therefore causing setbacks. The nests were vacated last week. The original conjunctive use ponds are ready to take water. Deliveries

are being scheduled. Remaining conjunctive use ponds should be done and receiving water in July. The source of the water is raw water from MWD.

**Orange County Management Zone (OCWD) - Greg Woodside**

Still purchasing some imported water this year, not as much as last year. Sam Fuller asked how OCWD is discriminating state project water from flowing in the SAR or, is OCWD running a model based on the Prado discharge quality? Greg Woodside said when the last model was done it was assumed all water was recharged by delivery into the basins like Anaheim Lake. We are assuming it was not coming down the river. If we wanted to do it we could because it is a lumped parameter model. Each source is accounted for.

**Arlington Management Zone (WMWD)**

No representative was present from WMWD.

**Geoscience Presentation**

Johnson Yeh presented the *"Second Report of Recharge Parties Pursuant to RWQCB Resolution R8-2008-0019 Cooperative Agreement to Protect Water Quality and Encourage the Conjunctive Uses of Imported Water in the Santa Ana River Basin"* and described the modeling assumptions, modeling process updates, water supply plans for potable and non-potable, and water balance from 2010 to 2040. The modeling process will include 1) update of the Water Supply Plan (Tables G1c, G2c, G3c and G4c of WEI, 2011); 2) update of Concentrations for Deep Percolation from Applied Water (Tables B6, B7, and B8 of WEI, 2011); and 3) update of the Salt Balance Model (Table G5c of WEI, 2011).

**Future Meeting**

No future meeting date was scheduled.

**Adjournment**

The meeting adjourned at 2:50 p.m.

Note: Handouts are available at [www.sawpa.org](http://www.sawpa.org)

## Jeff Davis

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**From:** Sara Villa <svilla@sawpa.org>  
**Sent:** Tuesday, February 6, 2018 1:16 PM  
**To:** Hope Smythe; Cindy Li; Corona WRF - Tom Moody; katie.hockett@ci.corona.ca.us; Edward Filadelfia; Kevin Street; Jones, Paul; Al Javier; John Vega; pkalaria@evmwd.net; mmarkus@ocwd.com; Greg Woodside; Bob Tincher; Doug Headrick; Darin Kasamoto; Jeff Davis; Craig Miller; tbarr@wmwd.com; Jennifer Shepardson; Rich Haller; Larry McKenney  
**Cc:** Mark Norton; Dawna Munson; Kelly Berry  
**Subject:** Cooperative Agreement for Imported Water Recharge  
**Attachments:** Coop Agmt Conjunctive Use w-all sig pages 3-08.pdf

Good Afternoon.

We are seeking to schedule a meeting with the signatories of the Cooperative Agreement for Imported Water Recharge (see attached). It has been 10 years since the agreement was signed in cooperation with the Regional Board. The purpose of the meeting is to discuss the following:

1. Review and update agreement to reflect list of types of groundwater models that may be used
2. Review and update the timing and frequency of the groundwater recharge reporting and groundwater modeling reporting
3. Determine if the agencies listed as signatories need to be revised
4. Review possible inclusion of agreement provisions to address ongoing administrative support by SAWPA

**Please provide your availability through the doodle link below to schedule a meeting to discuss the Cooperative Agreement for Imported Water Recharge.**

<https://doodle.com/poll/f387sgf8a8683t7u>

Should you have any questions, please contact Mark Norton at [mnorton@sawpa.org](mailto:mnorton@sawpa.org).

Thank you,

Sara Villa  
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**DATE:** September 6, 2017  
**TO:** Board of Directors  
**FROM:** Dan Jagers, Interim General Manager  
**SUBJECT:** Discussion of the Analysis of State Project Water (SPW) Requirements for SGPWA and BCVWD – White Paper No. 1

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This white paper is the first of a series of white papers discussing San Geronio Pass Water Agency (SGPWA) and Beaumont Cherry Valley Water District's (BCVWD's) imported water needs to year 2050 – essentially build-out. Subsequent white papers will expand on this initial forecast and identify funding sources and possible strategies to secure and fund the future imported water needs.

#### **Background:**

There has been much discussion at past BCVWD and SGPWA Board meetings and presentations about imported water supply, the need for more “Table A” water, Nickel Water, Sites Reservoir, etc., but there has not been much analysis presented by the SGPWA as to the region's needs and BCVWD's specific needs with respect to the proposed water supply opportunities. Some of these needs include:

- What are SGPWA's regional needs for imported water and where will this water come from?
- What is the effect on BCVWD's imported water demands without recycled water supply? What is the ripple effect on SGPWA?
- What is the impact of demand reduction due to more efficient housing and landscaping in combination with rising costs for water?
- What planned participation should BCVWD have in future water supply opportunities?

This White Paper provides information to BCVWD Board Members and others so they have a better understanding of our current and future water supply needs when they make decisions and set policy for the District's and the Region's future.

BCVWD Engineering Staff has reviewed the SGPWA's supply needs taken from their 2015 Urban Water Management Plan (UWMP) and some of the additional supply sources they were or are considering and developed a set of bar graphs that illustrate how their demands and supply sources might look from now to 2050.



Table 2-2, shown below, extracted from SGPWA’s 2015 UWMP, shows BCVWD’s demands for 2010 and 2015. The data is correct, but is misleading.

**TABLE 2-2  
HISTORICAL (2010) AND CURRENT (2015) WATER DEMANDS ON SGPWA (AF)<sup>(a)</sup>**

Agency Name	2010	2015
BCVWD <sup>(b)(c)</sup>	5,727	2,773
City of Banning <sup>(c)</sup>	1338	694
YVWD <sup>(c)</sup>	713	454
<b>Total Demands</b>	<b>7,778</b>	<b>3,921</b>

**Notes:**

- (a) Volumes shown are actual deliveries.
- (b) 2010 Data provided by BCVWD; 2015 data from BCVWD 2015 UWMP.
- (c) Data from retailer 2015 UWMPs.

During 2010 BCVWD was able to pump 6,802 acre-ft/year (AFY) of “temporary surplus” from the Beaumont Basin without replacement obligations. This reduced BCVWD’s demand for imported water and a portion of the 5,727 acre-ft (AF) shown above was “banked” for future use. So the “5727 AF” in Table 2 would not be BCVWD’s “normal” demand on the SGPWA.

The 2015 demand of 2,773 AF was reflective of reduced water consumption due to the mandated water conservation measures and the reduced amount of SPW available to SGPWA that year due to the low State Water Project Allocation (20% in 2015). Under “normal conditions” BCVWD’s imported water demand in 2015 would have reflected a number closer to 7,565 AF and SGPWA SPW demands would have been closer to 9,000 (AFY).

Table 2-4, extracted from SGPWA’s 2015 UWMP, shows BCVWD’s imported water demands and the SGPWA’s total projected demands. The demands given to the SGPWA by BCVWD were adjusted slightly by BCVWD in the preparation of BCVWD’s 2015 UWMP.

**TABLE 2-4  
PROJECTED WATER DEMANDS ON SGPWA (AF)**

Agency Name	2020	2025	2030	2035	2040
BCVWD <sup>(a)</sup>	10,860	12,476	14,087	15,886	17,334
City of Banning <sup>(b)</sup>	-	501	1,344	2,237	2,718
YVWD <sup>(c)</sup>	1,809	1,967	2,162	2,391	2,644
Other <sup>(d)</sup>	500	1,600	2,800	3,900	5,000
<b>Total Water Demands</b>	<b>13,169</b>	<b>16,544</b>	<b>20,393</b>	<b>24,414</b>	<b>27,696</b>

Since the SGPWA UWMP only has forecasts to 2040, BCVWD made some estimates of the SGPWA’s demands for 2045 and 2050 by extrapolating the reported demands from 2040. The extension to 2050 was done to identify water supply needs beyond the limits of the current UWMPs.

**Some Basic Assumptions**

1. SWP reliability in any given year is 62% to 64%; SGPWA used 62% in their UWMP which was the basis for this analysis. Their “Table A” amount is 17,300 AFY. “Table A” refers to the amount of water in SGPWA’s contract with the Department of Water Resources

(DWR). It is used by DWR to allocate available water supplies to State Water Contractors such as SGPWA. There is no guarantee that full “Table A” is available every year (100% allocation). It has averaged 66.7% over the last 25 years; so the reliability percentages above are reasonable. This means that SGPWA can only count on approximately 10,700 AFY of SPW in any given year.

2. SGPWA is collecting a “fee” to purchase water to bring their “Table A” to 100% reliability. BCVWD believes this will happen over the years and the assumption in this analysis is that the SGPWA will have 100% reliable “Table A” by 2050 through gradual purchases of “Table A” water rights or other long term supply options. It may occur sooner than this, and if it does, that will improve the water supply situation.
3. In SGPWA’s UWMP there is reference to “Yuba Accord” water. SGPWA has a long term agreement to purchase water from the Yuba County Water Agency through DWR. Over the years SGPWA has received about 300 AFY. It is assumed this will continue into the future.
4. SGPWA’s UWMP states they are in final negotiations with San Bernardino Valley Municipal Water District (Valley District, formerly “Muni”) for 5,000 AFY of “Table A” in years when Valley’s Board declares a surplus. SGPWA states that this would be on the average of 2 out of 5 years (40% of the time), so it is assumed that 2,000 AFY can be obtained in any one year and this will continue in the future.
5. SGPWA has been in negotiations with a) Antelope Valley-East Kern Water Agency (AVEK) for water from the Nickel Farms (AVEK Nickel Water), for 1,700 AFY for 20 years with a first right to extending it another 20 years; b) a confidential individual or organization in the Southern Central Valley for 1,000 AFY to improve SPW reliability; and c) a confidential organization for 50,000 AF over a 10 year period (5,000 AFY) just to name a few. The AVEK Nickel Water is not subject to the DWR SWP reliability issues.
6. SGPWA has made a commitment of 10,000 AF and BCVWD has committed to 4,000 AF to the Sites Project Authority to fund Phase I of the Sites Reservoir Study; The Sites Reservoir has been preliminarily modeled using the Cal SIM model and its yield is determined to be 500,000 AFY; but only 250,000 AFY is actually guaranteed to the project participants at this time. Portions of the remaining 250,000 AFY may be under the control of the resource agencies for the benefit of fish and migratory birds<sup>1</sup>. Any unused portion of the 250,000 AFY, after the resource agencies “buy in,” will revert back to the project participants. The Sites Project Authority participants requested more than 250,000 AF of the “guaranteed” water and so the Authority developed and allocated two classes of water: Class 1 and Class 2. Class 1 water is guaranteed if the project moves forward. After Phase I study is complete and all of the project participants, including the resource agencies, are committed, any remaining Class 2 water will be converted to Class 1 for each project participant. The Authority believes this might be as much as 50% of a participant’s Class 2 water.

<sup>1</sup> Sites Project Authority (2017). Sites Reservoir Project, Program Administrator Position: Request for Qualifications and Proposal, June 23.

The SGPWA agreement with the Sites Authority is for 14,000 AF which included BCVWD's 4,000 AF share (28.571%). The split is shown below in Table 1.

Table 1  
Original Agreement

	Total, AF	SGPWA, AF	BCVWD, AF
Class 1	7,966	5,690	2,276
Class 2	6,034	4,310	1,724
Total	14,000	10,000	4,000

Sometime after the original offer to SGPWA, one of the original participants decided not to participate, freeing up 10,000 AF Class 1 water which was then allocated to all of the participating State Water Project/Central Valley Project Contractor Participants. SGPWA's share of the reallocation was about 8.33%. The result of this reallocation is shown in Table 2. SGPWA and BCVWD's Class 2 water allocation were then reduced accordingly so the total participation remained the same.

Table 2  
Adjusted Agreement

	Total, AF	SGPWA, AF	BCVWD, AF
Class 1	8,799	6,285	2,514
Class 2	5,201	3,715	1,486
Total	14,000	10,000	4,000

Discussions with SGPWA indicates there may be another participant that withdrew. Staff reviewed the minutes of the Authority's board meeting and determined that the agency that withdrew was Westlands Water District. Westlands had 11,380 AF of Class 1 water, which would result in a reallocation to SGPWA of about 949 AF. This should result in a final adjusted agreement shown in Table 3.

Table 3  
Final Adjusted Agreement after Westland Withdrawal

	Total, AF	SGPWA, AF	BCVWD, AF
Class 1	9,748	6,963	2,785
Class 2	4,252	3,037	1,215
Total	14,000	10,000	4,000

The final project yield could range from the Class 1 water amounts in Table 3 to a likely maximum amount shown in Table 4 which is based on 50% of Class 2 being converted to Class 1 as stated above.

Table 4  
Final Probable Maximum Yield of Sites Water

	Total, AF	SGPWA, AF	BCVWD, AF
Class 1	11,874	8,481	3,393

It is possible, depending on the resources agencies funding, that the Class 1 water amounts shown in Table 4 could be greater, i.e., the resource agencies fund less of the

project. It is also a very remote possibility that the full 500,000 AFY yield could be allocated to the project participants.

The project schedule for Sites estimates completion is approximately 2029. For purposes of this analysis it is assumed that water would not be available until 2035.

7. BCVWD's demands were extracted from their 2015 UWMP, (Table 6-26), with the 2045 demand extended forward to 2050. These demands were founded in the 2016 Potable Water Master Plan.
8. BCVWD's imported water demands were based on BCVWD using the following local sources:
  - Edgar Canyon Groundwater – 2,200 AFY
  - Beaumont Basin Groundwater, including forbearance water,
  - Recharged captured stormwater from MDP pipeline (Grand Avenue) and recharged urban runoff from water quality basins
  - Recycled Water
  - Non-potable groundwater from mouth of Edgar Canyon and San Timoteo Creek

The quantities and more details can be found in Table 6-26 of BCVWD's 2015 UWMP.

### **SGPWA Imported Water Supplies to 2050**

Figure 1 shows a stacked bar graph of the various sources of imported water supply that the SGPWA already has, has committed to, or is in serious negotiations for. Figure 1 assumes the yield from Sites Reservoir is based on the Total Likely Maximum Yield of 11,874 AF shown in Table 4. This assumes conversion of 50% of Class 2 water to Class 1 water. This represents a likely upper bound for Sites Reservoir water. There is no adjustment for reliability. Also shown in Figure 1 are the SGPWA's total demands for imported water from their UWMP appropriately extended along with BCVWD's imported water demands.

Also shown are BCVWD's need for imported water if recycled water from YVWD and the City of Beaumont are not available. Figure 1 shows that the Sites Reservoir is essential to meeting SGPWA's demands to 2050. Figure 1 and the figures to follow show there is a significant deficiency in 2030. It will be imperative that SGPWA secure a short term supply to meet that demand until Sites Reservoir comes on line or use retail water agencies water in storage, develop a banking program for any available water to cover the shortfall, or some combination of same.

Figure 2 shows SGPWA's sources of imported water assuming none of SGPWA's Sites Reservoir Class 2 water is converted to Class 1 water. This is a likely lower limit of supply from sites and represents a reduction of about 18%. There is no other adjustment for reliability. In Figure 2, SGPWA's 2045 and 2050 demands slightly exceed the available water supply. This is nothing to be alarmed about at this time; it is still 25 to 30 years away and sufficient time exists to secure additional supplies if needed. There will likely be some conservation measures that will bring the "demand curve" down. For example, new sources of imported water are very expensive. This will be reflected in the water rates and result in a reduction in demand.

The status of Sites Reservoir should be known by 2020, or sooner, if it will move forward. At this time it is not known if the Sites Reservoir yield will be subject to the reliability issues experienced SWP. BCVWD staff has posed this question to the Sites Project Authority, but to date the Authority has not responded. To see the impact of reduced reliability, a worst case scenario, Figure 3 was prepared. It is based on receiving only 62% of the minimum Class 1 water, i.e., no conversion of Class 2 water to Class 1 water. Figure 3 shows that SGPWA will need additional water sources even as Sites Reservoir comes on line. With conservation, it is possible that the need for an additional source(s) can be deferred for a few years. In any case, it is imperative that the Sites Reservoir yield reliability be determined as soon as possible as this is critical to long term water supplies for the SGPWA.

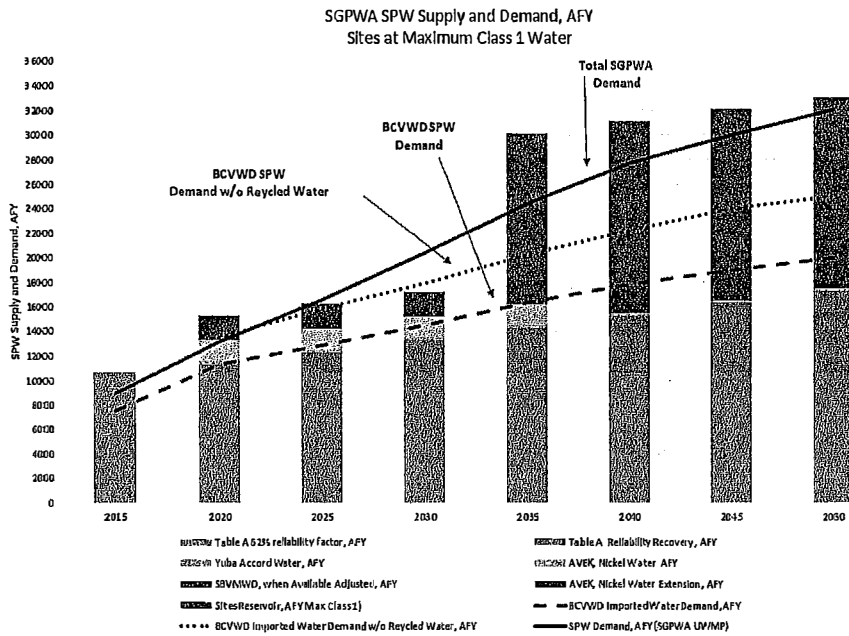


Figure 1  
SGPWA Imported Water Sources and Demands  
(Sites Reservoir at Maximum Class 1 Water)

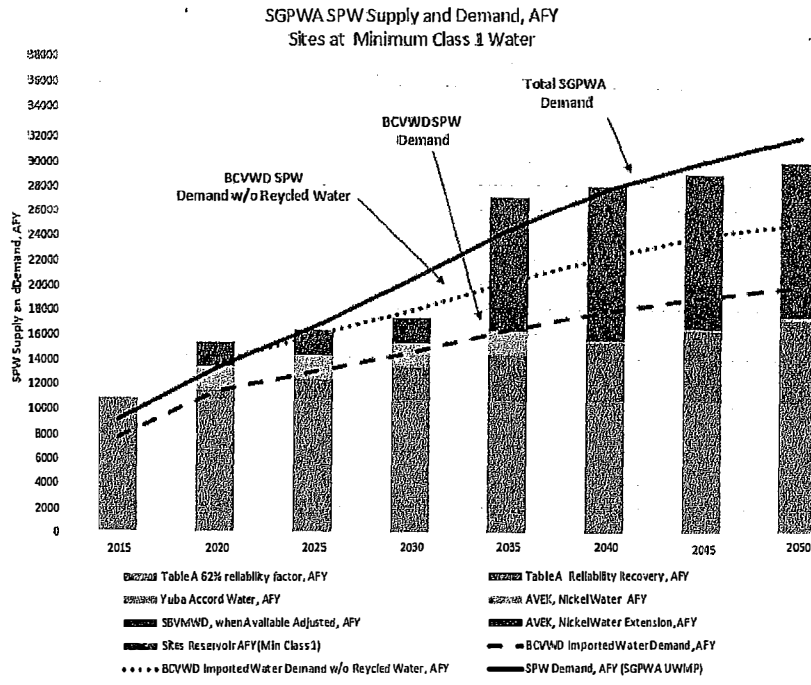


Figure 2  
SGPWA Imported Water Sources and Demands  
(Sites Reservoir at Minimum Class 1 Water)

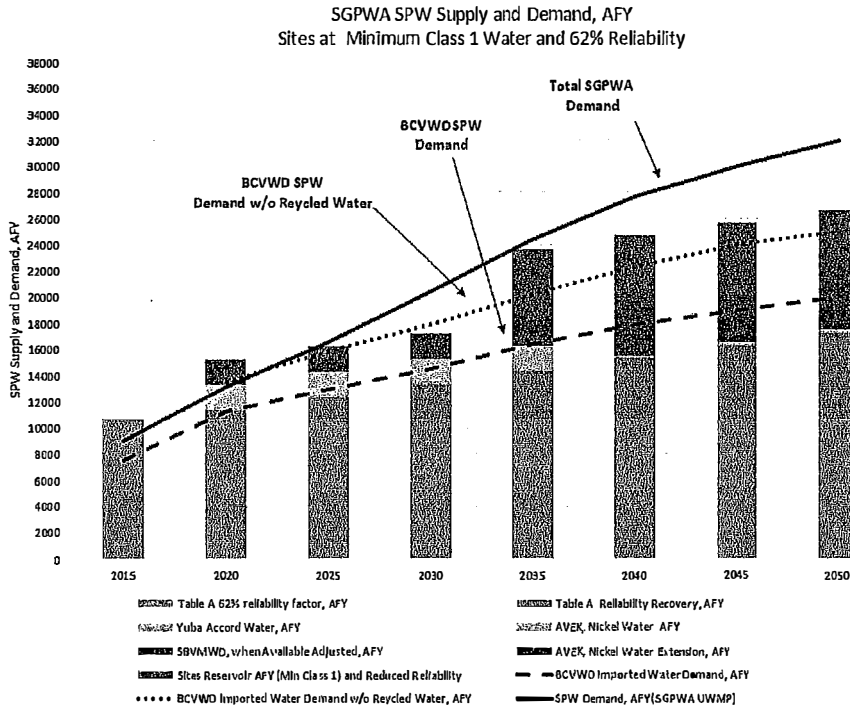


Figure 3  
SGPWA Imported Water Sources and Demands  
(Sites Reservoir at Minimum Class 1 Water with only 62% Reliability)

## BCVWD's Long Term Imported Water Needs

BCVWD Engineering Staff analyzed BCVWD's long term water supply situation similar to the analysis presented above for SGPWA. The assumptions presented above for SGPWA were also applicable to BCVWD; but BCVWD has some additional constraints since they are only a portion of SGPWA's demand. Additional assumptions:

- BCVWD's share of SGPWA's "Table A", "Table A" reliability enhancement, Yuba Accord Water, AVEK Nickel Water, Sites Reservoir Water, etc. is based on BCVWD's portion of the SGPWA's total demand. BCVWD's share of the demand can be extracted from the SGPWA 2015 UWMP and is 85.9% in 2020 declining to 64.5% by 2040 and projected, by BCVWD to be 60% by 2050.
- BCVWD has committed to 4,000 AF from Sites Reservoir.

Figure 4 shows BCVWD's long term imported water supply. There are three (3) demand lines plotted:

- Demand for imported water assuming local water resource projects (stormwater capture etc.) and recycled water from YVWD and City of Beaumont are utilized.
- Demand for imported water without recycled water.
- Demand for imported water assuming conservation. A 20% reduction in BCVWD total water demand was assumed by 2040 and 25% by 2050. The imported water supply is about 58% of BCVWD's total supply, so the reduction in imported water demand will only be 58% of the conservation reduction.

The Sites Reservoir supply is based on having maximum Class 1 water, 3,393 AFY from Table 4 above along with BCVWD's share of SGPWA's 8,481 Sites Reservoir supply. This probably represents a likely maximum supply from Sites Reservoir. It shows that under this scenario and assuming recycled water use, BCVWD will have more than adequate water supply to 2050 and beyond. The plot further shows that the "50,000 AF for 10 years" currently being considered, may not be needed if Sites Reservoir is completed.

Figure 4 and the figures to follow show a short-fall in 2030, but that can be overcome by banking additional water between now and 2030 and using that water to meet demands until Sites Reservoir is fully functional.

Figure 5 shows BCVWD's imported water supply and demands under the same assumptions as Figure 4, but with Sites Reservoir yielding the minimum Class 1 supply. This is a likely minimum supply. The plot shows that BCVWD will likely have adequate water supply to 2045 and with conservation, well beyond 2050.

Figures 4 and 5 show that BCVWD have adequate imported water supplies until 2025 assuming SGPWA secures AVEK Nickel Water and continues to aggressively purchase water rights to bring their Table A to 100% reliability. This will provide some time to determine if Sites Reservoir will be implemented. If Sites Reservoir is not implemented, additional sources of imported water are needed. BCVWD will be about 4,000 AFY "short" in 2035 without Sites Reservoir.

Figure 6 represents a worst case scenario with Sites Reservoir at minimum Class 1 water and 62% reliability. Figure 6 shows that with conservation, even under this worst case, BCVWD will be able to meet its demand till 2050.

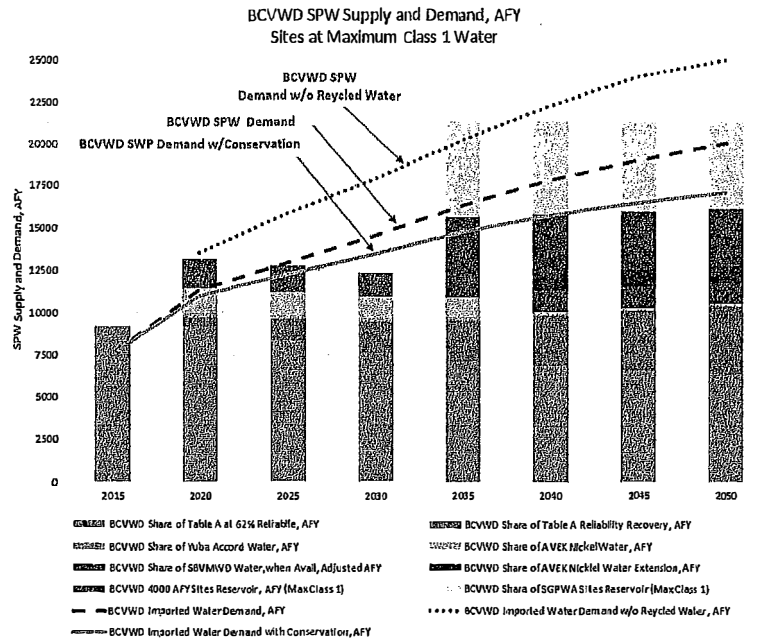


Figure 4  
BCVWD Imported Water Sources and Demands  
(Sites Reservoir Yield at Maximum Class 1 Water)

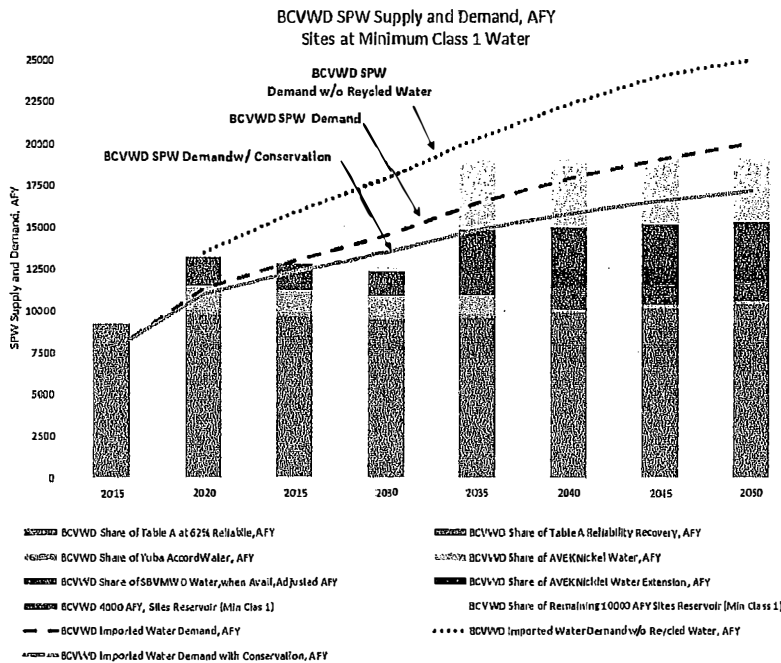




Figure 5  
BCVWD Imported Water Sources and Demands  
(Sites Reservoir at Minimum Class 1 Water)

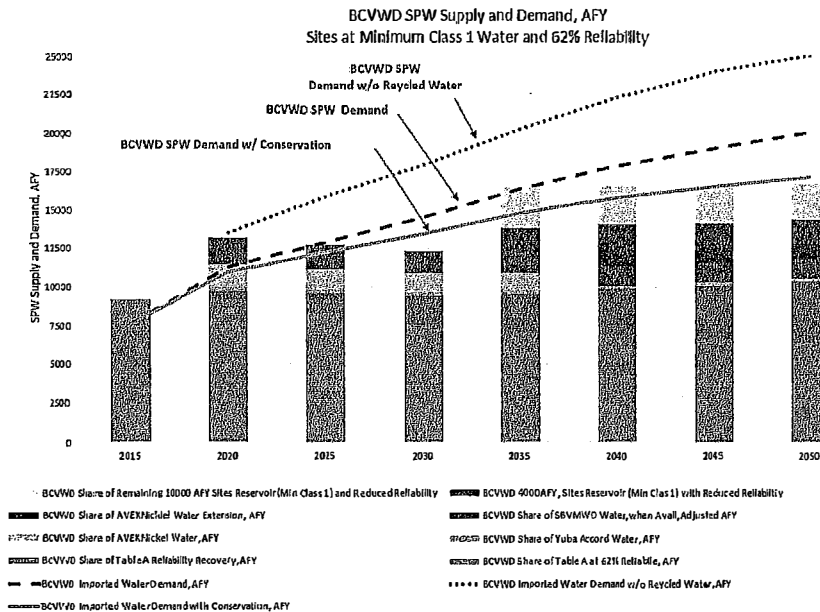


Figure 6  
BCVWD Imported Water Sources and Demands  
(Sites Reservoir at Minimum Class 1 Water and 62% Reliability)

**Conclusions**

1. Recycled water and maximization of local water resources by BCVWD is crucial to meeting long term water demands and minimizing BCVWD’s dependence on imported water.
2. The SGPWA must secure Nickel Water and other long term contracts to bring their “Table A” amount from 62-64% reliability to 100% reliability. The figures in this report assume “Table A” will be 100% reliable by 2050.
3. Sites Reservoir is critical to meeting long term water demands. It is essential to determine if Sites Reservoir yield is subject to reliability reductions.
4. Water conservation should be encouraged to minimize the need for imported water.
5. These water demand and supply scenarios should be revisited periodically, certainly at least every five years.

**Acknowledgments**

This white paper supports a series of presentations made by BCVWD management to the Board of Directors and members of the public. Additional information is contained in those presentations.

Analyses and evaluations in support of the white paper and presentations were prepared by BCVWD staff, Joseph C. Reichenberger P.E., BCEE, Senior Engineer under the direction of

and with input from Dan Jagers P.E., General Manager. Extensive analyses were prepared by Kaden Johnsen, Engineering Assistant, with help from Ivan Garcia, Engineering Intern.



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**DATE:** November 15, 2017  
**TO:** Dan Jagers, General Manager  
**FROM:** Joe Reichenberger PE, Senior Engineer  
**SUBJECT:** Role of Groundwater Storage and Banking in Meeting State Project Water (SPW) Requirements for SGPWA and BCVWD – White Paper No. 2

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This white paper summarizes a presentation to BCVWD's Board of Directors on October 11, 2017 continuing the discussion of San Geronio Pass Water Agency (SGPWA) and Beaumont Cherry Valley Water District's (BCVWD's) imported water needs to year 2050 – essentially build-out. This white paper focusses on the role of groundwater storage in overcoming short term deficiencies between imported water demand and imported water supply.

**Background:**

White Paper No. 1 identified BCVWD and SGPWA imported water requirements over the next 30 years or so based on the respective agencies' 2015 Urban Water Management Plans (UWMPs). White Paper No. 1 also listed a number of sources of imported water ("water portfolio") and the timing of the leasing, purchasing, or construction of these sources. Since the leasing and/or purchasing of the various sources in the portfolio will not be able to match the demand exactly, there will be times in the future that supplies will either exceed demand or be less the demand. Banking and groundwater storage in the Beaumont Groundwater Basin (Beaumont Basin) can be used advantageously as a strategy to better balance supply and demand.

The Beaumont Basin is an adjudicated groundwater basin, operated on a long-term safe yield basis, and managed by the Beaumont Basin Watermaster. When the Beaumont Basin was adjudicated, a minimum volume of 200,000 acre-ft (AF) was provided for banking (conjunctive use) of imported water available during wet years for used during dry years when imported water supply is reduced. Groundwater banking can also be used on a short term to partially overcome the reduced reliability of the SPW.

## The Adjudication and Groundwater Storage

The Adjudication allocated the basin safe yield to the overlying parties. The Basin's appropriator parties (BCVWD, City of Banning, Yucaipa Valley Water District, and South Mesa Water Company) were assigned no rights except that in the event the overlying parties did not use the entire safe yield, the unused portion was reallocated to the appropriator parties based on an allocation percentage in the Adjudication and credited to the appropriator's groundwater storage account. The appropriator parties were given credit, acre-ft for acre-ft, for supplying recycled water and/or potable water to the overlying parties or their successors which also went into the appropriator's groundwater storage account. The appropriator parties could only pump stored groundwater or banked imported water without a replacement or replenishment obligation.

The current storage accounts in the Beaumont Basin are as follows:

City of Banning	80,000 AF
City of Beaumont	30,000 AF
BCVWD	80,000 AF
South Mesa Water Company	20,000 AF
Yucaipa Valley Water District	50,000 AF
Morongo Band of Mission Indians	20,000 AF
SGPWA	10,000 AF
Total	290,000 AF

At the end of calendar year 2016 there was a total of 101,425 AF of water in storage; about 35% "full." Having a total capacity of 290,000 AF available for storage will be an advantage in overcoming short term shortages in SPW availability. Figure 1 shows the accumulation in storage from all of the parties and BCVWD. BCVWD had 27,565 AF of the total. These totals are increasing in 2017 as more SPW was available from SGPWA. BCVWD projects over 33,000 AF in BCVWD's storage account by the end of 2017. This represents about three years of BCVWD's total current annual water demand and about five times BCVWD's annual imported water requirements.

## The Water Portfolio

SGPWA has contract with the Department of Water Resources (DWR) for 17,300 AF of SPW (Table A). However, that amount of water is not available year-in – year-out. In any given year, DWR forecasts that only about 60 to 64% of a State Water Contractor's Table A can be counted on. A reliability of 62% was used by SGPWA in their 2015 UWMP. It is possible this could be reduced to 60% at some point in the future. Figure 2 shows the SWP Table A allocations since 1992. The average over the 25 year period was 66.7%, slightly larger than DWR's projection. DWR's projection is lower because it considers future development condition rather than historical deliveries. But Figure 2, nevertheless, does show the variability from year to year. BCVWD is easily able to accommodate this variation through the banked groundwater.

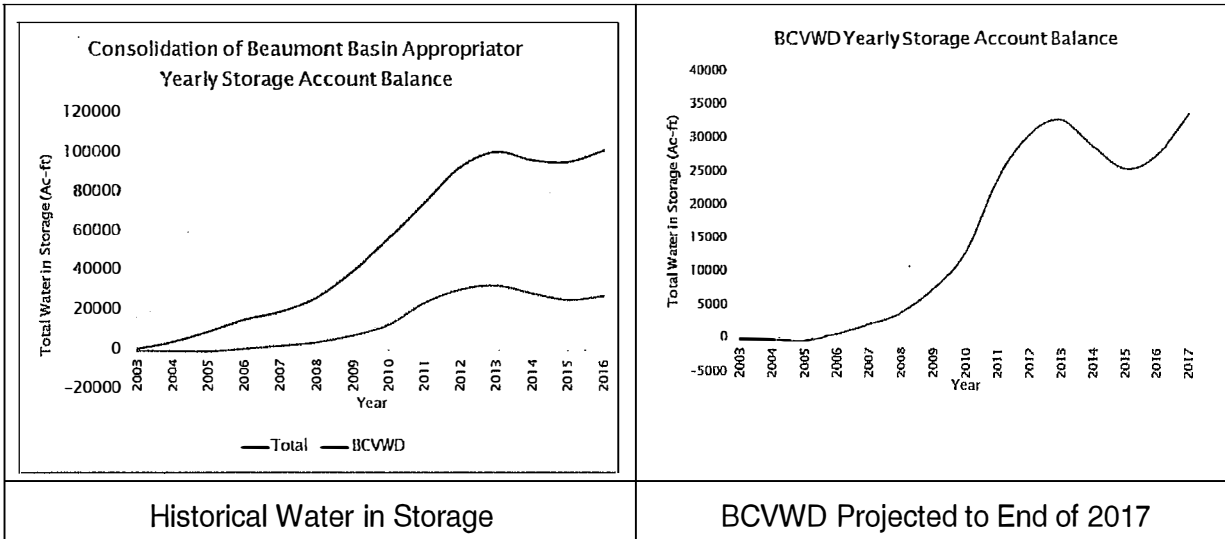


Figure 1  
Historical Groundwater in Storage in the Beaumont Basin

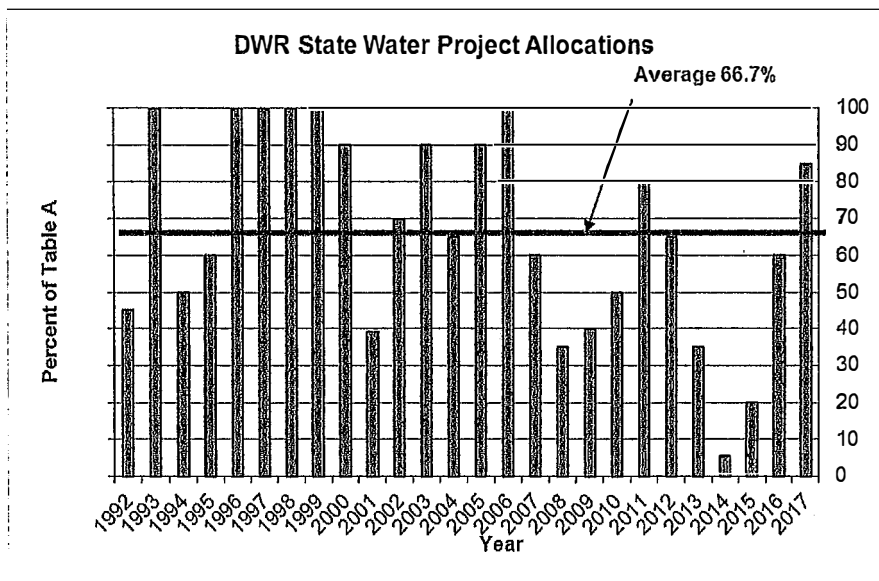


Figure 2  
Historic DWR SWP Delivery Allocations

At the time of this analysis SGPWA was considering the following water sources for its portfolio in addition to its Table A at about 60 to 64% reliability:

- Table A reliability recovery to 100% reliability by 2050
- Antelope Valley-East Kern (AVEK) for water from the Nickel Farms (AVEK Nickel Water), 1,700 AFY for 20 years with a first right to extending it another 20 years
- San Bernardino Valley Municipal Water District (Valley District, formerly “Muni”) for 5,000 AFY of “Table A” in years when Valley’s Board declares a surplus. SGPWA states that this would be on the average of 2 out of 5 years (40% of the time), so it is assumed that 2,000 AFY can be obtained in any one year and this will continue in the future.

- “Yuba Accord” water. SGPWA has a long term agreement to purchase water from the Yuba County Water Agency through DWR. Over the years SGPWA has received about 300 AFY (as stated in their 2015 UWMP. It is assumed this will continue into the future.
- SGPWA has made a commitment of 10,000 AF and BCVWD has committed to 4,000 AF to the Sites Project Authority to fund Phase I of the Sites Reservoir Study. White Paper No.1 described in the detail the yield from Sites Reservoir which SGPWA and BCVWD can count on. There is some uncertainty to the final allocation of the yield from Sites Reservoir depending on finalization of the participants and the extent to which the resources agencies participate. This is discussed in White Paper No. 1. The results of this uncertainty in presented in Table 1, below, which shows a likely minimum yield of Class 1 water to SGPWA and BCVWD and a probably maximum yield if some of the Class 2 water is not fully taken by the resources agencies and the remaining portion of Class 2 water is reallocated to the project participants as additional Class 1 water.

Table 1  
Sites Reservoir Minimum and Maximum Yield to BCVWD and SGPWA

Condition		Total, AF	SGPWA, AF	BCVWD, AF
Minimum Yield, adjusted without Westlands WD	Class 1	9,748	6,963	2,785
Probable Maximum Yield	Class 1	11,874	8,481	3,393

It is possible, depending on the resources agencies funding, that the Class 1 water amounts shown in Table 1 could be greater, i.e., the resource agencies fund less of the project. It is also a very remote possibility that the full 500,000 AFY yield could be allocated to the project participants instead of only 250,000 AFY, the basis of the amounts in Table 1. At this point it is not known if the yields from Sites Reservoir, in Table 1 above, will be subject to the reliability factor of 62% like the current Table A SPW.

- White Paper No. 1 included a discussion on the SGPWA’s discussion with a confidential organization for 50,000 AF over a 10 year period (5,000 AFY). This source is no longer under consideration in this White Paper No. 2.
- The California Water Fix is not considered in this White Paper No. 2.

### Year-by-Year Analysis of SGPWA Imported Water Supply and Demand

Based on the water supply portfolio presented above, BCVWD expanded the analysis in White Paper No.1 to a year-by-year analysis to determine the benefit and effectiveness of groundwater banking, and subsequent extraction, in meeting short term differences between imported water supply and demand.

BCVWD Staff analyzed three possible scenarios:

- A “**best case**” scenario where the maximum possible amount of Class 1 water is secured from the Sites Reservoir.

- The **most likely scenario** where supply is assumed to be between the “best” and “worst” case; for this case the minimum amount of Class 1 water is secured from the Sites Reservoir at 100% reliability.
- A **“worst case” scenario** where the minimum amount of Class 1 water is secured from the Sites Reservoir at 62% reliability

In all three cases, the imported water supply sources and amounts are identical until the Sites Reservoir comes on line.

In all of the analyses to follow, the SGPWA imported water demand was extracted from the Agency’s 2015 UWMP adjusted and projected to year 2050 as described in White Paper No. 1. The analyses also assume that the current Table A 62% reliability will be gradually brought to 100% reliability through water purchases by SGPWA from 2020 through 2050.

Other assumptions include:

- AVEK Nickel Water delivery starts in year 2020 and continues to year 2040 and the agreement is extended for another 20 years to beyond 2050.
- SBVMWD water is available every year (2,000 AFY).
- Yuba Acord water is available every year (300 AFY)
- Sites Reservoir water delivery starts in year 2035
- Water conservation and demand reduction from new landscape ordinances, more efficient plumbing and appliances in new homes is not reflected in the demands
- BCVWD’s imported water requirements provided to SGPWA reflect the use of recycled water shown in Table 2 below. If recycled water is not available or used, BCVWD’s and SGPWA’s imported water demands would increase accordingly.

Table 2  
Projected BCVWD Recycled Water Use

Year	2015	2020	2025	2030	2035	2040	2045	2050
BCVWD Recycled Water, AFY	0	2,196	2,193	3,387	3,882	4,406	5,000	5,000

*SGPWA Best Case Scenario*

Figure 3 shows the SGPWA Demand from White Paper No.1, projected to 2050, showing the sources of imported water from the water portfolio year by year. Figure 3 also shows that demand for imported water exceeds the supply from 2017 to 2020, and from year 2026 through year 2035 at the time when Sites Reservoir water deliveries will be available. Under the Best Case scenario, Sites Reservoir will meet the demands through 2050.

Figure 4 shows the annual surplus/deficit in imported water supply and demand and the accumulated surplus/deficit in the imported water supply over time beginning in year 2015 under the best case scenario. This assumes SGPWA and its member agencies, e.g., BCVWD, City of Banning, YVWD, will bank water during years when the imported water supply exceeds demands.

Figure 4 shows that even though there are deficiencies between imported water supply sources and imported water demand from years 2017 to 2020 and years 2024 to 2035, the maximum accumulated deficit or shortfall was only 22,000 AF. Once Sites Reservoir water deliveries occur, this accumulated deficit is quickly refilled. The Beaumont Basin can easily accommodate the 22,000 AF deficiency where the SGPWA and its member agencies have a total of 290,000 AF of allocated storage capacity in the Beaumont Basin. As of the end of 2016, the SGPWA and its members had over 100,000 AF in storage and projected increase further in 2017 due to the wet year in Northern California. Assuming normal water years, this cumulative volume will increase. But the strategy has to be to import as much water as the contracts allow and bank any surplus in the Beaumont Basin.

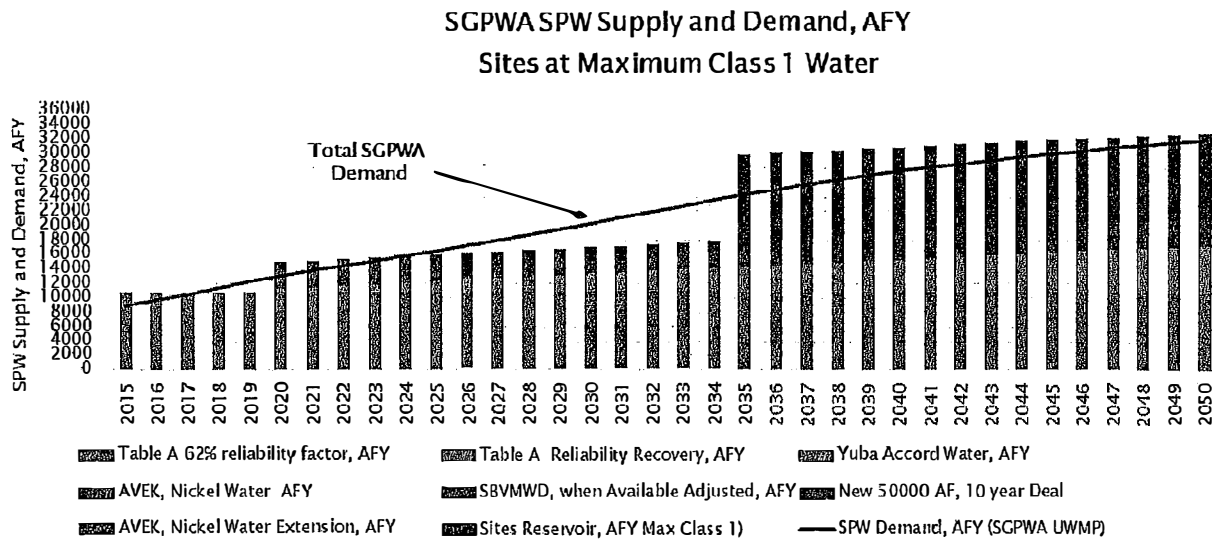


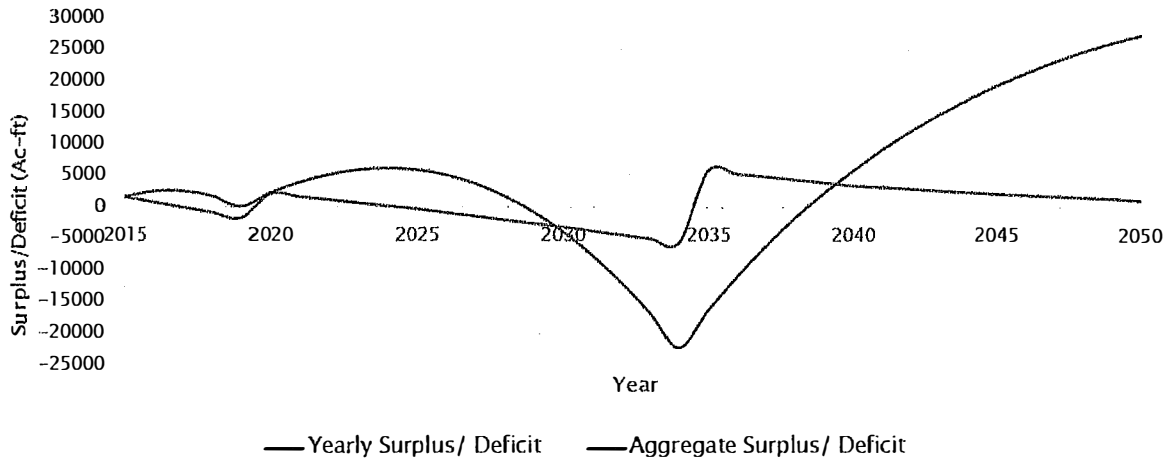
Figure 3  
SGPWA Imported Water Supply and Demand – Best Case

*SGPWA Most Likely Scenario*

Figure 5 shows the SGPWA Demand and the sources of imported water from the water portfolio year by year in the Most Likely Case. It is assumed that Sites Reservoir water deliveries are the minimum yield amount from Table 1. Figure 5 also shows that demand for imported water exceeds the supply from 2017 to 2020, and from year 2026 through year 2035 at the time when Sites Reservoir water deliveries will be available. This is similar to the “Best Case” analysis presented in Figures 3 and 4 above. Under the Best Case scenario, Sites Reservoir will only meet the demands through 2042 but the shortfall by year 2050 is very small and will easily be accommodated by the likely reduction in demand due to conservation and more efficient plumbing and appliances as described above.

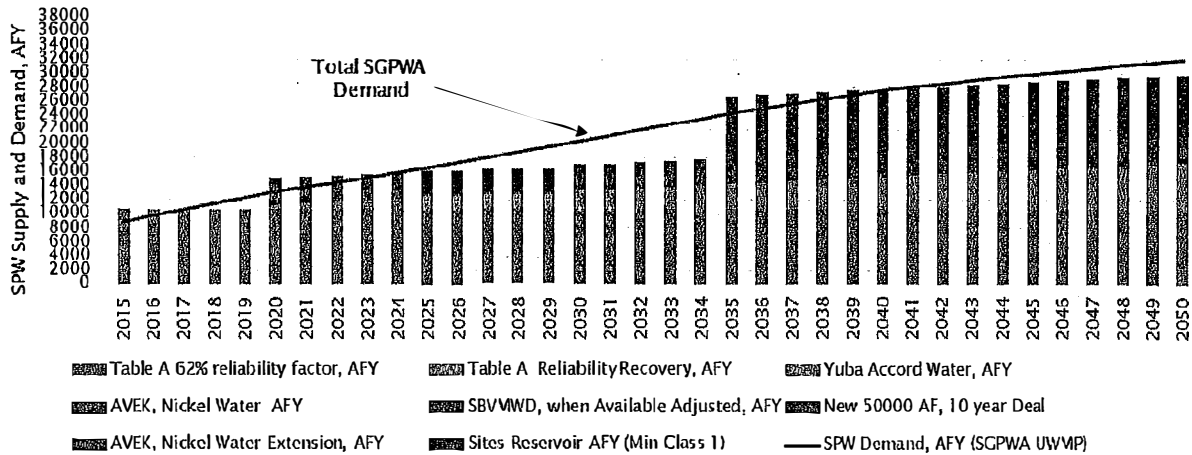


**SGPWA SPW Supply and Demand Surplus/Deficit Study  
Sites Max Class 1 Water**



**Figure 4  
SGPWA Imported Water Supply Surplus/Deficit – Best Case**

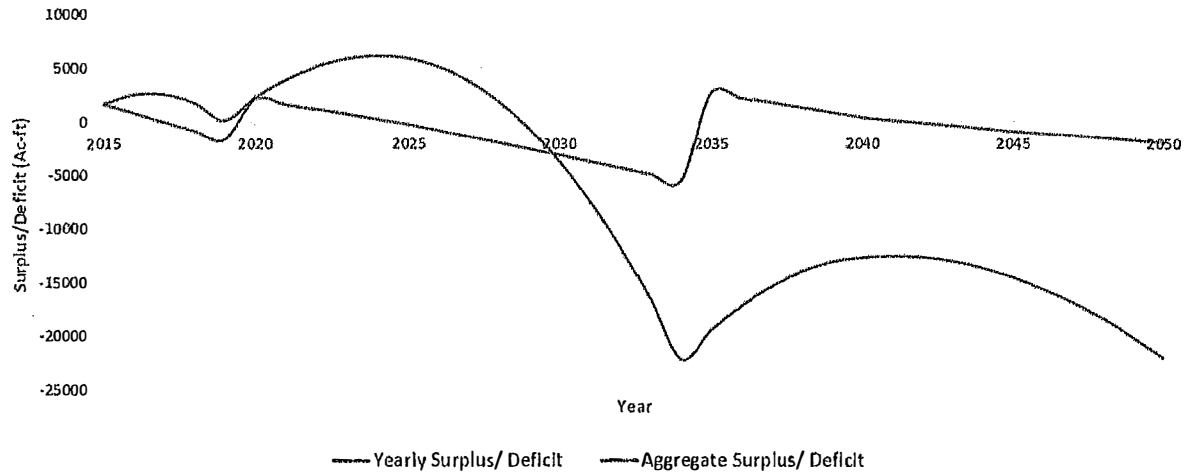
**SGPWA SPW Supply and Demand, AFY  
Sites at Minimum Class 1 Water**



**Figure 5  
SGPWA Imported Water Supply and Demand – Most Likely Case**

Figure 6 shows the annual surplus/deficit in imported water supply and demand and the accumulated surplus/deficit in the imported water supply over time beginning in year 2015 under the Most Likely Case scenario. This assumes SGPWA and its member agencies, e.g., BCVWD, City of Banning, YVWD, will bank water during years when the imported water supply exceeds demands.

**SGPWA SPW Supply and Demand Surplus/Deficit Study  
Sites Minimum Class 1 Water**



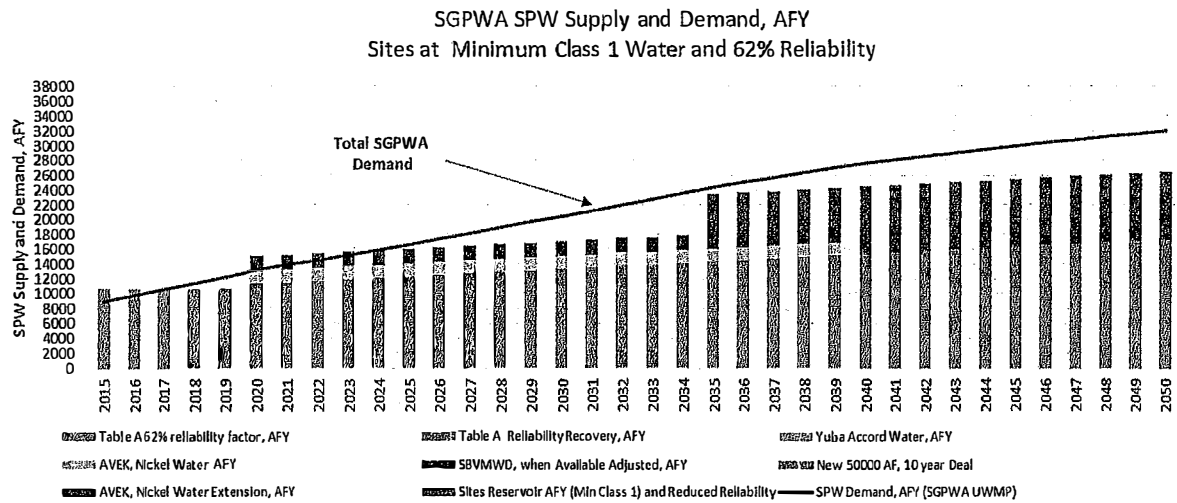
**Figure 6  
SGPWA Imported Water Supply Surplus/Deficit – Most Likely Case**

Figure 6 shows that even though there are deficiencies between imported water supply sources and imported water demand from years 2017 to 2020 and years 2024 to 2035, the maximum accumulated deficit or shortfall was only 22,000 AF similar to the “Best Case” analysis. The Beaumont Basin can easily accommodate the 22,000 AF deficiency as discussed above in the “Best Case” analysis. Once Sites Reservoir water deliveries occur, this accumulated deficit is partially refilled.

Figure 6 shows that there will be adequate water supply until about 2040 or so and that unless there is a reduction in the demand due to conservation, which is likely to occur over time, the accumulated deficit will not be fully replenished. If demand reduction does not occur, additional water supply will be needed beyond Sites Reservoir. This could be the California Water Fix or other sources.

*SGPWA Worst Case Scenario*

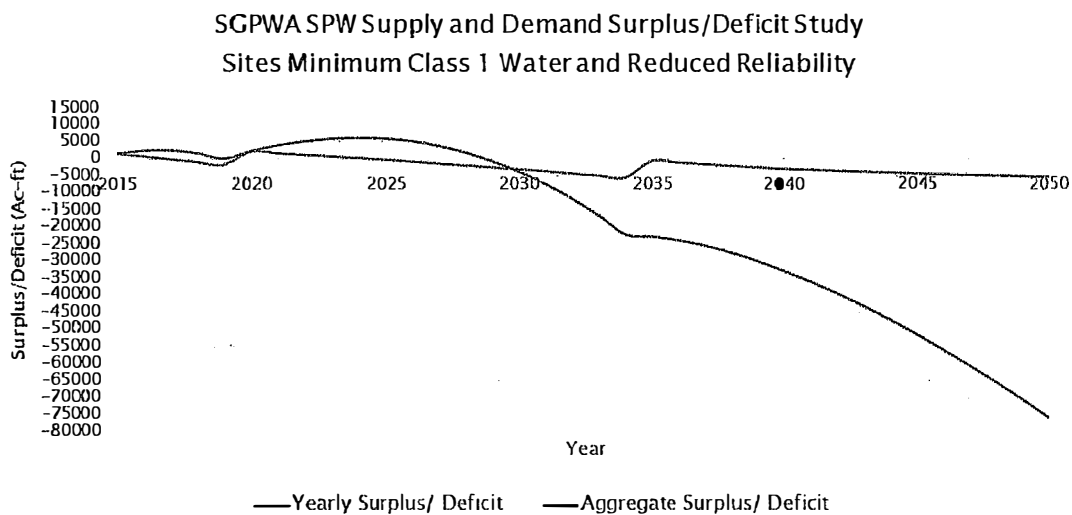
Because of the uncertainty with respect to the reliability of the yield of Sites Reservoir, BCVWD took a very conservative approach to bracket the “lower end” or “Worst Case” scenario. This Worst Case scenario was based on the minimum yield from Sites Reservoir as shown in Table 1 with a 62% reliability factor applied. This assumed Sites Reservoir would be subject to the same reliability of the State Water Project as a whole. Figure 7 shows the SGPWA imported Water Supply and Demand forecast to year 2050. As can be seen from Figure 7, there is a continuous shortfall from year 2024 through year 2050 even with Sites reservoir. By the year 2050 the shortfall is about 7,000 AFY about 22%. Some or all of this deficiency will likely be made up by conservation and reduction demand.



**Figure 7**  
SGPWA Imported Water Supply and Demand – Worst Case

Before Sites Reservoir deliveries begin in 2035 the delivery capability and reliability will be known. This could be as early the middle to late 2020s which should provide sufficient time to secure other imported water sources; perhaps the California Water Fix may make up some of the deficiency.

Figure 8 shows the annual surplus/deficit in imported water supply and demand and the accumulated surplus/deficit in the imported water supply over time beginning in year 2015 under the Worst Case scenario. This assumes SGPWA and its member agencies, e.g., BCVWD, City of Banning, YVWD, will bank water during years when the imported water supply exceeds demands.



**Figure 8**  
SGPWA Imported Water Supply Surplus/Deficit – Worst Case

The strategy of using the Beaumont Groundwater Basin to store surplus imported water is a good strategy until more is known about the yield and reliability of Sites Reservoir yield and the

status of California Water Fix. As shown in Figure 8, the accumulated deficiency by the time Sites Reservoir is on line (year 2035) is 22,000 AF, same as the “Best” and “Likely” scenarios. However even with Sites Reservoir, there will be significant accumulated deficiency by year 2050, (75,000 AF), which would be a concern if allowed to continue. But with some conservation and demand reduction the accumulated deficiency would be reduced. Based on the storage capacity in the Beaumont Basin, the drop in water storage from year 2035 to year 2050 is manageable.

### **Year-by-Year Analysis of BCVWD Imported Water Supply and Demand**

A similar year-by-year analysis of BCVWD’s imported water supply and demand was completed. The assumptions presented above for SGPWA were also applicable to BCVWD; but BCVWD has some additional constraints since they are only a portion of SGPWA’s demand. Additional assumptions pertinent to BCVWD:

- BCVWD’s share of SGPWA’s “Table A”, “Table A” reliability enhancement, Yuba Accord Water, AVEK Nickel Water, Sites Reservoir Water (separate from BCVWD’s 28.571% as stated in White Paper No. 1), etc. is based on BCVWD’s portion of the SGPWA’s total demand. BCVWD’s share of the demand can be extracted from the SGPWA 2015 UWMP and are 85.9% in 2020 declining to 64.5% by 2040 and projected, by BCVWD to be 60% by 2050. These percentages were applied to the above listed sources in making projections of imported water supply and demand in the following figures.
- BCVWD has committed to 28.571% of the final allocation to SGPWA from Sites Reservoir (2,785 to 3,393 AFY minimum and maximum Class 1 yield as shown in Table 1 above).

As with the SGPWA analyses presented above, the imported water sources and amounts are identical under all three scenarios up until Sites Reservoir comes on line.

#### *BCVWD Best Case Scenario*

Figure 9 shows BCVWD’s long term imported water supply for the Best Case scenario; it assumes Sites Reservoir yield at its probable maximum yield per Table 1 above. There are three (3) demand lines plotted:

- Demand for imported water assuming local water resource projects (stormwater capture, etc.) and recycled water from YVWD and City of Beaumont are utilized. This was extracted from Table 6-26 in BCVWD’s 2015 UWMP, projected to year 2050, and includes the purchased imported water for banking for wet year-dry year mitigation.
- Demand for imported water without recycled water.
- Demand for imported water assuming conservation. A 20% reduction in BCVWD total water demand was assumed by 2040 and 25% by 2050. The imported water supply is about 58% of BCVWD’s total supply, so the reduction in imported water demand will only be 58% of the conservation reduction.

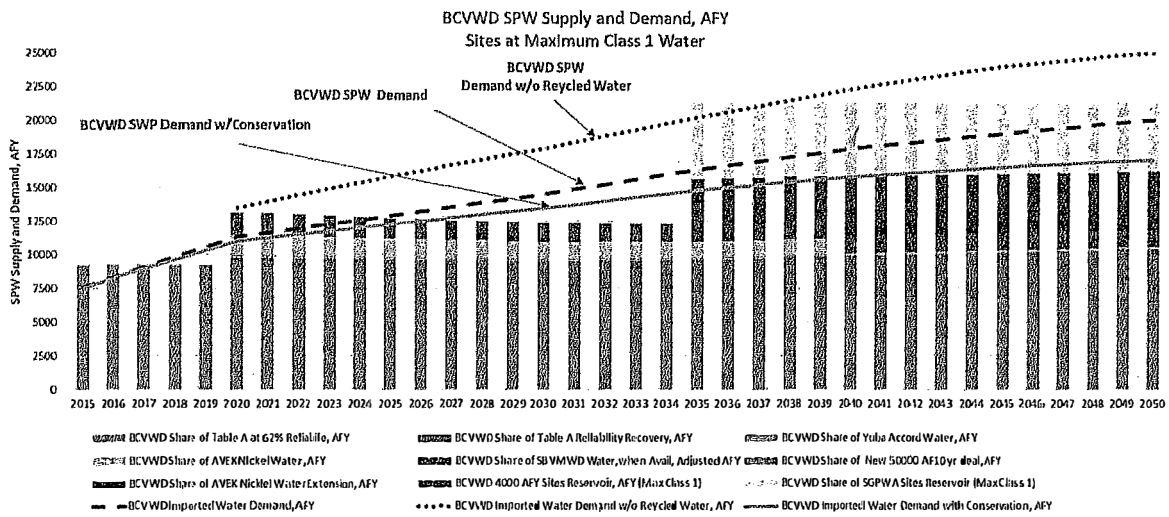


Figure 9  
BCVWD Imported Water Supply and Demand – Best Case

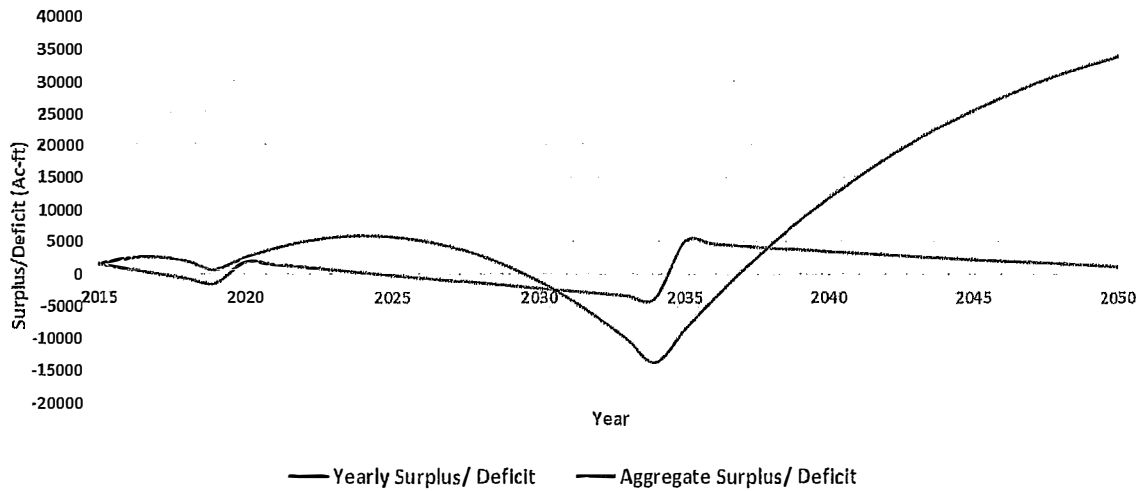
Figure 9 clearly shows that BCVWD will be able to meet its year 2050 imported water demand assuming the recycled water amounts, presented in Table 2 above, are available and utilized. Without recycled water, BCVWD's demand for imported water in year 2050 will exceed the available supply by about 3,500 AFY. With conservation, BCVWD will be able to meet its year 2050 imported water demands easily and for many years beyond 2050.

Figure 9 shows a shortfall of supply from year 2017 to year 2020 and year 2025 to year 2035. Figure 10 shows the accumulated surplus/deficit for the entire period of study assuming the use of recycled water. The maximum accumulated deficit is only 13,600 AF which occurs in year 2035 just as Sites Reservoir is coming on line. This is easily accommodated as BCVWD is projected to have over 33,000 AF in storage at the end of 2017 even after an extended drought period. BCVWD's Beaumont Basin storage account can accommodate up to 80,000 AF.

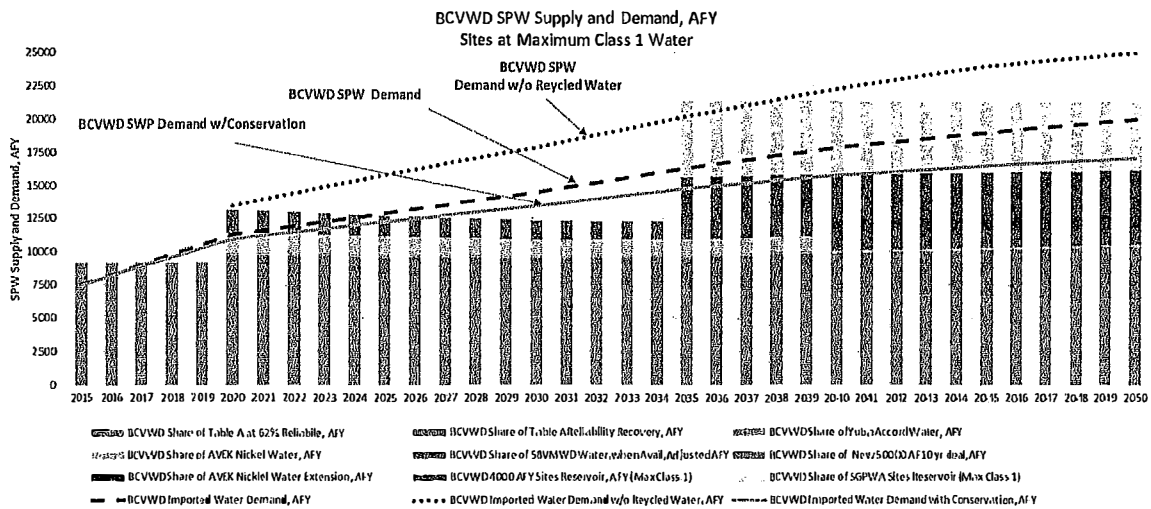
#### BCVWD Most Likely Scenario

Figure 11 shows BCVWD's imported water supply and demand under the Most Likely scenario with Site's reservoir at the minimum amount of Class 1 water from the Sites Reservoir at 100% reliability as shown in Table 1. Even under this scenario BCVWD can easily meet its imported water requirement in year 2050 without conservation and demand reduction. With conservation, as described above for Best Case Scenario, BCVWD will be able to meet its imported water demands well beyond year 2050.

**BCVWD SPW Supply and Demand Surplus/Deficit Study  
Sites Max Class 1 Water**



**Figure 10  
BCVWD Imported Water Supply Surplus/Deficit – Best Case**



**Figure 11  
BCVWD Imported Water Supply and Demand – Most Likely Case**

Figure 11 shows there is a deficit of supply from year 2025 to year 2035. Figure 12 shows the accumulated surplus/deficit for the period of study. The maximum deficit, 13,600 AF, occurs in 2035 just before Sites Reservoir comes on line. This can easily be met with groundwater from BCVWD's Beaumont Basin groundwater storage account which has capacity to 80,000 AF. As of the end of 2017, BCVWD's groundwater in storage is projected to be 33,000 AF. Figure 12 shows that there will be an aggregate surplus from 2017 to about year 2025. It is projected another 6,000 AF will be added to BCVWD's storage account by 2025 bringing BCVWD's groundwater storage account up to 39,000 AF. It is possible that more groundwater will be in storage if hydrologic conditions are favorable.

BCVWD SPW Supply and Demand Surplus/Deficit Study  
 Sites Minimum Class 1 Water

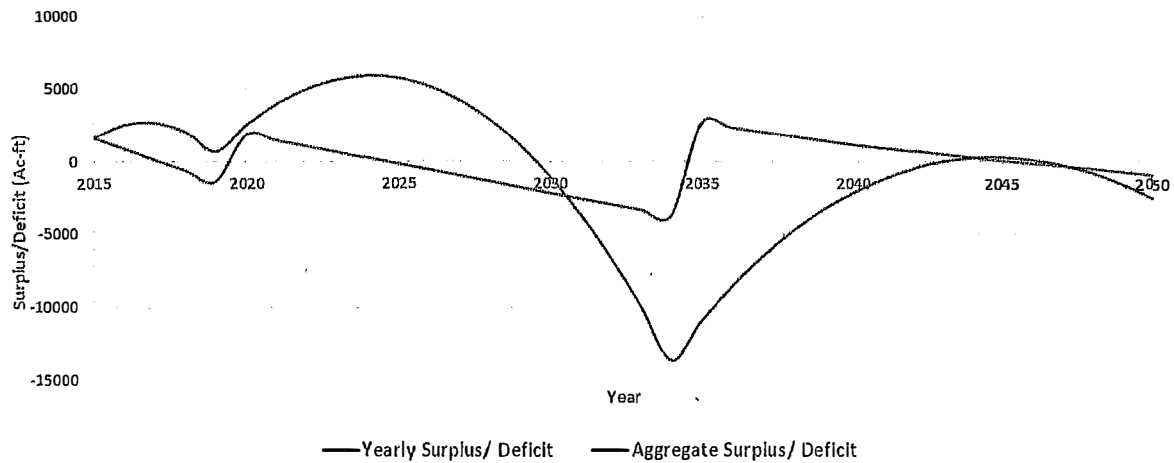


Figure 12  
 BCVWD Imported Water Supply Surplus/Deficit – Most Likely Case

The storage account will decline to year 2035 when Sites Reservoir comes on line as shown in Figure 12. BCVWD’s storage account would still have 19,400 AF in storage at this time. Figure 12 shows that BCVWD’s storage account would continue to increase from year 2035 on.

*BCVWD Worst Case Scenario*

Figure 13 shows BCVWD’s imported water supply and demand under a Worst Case Scenario where the minimum amount of Class 1 water is secured from the Sites Reservoir but at 62% reliability. Under the Worst Case Scenario, BCVWD imported water supply will be about 2,300 AFY “short” in year 2050 assuming local water resources and recycled water is available and used. Figure 13 shows that with conservation as described previously for Best Case Scenario, the imported water demand in year 2050 will be met. The amount of water available from Sites Reservoir and whether it is subject to the SWP reliability reduction will be known before is constructed which will provide opportunity to secure water from other sources.

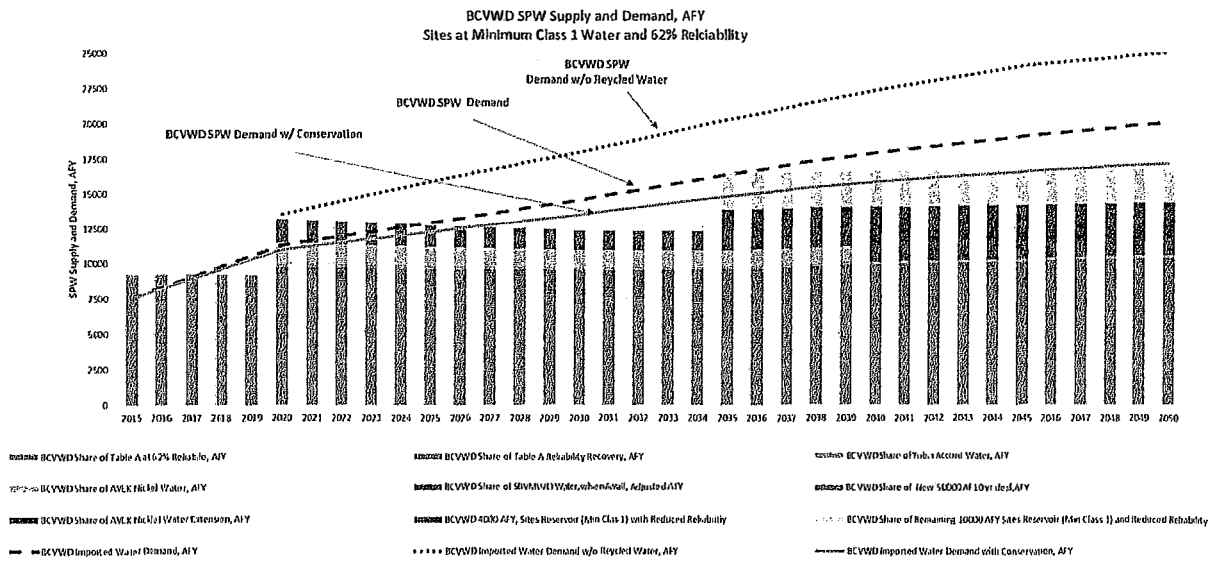


Figure 13  
BCVWD Imported Water Supply and Demand – Worst Case

Figure 14 shows the surplus/deficit on both an annual basis and cumulative to year 2050. The cumulative deficiency reaches 13,600 AF just before Sites Reservoir is on line, but then due to the inadequacy of imported water supply, the cumulative deficiency increases each year, eventually reaching about 42,000 AF by year 2050.

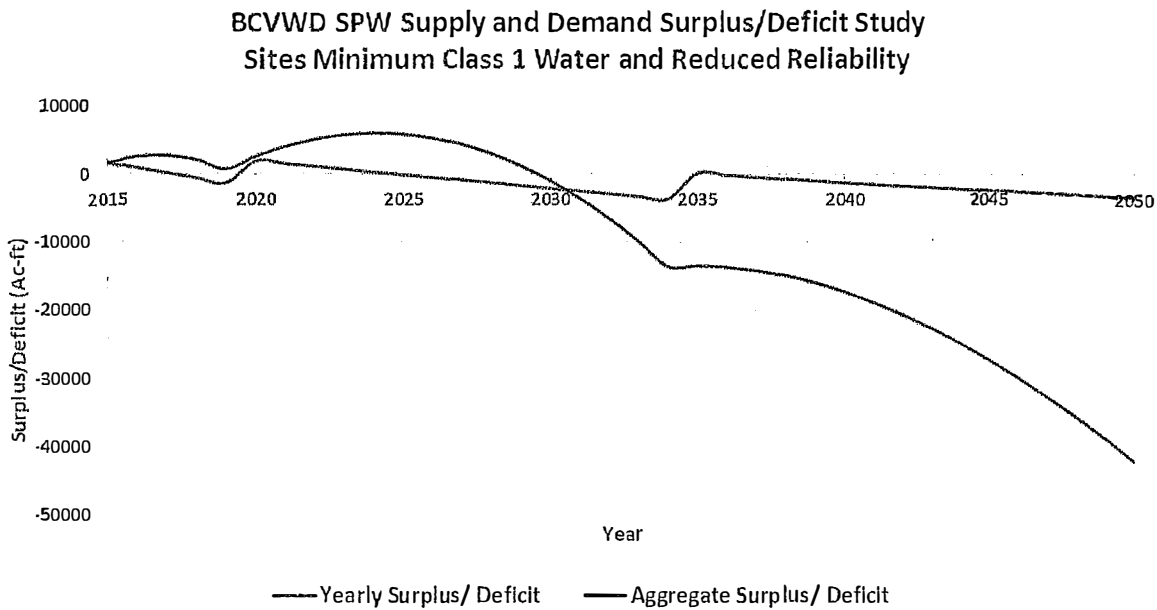


Figure 14  
BCVWD Imported Water Supply Surplus/Deficit – Worst Case

As discussed above for the Most Likely Scenario, BCVWD's Beaumont Basin groundwater storage account would have 19,400 AF in storage just before Sites Reservoir comes on line. Banked groundwater in BCVWD's storage account could meet the demand for a few years after Sites Reservoir comes on line but not for an extended period under this Worst Case Scenario.



Figure 14 shows that under the Worst Case Scenario, BCVWD will have enough water in storage to meet the demands up until Sites Reservoir comes on line. Beyond then, additional imported water sources will need to be in place.

## Conclusions

- **Sites Reservoir and/or California Water Fix is critical to meeting long term water demands.**
- Over the next decade, the feasibility, yield, reliability, costs, and construction schedule for Sites Reservoir and the California Water Fix will be better known.
- Because of the uncertainties of Sites Reservoir and the California Water Fix, SGPWA should secure projects like AVEK Nickel Water and other short and long term contracts as they become available and the demand in the service area continues to develop. This water can be banked to meet short-term demands during dry years and will provide water to make up for short term deficiencies while agreements are being developed and additional water sources, e.g. Sites Reservoir, are brought on line.
- Groundwater banking and subsequent extraction is critical to meeting deficiencies between imported water supply and demand until agreements can be executed and water supply projects come on line. As much imported water as is available should be banked.
- If Sites Reservoir and/or the California Water Fix are not implemented or delayed, SGPWA must move aggressively to replace these essential sources.
- Recycled water and maximization of local water resources is crucial to meeting long term water demands, minimizing BCVWD's and other SGPWA member agencies' dependence on imported water.
- Water conservation should be encouraged to minimize the need for imported water.
- Imported water demand and supply should be revisited periodically.
- A complete strategy for funding of the water portfolio should be prepared to set forth a comprehensive fund strategy for new water including the following minimum components:
  - Capacity fees
  - Rates
  - Tax based contributions
  - Others

## **Acknowledgments**

This white paper supports a series of presentations made by BCVWD management to the Board of Directors and members of the public. Additional information is contained in those presentations.

Analyses and evaluations in support of the white paper and presentations were prepared by BCVWD staff, Joseph C. Reichenberger P.E., BCEE, Senior Engineer under the direction of and with input from Dan Jagers P.E., General Manager. Extensive analyses were prepared by Kaden Johnsen, Engineering Assistant, with help from Ivan Garcia, Engineering Intern.



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**DATE:** December 20, 2017

**TO:** Dan Jagers, General Manager

**FROM:** Joe Reichenberger PE, Senior Engineer

**SUBJECT:** Water Supply Portfolio Unit Costs– White Paper No. 3

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This white paper summarizes a presentation to BCVWD's Board of Directors on November 8, 2017 continuing the discussion of San Geronio Pass Water Agency (SGPWA) and Beaumont Cherry Valley Water District's (BCVWD's) imported water needs to year 2050 – essentially build-out. This white paper focusses on imported water portfolio, the costs for the various water sources and some funding strategies.

**Background:**

White Paper No. 1 identified BCVWD and SGPWA imported water requirements over the next 30 years or so based on the respective agencies' 2015 Urban Water Management Plans (UWMPs). White Paper No. 1 also listed a number of sources of imported water ("water portfolio") and the timing of the leasing, purchasing, or construction of these sources. Since the water purchases and leases do not always exactly match the demands, White Paper No. 2 evaluated the feasibility of using groundwater storage and banking as a strategy to overcome temporary deficiencies between the demand for imported water and the supply.

SGPWA's water supply (current and planned) comes from the following sources:

- State Water Project (SWP) Current Table "A" Water
- Increased Table "A" Water Reliability Through California Water Fix
- Sites Reservoir Project
- Yuba Accord Water
- AVEK, Nickel Farms Water through the Antelope Valley East Kern Water Agency (AVEK-Nickel)
- San Bernardino Valley Municipal Water District (SBVMWD) Water

## Current Table A Supply

The SWP provides approximately 4.2 million AFY in total Table “A” water supply (100% capacity) to the 29 state water contractors; San Geronio Pass Water Agency (SGPWA) is one of the state water contractors. The long-term water supply contracts to each of the 29 contractors sets forth a maximum amount of water a contractor may request each year for the SWP, and these water amounts are written in the contracts in a list format known as “Table A.”

“Table A” or “Table A water” represents a portion or all of the annual Table A amount requested by the SWP water contractors and approved for delivery by the Department of Water Resources (DWR) based on hydrologic conditions, current reservoir storage, and the combined requests from the SWP contractors. Under certain water year conditions, DWR is not able to deliver the quantity of water requested by the SWP contractors. In those years, a proportional amount is allocated and delivered according to the contracts by prorating the amount in proportion to each SWP contractor’s annual Table A amount. Table A amounts are also used to allocate other water supplies.

Of the 4.2 million AFY, SGPWA’s Table “A,” amount is 17,300 Acre-Feet (approximately 0.41% of the total 4.2 million AF supply). In 2017 the SGPWA will pay an estimated \$23,060,018 (includes taxes and water rates) to the SWP for entitlement to 17,300 AF of the Table “A” water (from DWR Bulletin 132-17). The current SWP Table “A” water supply is assumed to be 60% to 64% reliable. Therefore, the SGPWA receives only approximately 10,400 AFY of Table “A” water from the SWP on an average annual basis.

The estimated \$23 million above includes transportation and energy charges (DWR “pass through” costs). SGPWA currently charges \$317/AF with includes the DWR pass through costs plus other costs. A summary of the costs included in the \$317/AF, extracted from the SGPWA’s recent rate study, is presented in Table 1.<sup>1</sup>

The DWR energy and transmission charges (“transportation costs) are estimated to be \$260/AF.

With this annual supply, the water is forecast to be delivered at an approximate cost of \$2,220 per AF based future projected payments (includes capital cost and \$260/AF Transportation cost).

## The California Water Fix

The SWP planning began in earnest in the mid-1950s and was authorized in the Burns-Porter Act, also known as the California Water Resources Development Bond Act, passed by vote of the people in November, 1960 (Proposition 1). Construction on most of the basic facilities of the SWP was completed by 1975. Due to cost considerations, and initial project water demands lower than design capacity, a number of planned facilities were scaled down or deferred. Many have not been constructed to date. One of those projects was the Cross-delta Facility known as

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<sup>1</sup> SGPWA (2009). Final Draft – Water Rate Study, David Tausig Associates, Inc., February 2.

the Peripheral Canal. The SWP is not able to live up to its original design capacity due to many factors beyond the scaled down, deferred, or not constructed facilities.

Table 1  
Costs in SGPWA's Water Rate

Cost Item	Cost, \$/AF
Agency Operational Expenses	\$10.00
Agency Administrative Cost	\$3.50
SBVMWD Pass Through	\$8.00
Yuba Water Purchases	\$3.86
New Water Purchase	\$22.00
Rate Stabilization	\$11.00
Subtotal	\$57.36
Rate Charged by SGPWA	\$317.00
DWR Pass Through	\$259.64 (\$260)

The Sacramento-San Joaquin Delta levees are vulnerable to seismic shaking; the Delta ecosystem continues to decline; flooding and saline water intrusion into the Delta impacts the water quality delivered to municipal and agricultural users; climate change, whether short-term or extended long-term, will cause increased water levels in the Delta further stressing vulnerable levees. The SWP dams and reservoirs were designed about 50 years ago with the hydrology of the times. Climate change, whether short term (50 or 100 years) or long term 500 or more years, will impact the operation of the SWP. Precipitation, which used to fall as snow and be stored in snowpack, will be in the form of rain which the reservoirs were not designed to accommodate. More and water will be lost to the ocean in future years.

The California Water Fix (CWF), intended to address some of these issues, proposes a dual gravity tunnel conveyance system from north of the Delta extending south to the Clifton Court Forebay. At the southerly end of the tunnels a new Clifton Court Pumping Facility would lift water from the tunnels into Clifton Court Forebay. The water would be pumped from Clifton Court Forebay by the State and Federal Central Valley Project pumps as they now do. About 9,000 cfs would be diverted from the Sacramento River into the tunnels and around the Delta improving water supply reliability and export water quality TDS. The cost of the CWF is estimated to \$ 16.7 billion (2017 costs) with an estimated \$64.4 million in annual operation and maintenance costs.<sup>2</sup> It is possible that the dual tunnels may be scaled back or phased. The project from initiation of design through commissioning is projected to take eighteen years. So if it started in 2020, it would not be complete until 2038. During that time, the reliability of the SWP would gradually decline as described later in this section. The principal elements of the CWF are shown in Figure 1.

<sup>2</sup> Wheeler Ridge-Maricopa Water Storage District, California Water Fix Business Case Analysis Spreadsheet.

All State Water Contractors were requested to provide non-binding resolutions of support for the CWF. As of October 17, 2017, twelve Contractors, including SGPWA and many of large agencies, e.g., Metropolitan Water District of Southern California (Metropolitan), Kern County Water Agency, Santa Clara Valley Water District, voted to support the CWF. Many of those agencies that did not take a formal vote are anticipated to participate commensurate with their existing State Water Contracts. Although five of the 29 State Water Contractors ended their participation in the CWF; the remaining 24 contractors hold almost all of the original Table A (97.2%).

The estimated \$16.7 billion cost for the CWF (2017 dollars) is anticipated to be shared 55% with State Water Contractors and 45% with federal Central Valley Project Contractors. Assuming the 55/45 split and the fact that SGPWA has 0.41% of the Total SPW Table A, SGPWA would be paying about \$38 million for the CWF (based on 0.41%) or \$39.4 million based on 0.43%. See discussion below. Financing for the CWF is proposed over a 40-year period at a possible interest rate of 4%. Annual capital cost payments by SGPWA would be about \$2.0 million including bond issuance costs; annual O&M costs would be about \$150,000 plus transportation costs, estimated to be about \$260/AF currently.

The reliability of the SWP Table "A" water is projected to degrade over time to 48% without the California Water Fix (CWF) due to a variety of reasons. The CWF is projected to increase the future reliability of the SWP by 14% (DWR study) to 17.62% (Metropolitan Water District of Southern California [Metropolitan] study) resulting in an increase the overall reliability to 62% or, in the best case, 65.62%. This is about what the current reliability is. It should be noted that the reduction in reliability will occur gradually over time from the current 60 to 64% reliability to 48%.

Without CWF, SGPWA's reliable Table A would be 8,304 AFY (based on 48% of 17,300 AFY). The reliable Table A supply for SGPWA would increase to 10,726 AFY at 62% reliability or possibly as much as 11,352 AFY based on Metropolitan's study (65.62% reliability). Potentially then, the CWF would result in an increase from 2,422 AFY to 3,048 AFY reliable supply. With the firm withdrawal of five of the contractors mentioned above, SGPWA's percentage of the CWF "yield" should slightly more than 0.41%, perhaps maybe as high as 0.43% of the yield based on SGPWA's share of the total Table A of the participating 24 contractors.

To put a price on Table "A" water going forward from now, the estimated future annual cost of \$24.2 million estimated by DWR for SGPWA from Bulletin 132-17 will be used; it should be noted this cost includes transportation charges of about \$260/AF. The SGPWA's pre-CWF cost for 8,304 AFY is calculated as shown in Table 2

The cost of SGPWA water with CWF based on the original SWP contract at 48% reliability with the CWF at 14 % to 17.62% additional reliability is summarized in Table 3.

The additional annual amount of water due to increased reliability brought about by the CWF ranges between 2,422 and 3,048 AFY; the annual cost for this incremental amount of water is \$2.2 million (\$2.0 million + \$0.15 million) as shown in Table 3; resulting in a unit cost of about \$887/AFY to \$705/AFY respectively for the increment, not including DWR pass-through transportation costs.

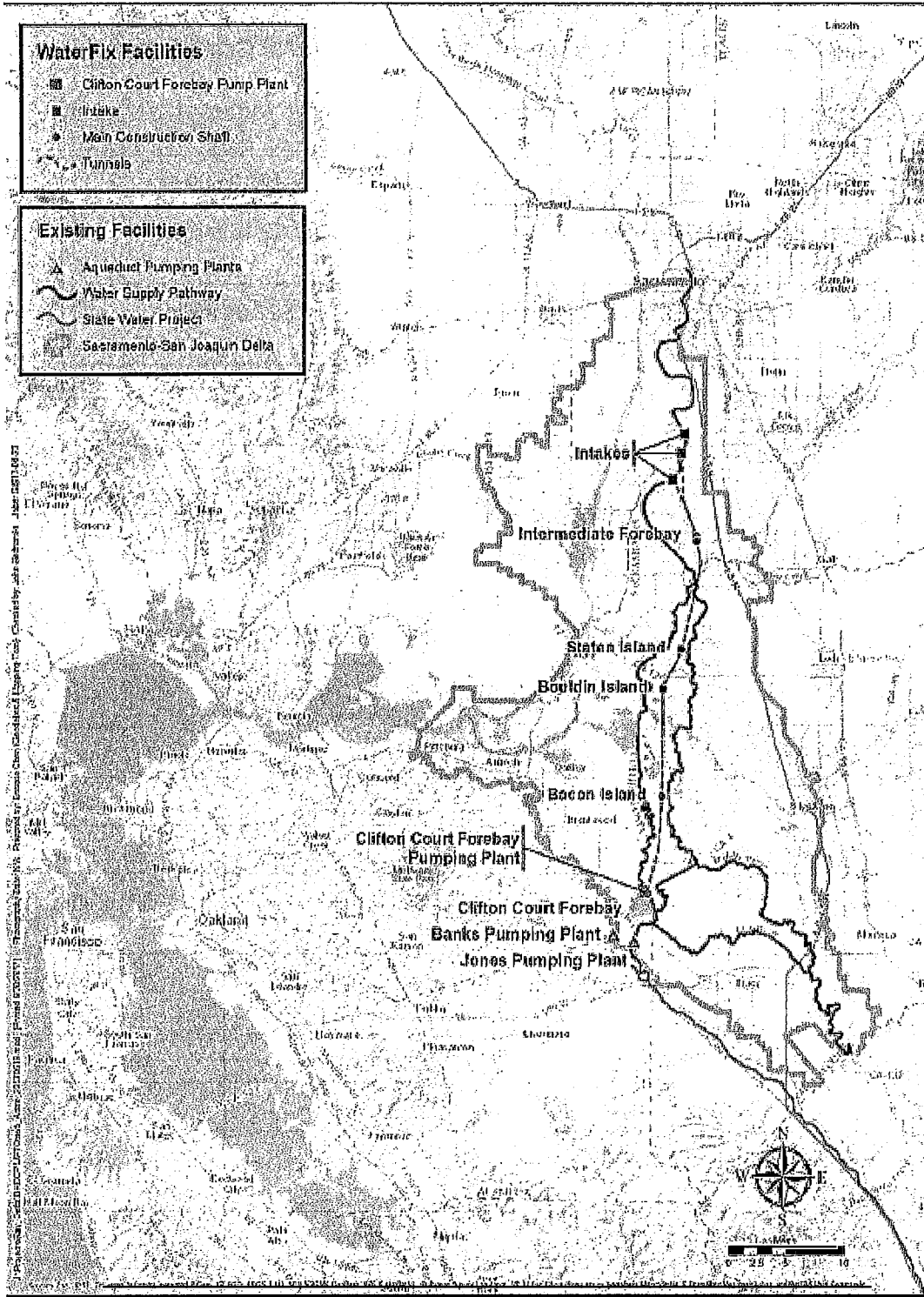


Figure 1  
California Water Fix Facilities

Table 2  
Estimated Cost for SGPWA Table A Water without CWF Going Forward  
(based on 8,304 AFY)

Item	Cost
Total Annual Payment pre-CWF	\$24.2 million
DWR Transportation Charges @ 8,304 AF \$260/AF	\$2.16 million
Annual Payment less DWR Transportation Charges	\$22.04 million
Pre-CWR Cost per AF without DWR Transportation	\$2,654/AF
DWR Transportation Charges @ \$260/AF	\$260/AF
Total SGPWA Pre-CWF Cost per AF incl. DWR Transportation Cost	\$2,914/AF

Table 3  
Estimated Cost of SGPWA Table A Water with CWF Going Forward

Item	SWP @ 62% Reliability (10,726 AFY)	SWP @ 65.62% Reliability (11,352 AFY)
Total Annual Payment pre-CWF	\$24.2 million	\$24.2 million
DWR Transportation Charges @ \$260/AF	\$2.8 million	\$3.0 million
Annual Payment less DWR Transportation Charges	\$21.4 million	\$21.2 million
Annual Capital Cost of CWF plus bond issuance costs	\$2.0 million	\$12.0 million
Annual O&M Costs for CWF	\$0.15 million	\$0.15 million
Total Annual Payment with CWF	\$23.6 million	\$23.4 million
Cost per AF with CWF but without DWR Transportation Costs	\$2,200	\$2,060
DWR Transportation Charges @ \$260/AF	\$260	\$260
Total with CWF, Cost per AF incl. DWR Transportation Cost	\$2,460	\$2,320

These costs are based on the current assumptions that the contractors currently involved in the SWP and CVP remain unchanged. There may be an opportunity for the SGPWA to secure more Table "A" supply through purchase or long term leases from the CWF in the event that more contractors from the SWP or CVP withdraw their support and associated financing of the project. Costs presented previously are melded SWP and CWF costs. However, any additional supply available may result in a decreased overall melded cost (SWP component reduction).



## Sites Reservoir Supply

Sites Reservoir is a proposed reservoir that would be located at the site of a cattle ranch in the eastern foothills of the Central Valley about 78 miles northwest of Sacramento. See Figure 2. Sites Reservoir is not on any major stream; all water must be pumped into the reservoir. Sites Reservoir was part of the original California Water Project, but was deferred. Because of dwindling water supplies, new interest has arisen in the reservoir. The reservoir would have a surface area of about 14,000 acres and store between 1.27 and 1.81 million acre-feet depending on final project. The estimated water yield would be between 470,000 to 640,000 acre-feet per year, depending on yearly rainfall and environmental regulations, according to DWR.

Flood flows in the Sacramento River, over and above that needed to meet the demands of existing water rights holders, would be captured and pumped into Sites Reservoir. During the drought year of 2014-15 Sites would have captured 410,000 AF; if Sites were operational in the 2015-16 season it would have captured over 1 million AF, which was lost to the ocean. On an average year Sites will add 500,000 AF to Delta flows; during critical dry years, Sites would add about 250,000 to 300,000 AF of water.

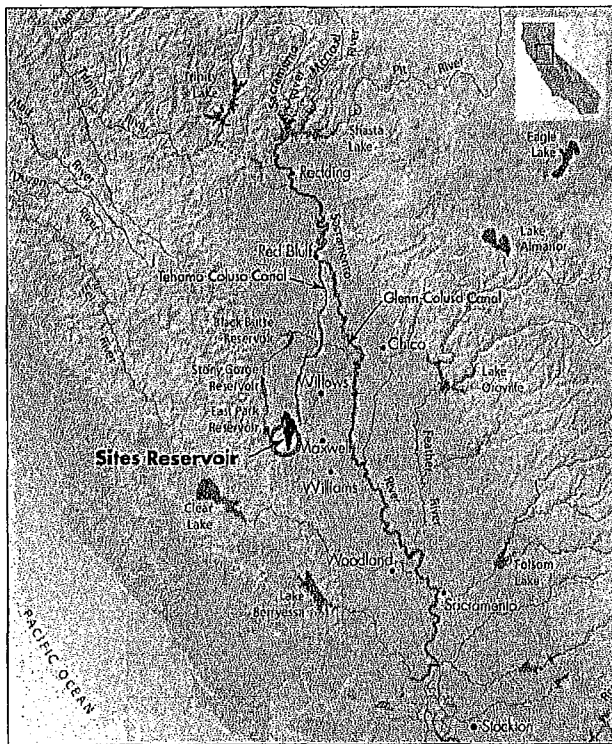


Figure 2  
Sites Reservoir General Location

Water would be delivered to a forebay reservoir (Holthouse Reservoir expanded from the existing Funks Reservoir) through the existing Tehama-Colusa and Glenn-Colusa irrigation canals, and from a new pumping station on the Sacramento River. The water would then be boosted into Sites Reservoir. The water would then be released into the Sacramento River, augmenting natural flows and releases from other reservoirs. Electric power would be generated upon release of the water into the Sacramento River. Refer to Figure 3.

Sites Reservoir is projected to cost \$4.7 billion, (October, 2015 Costs), with annual operating and monitoring costs of \$26 million, according to DWR.<sup>3</sup>

The Sites Reservoir Project is projected to supply 14,000 AFY of Class 1 water (9,748 AFY) and Class 2 water (4,252 AFY) to the SGPWA with a reliability of 75% to 100%.<sup>4</sup> It is possible the amount of Sites Reservoir

<sup>3</sup> Sites (2017). Basis of Estimate for Sites Authority Project Alternative D, Working Draft, Subject to Change, prepared by AECOM, June, page E-5

<sup>4</sup> See White Paper No. 1, Table 3.

Class 1 water may increase from the 9,748 AFY to perhaps as much as 11,874 AFY depending on the resources agencies' participation in the project. It is possible that maybe even 14,000 AFY will be available, but that is very optimistic.

If the Sites Project is ultimately considered to be part of the SWP the reliability will most likely be 100%. If the project is ultimately not considered to be a part of the SWP there may be a loss of up to 25% as this portion of the supply may be lost through the Delta. Therefore, the Sites Reservoir Project could supply between 7,311 AFY, (75% of 9,748 AFY), and 11,874 AFY or maybe even more. Table 4 shows a possible allocation of Sites Reservoir project costs to SGPWA. It should be pointed out this is very preliminary and is based on SGPWA's Class 1 Water Amount to the Total Class 1 Water Amount (250,000 AFY).

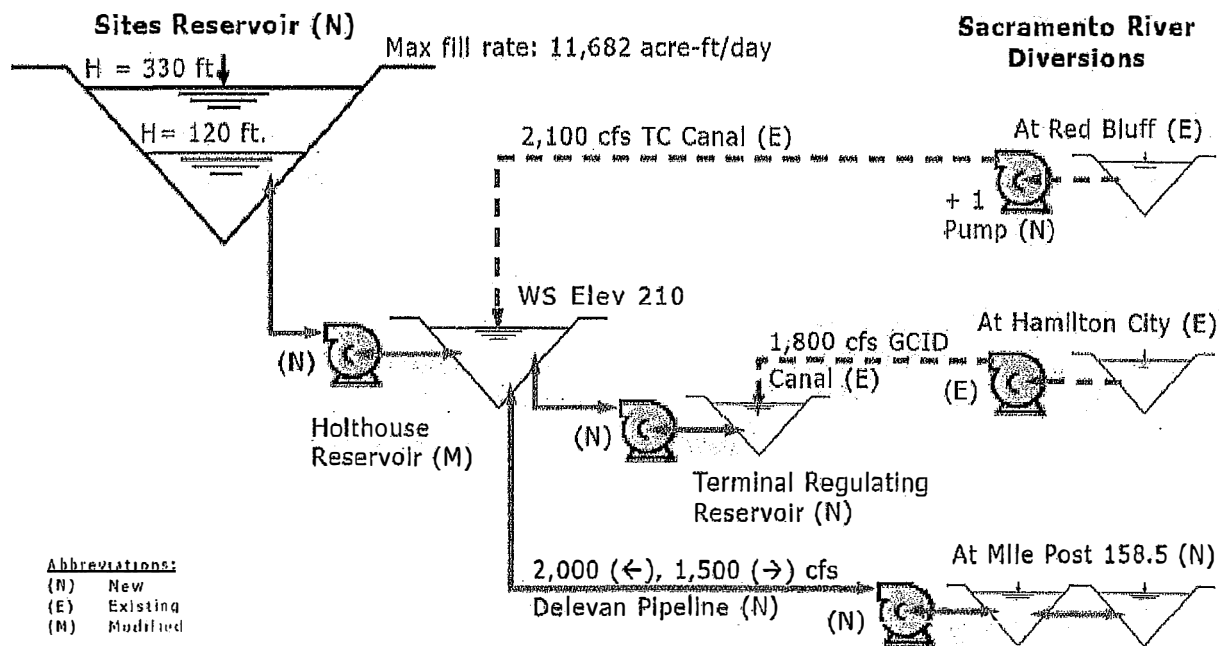


Figure 3  
 Sites Reservoir Project Operating Schematic

Table 4  
 Possible SGPWA Allocation of Sites Reservoir Project Costs  
 (All costs in thousands)

Item	Cost or %	Remark
Sites Reservoir Construction Cost	\$4,700,000	2015 cost
Interest During Construction	\$789,000	AECOM 2017 study
Total Costs, Oct 2015	\$5,489,000	
Escalation to 2017	6.6%	per ENRCCI
2017 Capital Costs	\$5,851,274	
Percent Water Supply Joint Powers Agency Funded	75%	AECOM 2017 Study estimated from 54% to 59%
Annual OM&R and Monitoring Cost	\$26,000	2015 Costs
Escalation to 2017	6.6%	per ENRCCI
2017 OM&R and Monitoring Costs	\$27,700	

Table 4 Continued  
 Sites Reservoir Project Cost Allocation  
 (All costs in thousands)

Item	Cost or %	Remark
2017 Capital Costs	\$5,851,274	above
Sites Project Authority Share	60%	From AECOM Analysis
Cost Funded by Sites Project Authority	\$3,510,800	
Interest Rate	4%	
Number of Years	40	
Capital Recovery Factor, 4%, 40 year	0.05052	
Annual Capital Cost,	\$295,600	
SGPWA Requested Participation, AF	14,000	
SGPWA Allocated Class 1 Yield, AFY	9,748	
Total Sites Allocated Class 1 Yield, AFY	250,000	
SGPWA Share of Yield and Cost	0.039	Based on fraction of Class 1/Total Class 1
SGPWA Share of Annual Cost	\$6,916	
SGPWA Share of OM&R and Monitoring Costs, not including DWR transportation pass through charges	\$648	
SGPWA Total Annual Cost	\$7,565	

Table 5 shows the unit cost, \$/AF, for SGPWA for the range of possible yields from the Sites Reservoir Project under various scenarios, with and without the 25% loss and, with and without, the transportation charges. As can be seen in Table 5, under the likely scenario, Sites Reservoir Project Water will cost between \$1,035 /AF and \$776AF for the likely amount with and without loss. The unit cost could be lower if more water is made available.

Table 5  
 SGPWA Estimated Cost of Sites Reservoir Water

Cost per Acre-ft, No Transportation Cost				
Scenario	No Loss		25% Loss	
	Yield AFY	\$/AF	Yield AFY	\$/AF
Likely Amount, AFY	9,748	\$776	7,311	\$1,035
Probably Maximum, AFY	11,874	\$637	8,906	\$849
Maximum, AFY	14,000	\$540	10,500	\$720

**Yuba Accord Water**

Through Yuba Dry Year Transfer Program, the official name for Yuba Accord Water, SGPWA can purchase additional supplemental water from Yuba County Water District under an

agreement.<sup>5</sup> There are four categories of water in the agreement: Component 1, Component 2, Component 3 and Component 4, with each category having its own specific price per AF, varying from \$25/AF to \$125/AF depending on dry, normal, wet, or critical year water conditions and not including DWR pass through transportation costs. Going forward it is difficult to predict future hydrologic conditions, the amount to be purchased by SGPWA, or the price. It varies from year to year. The SGPWA estimates that about 300 AFY, on the average, of Yuba Accord Water can be obtained.<sup>6</sup> For purposes of this white paper a conservative cost of \$125/AF will be used (not including DWR pass through transportation costs) or \$385/AF with pass through transportation costs.

### **San Bernardino Valley Municipal Water District (SBVMWD Water)**

The SGPWA is in the process of finalizing negotiations or has completed negotiations with SBVWD to purchase up to 5,000 AFY of SBVMWD's Table A water in years that SBVMWD's Board of Directors declares a surplus. The availability of SBVMWD surplus water depends on hydrologic and groundwater conditions within SBVMWD's service area per SBVMWD Ordinance 79. SGPWA has the right of first refusal on the first 5,000 AFY of surplus water. Assuming SGPWA exercises the right, it must first offered in equal shares to the two agencies that are in both SBVMWD and SGPWA, i.e., Yucaipa Valley WD and South Mesa Water Company. Any water "left over," SGPWA can be offered to other SGPWA retailers. The agreement is for a term of 15 years, but SGPWA intends to renegotiate the terms and extend to some point in the future.

SGPWA estimates, based on past hydrologic conditions this is likely to occur about two years out of every five, or 40% of the time. This is equivalent to 2,000 AFY in any one year. The term of this agreement will be at least 15 years from now or about 2032.<sup>7</sup>

SBVMWD has set rates for selling water to "outside" agencies based on the DWR's final Table A allocation as shown in Table 6<sup>8</sup>.

The point of delivery to SGPWA is the Devil Canyon Afterbay. The cost of the water in Table 6 does not include DWR's pass through cost for energy or the cost SGPWA would pay to pump it from Devil Canyon to Cherry Valley. This cost was presented previously in Table 1. It is assumed the cost in Table 1 includes DWR's pass through costs for transportation to SBVMWD (Devil Canyon) plus the cost to pump from Devil Canyon to SGPWA, i.e., \$260/AF.

<sup>5</sup> DWR (2008). Agreement for the Supply and Conveyance of Water by the Department of Water Resources for the state of California to the Participating State Water Contractors under the Dry Year Water Purchase Program, March 31.

<sup>6</sup> Refer to Table 3-1 of SGPWA 2015 UWMP

<sup>7</sup> SGPWA 2015 UWMP

<sup>8</sup> SGPWA Proposed Surplus Water Sale Agreement with San Bernardino Municipal Water District ("Valley District").

Table 6  
Cost to Purchase Surplus Water from SBVMWD

Final SWP DWR Table A Allocation	Cost, \$/AF
0 - 20%	\$400
21 - 40%	\$300
41 - 60%	\$200
61 - 100%	\$100

To develop and average cost for future water purchases, the last ten years of Table A allocations was used in conjunction with the rate associated with that allocation percentage presented in Table 6. The average cost for the ten-year period was determined to be \$240/AF, not including DWR's pass through transportation charges (\$260/AF). Total cost, including the pass through cost would be \$500/AF.

### **AVEK-Nickel Water**

In June 2017 SGPWA Board of Directors approved an agreement with the Antelope Valley-East Kern Water Agency (AVEK) for 1,700 AFY for 20 years with the right of first refusal to extend it for a second 20 years. The water rights on the Kern River originally belonged to the Nickel Family LLC that were sold to Kern County Water Agency (KCWA) and subsequently leased to other parties in various amounts. One portion (1,700 AFY) is under the control of AVEK, which offered the water to SGPWA. This water is not subject to the reliability issues of the SPW. Per the agreement SGPWA must take all of the 1,700 AF each year or pay for 1,700 AF if the SGPWA does not take all of it in any one year.

The cost of AVEK-Nickel water has three component charges plus the cost to pump to SGPWA<sup>9</sup>:

- Purchase of the water, currently \$716.29/AF
- Replenishment charge, currently \$300/AF
- Administrative charge, currently \$5/AF

The total current 2017 cost is \$1,021.29/AF at the Tupman Turnout west of Bakersfield, but does not include the cost to pump it from there to SGPWA. The SGPWA estimates the pumping cost at \$247/AF, bringing the total cost to \$1,268.29/AF, round to \$1,270/AF. It is important to note that water purchase charge and the replenishment charges are subject to a 3% per year escalation or the Consumer Price Index (CPI) change for the Los Angeles, Orange and Riverside Counties, whichever is greater. For discussion purposes the SGPWA uses 3% per year. Over the initial 20-year period, the water will average \$1,370/AF, not including the

<sup>9</sup> SGPWA (2017). Memorandum, Consideration and Possible Action to Enter into a Water Supply Agreement with Antelope Valley East Kern Water Agency, June 19.

pumping costs. Using an initial (2017) pumping cost of \$247, the current cost, delivered to SGPWA would be \$1,617/AF. It is likely the pumping costs will increase over time also.

**SGPWA Water Portfolio Per AF Cost Summary**

A summary of the range of cost for various SGPWA water sources are presented in Table 7. The transportation costs have not been increased over time. It is likely those costs will increase slightly over time.

Table 8 contains a summary of Unit Costs (\$/AF) for various water sources for SGPWA under differing scenarios of reliability and water loss etc. Also included are the total amount of water beyond the SGPWA's current Table A with and without the CWF. Without the CWF the amount of additional water varies from 19,651 AFY to 26,340 AFY; with the CWF the amount of additional water ranges from 22,037 AFY to 29,352 AFY or about 2,500 to 3,000 AFY more. The difference with and without the CWF is due to the decrease in reliability over time from the current 62% to 48%. The weighted average cost for the water supply will range from \$1525/AF to \$2,067/AF.

Table 7  
Summary of Unit Cost for SGPWA Portfolio Water Sources

Water Supply Portfolio	Capital Cost Range		Transportation Cost	Total Cost/AF	
	Lowest Cost/AF	Highest Cost/AF	Lowest Cost/AF	Lowest Cost/AF	Highest Cost/AF
Existing SGPWA Table "A"	\$1,960	\$1,960	\$260	\$2,220	\$2,220
Future Table "A" w/o California Water Fix	\$2,654	\$2,654	\$260	\$2,914	\$2,914
Future Table "A" with California Water Fix <sup>(a)</sup>	\$2,060	\$2,200	\$260	\$2,320	\$2,460
Sites Reservoir Project <sup>(b)</sup>	\$600	\$1,148	\$260	\$860	\$1,408
Yuba Accord Water	\$125	\$125	\$260	\$385	\$385
AVEK, Nickel Water <sup>(c)</sup>	\$1,370	\$1,370	\$247	\$1,617	\$1,617
SBVMWD	\$240	\$240	\$260	\$500	\$500

- (a) Cost depends on reliability increase, see text discussion presented previously
- (b) Depends on final yield and if 25% loss through Delta occurs
- (c) Average cost over 20 years based on 3% per year escalation

**Funding Alternatives**

White Paper No. 4 will discuss possible funding strategies and funding alternatives to consider. Possibilities include:

- A single-component capacity fee for long-term water supplies.
- A two-component capacity fee that would pay for interim supplies as well as a permanent supply (if it can be found).
- The water rate charged to retail water customers.

- Withdrawals from reserves.
- General fund tax revenues.
- State Water Project tax (if new supplies are designated to be from the State Water Project)
- Creation of a standby charge for the entire service area or various Improvement Districts within the service area.
- Creation of new Improvement Districts, along with a water rate of standby charge, that would place the burden of funding new supplies on newly developed areas.

Table 8  
Summary of Unit Cost and Additional Water Supply for SGPWA

Water Supply Source	Amount Without Reliability Factor (AFY)	Reliability Factor		Opportunity for Purchase with Reliability Factor		Probable Cost Range	
		Min	Max	Min AFY	Max AFY	Lowest Cost/AF	Highest Cost/AF
Existing SGPWA Table "A"	17,300	60%	60%	10,380	10,380	\$2,220	\$2,220
Future Table "A" w/o California Water Fix	17,300	48%	48%	8,304	8,304	\$2,914	\$2,914
Future Table "A" with California Water Fix	17,300	62%	65.62%	10,726	11,352	\$2,320.	\$2,460
Sites Reservoir Project	14,000	75%	100%	7,311	14,000	\$860	\$1,408
Yuba Accord Water	300	100%	100%	300	300	\$385	\$385
AVEK, Nickel Water	1,700	100%	100%	1,700	1,700	\$1,617	\$1,617
SBVMWD	2,000	100%	100%	2,000	2,000	\$500.	\$500
Water Supply w/o CWF, AFY				19,615	26,304		
Blended Cost w/o CWF						\$1,525	\$1,955
Water Supply with CWF, AFY				22,037	29,352		
Blended Cost with CWF						\$1,606	\$2,067

## Conclusions

The SGPWA's water supply portfolio has many cost variables which will require a very robust approach to ensure that the anticipated cost associated with each water supply component is properly funded. BCVWD, along with the other water retail agencies and stakeholders in the region, must come to a high level understanding of the portfolio component costs and the funding tools being employed or potentially employed by the SGPWA to ensure the delivery of necessary water supplies to the region at the lowest melded cost. Through this understanding BCVWD will strive to ensure that the most efficient methods of funding are being employed

moving forward. BCVWD recommends that the SGPWA develop a funding strategy and identify specific fund vehicles for each component of the water portfolio.

### **Acknowledgments**

This white paper supports a series of presentations made by BCVWD management to the Board of Directors and members of the public. Additional information is contained in those presentations.

Analyses and evaluations in support of the white paper and presentations were prepared by BCVWD staff, Joseph C. Reichenberger P.E., BCEE, Senior Engineer under the direction of and with input from Dan Jagers P.E., General Manager. Extensive analyses were prepared by Kaden Johnsen, Engineering Assistant, with help from Ivan Garcia, Engineering Intern.





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**DATE:** December 20, 2017

**TO:** Dan Jagers, General Manager

**FROM:** Joe Reichenberger PE, Senior Engineer

**SUBJECT:** Water Supply Portfolio Funding Requirements – White Paper No. 4

---

This white paper summarizes a presentation to BCVWD's Board of Directors on December 7, 2017 at an Engineering Workshop. This continues the discussion of San Geronio Pass Water Agency (SGPWA) and Beaumont Cherry Valley Water District's (BCVWD's) imported water needs to year 2050 – essentially build-out. This white paper focusses on imported water portfolio funding requirements. The next white paper will discuss funding alternatives and strategies.

#### **Background:**

White Paper No. 1 identified BCVWD and SGPWA imported water requirements over the next 30 years or so based on the respective agencies' 2015 Urban Water Management Plans (UWMPs). White Paper No. 1 also listed a number of sources of imported water ("water portfolio") and the timing of the leasing, purchasing, or construction of these sources. Since the water purchases and leases do not always exactly match the demands, White Paper No. 2 evaluated the feasibility of using groundwater storage and banking as a strategy to overcome temporary deficiencies between the demand for imported water and the supply. White Paper No. 3 identified the preliminary unit costs, (\$/AF), for the various sources of water in the SGPWA portfolio, current and planned, including California Water Fix (CWF), Sites Reservoir (Sites), Yuba Accord Water, San Bernardino Valley Municipal Water District (SBVMWD Water), and AVEK-Nickel Water.

White Paper No. 3 showed that the future costs for water supply will range from as low as \$385/AF to almost \$3,000/AF depending on the source. On a blended (weighted) average, the cost ranges from \$1,525/AF to \$2,067/AF depending on assumptions related to the CWF. Possible funding alternative were identified in White Paper No. 3 but not discussed or analyzed.

White Paper No. 4 sets forth BCVWD staff's analysis of current and future funding requirements for the water portfolio identified in the previous white papers. A follow-on white paper discusses possible funding alternatives and strategies which might be used to secure the regional water supplies over the next several decades.

SGPWA's water supply, current and planned, comes from the following primary and supplementary sources:

Primary:

- State Water Project (SWP) Current Table "A" Water
- Increased Table "A" Water Reliability Through California Water Fix (CWF)
- Sites Reservoir Project (Sites)

Supplementary:

- Yuba Accord Water
- AVEK, Nickel Farms Water through the Antelope Valley East Kern Water Agency (AVEK-Nickel)
- San Bernardino Valley Municipal Water District (SBVMWD) Water
- Temporary Table A Supplies obtained through short term agreements
- Possible Transfer of Other State Water Project Rights/Supplies
- Article 21 Water and Turnback Pool Water when available

### **Primary Water Supply Costs**

This White Paper assumes that the Department of Water Resources (DWR) will implement the CWF and Sites Reservoir and administer the financing similar to the method of financing and charging for the current SWP. If the SGPWA participates in CWF and Sites, there will be two types of annual costs associated with each source:

- Capital (construction and project costs) funded through Bond Debt Service
- Operation and Maintenance (O&M) Costs

#### *Bond Debt Service*

The original SWP has been funded through bonded indebtedness and very likely the follow-on CWF and Sites Reservoir projects would be similarly funded through bonds, though this is still uncertain. The capital or project costs associated with each project would be distributed proportionately to each of the State Water Contractors involved via some form of bonds either General Obligation and/or Revenue Bonds. This would be a State decision. General obligation bonds are voted on by the people of the State of California; the initial general obligation bond (\$1.75 billion) for the SWP was approved through Proposition 1 in 1960. These bonds have various life terms (typically around 40 years) and are typically issued every year a project is in its construction phase. The bonds ultimately result in annual charges or debt payments that last for the life term of the Bond. Revenue bonds are funded from water sales and other similar revenues and do not require voter approval.

Project revenues from SWP contractor payments required under their long-term contracts are deposited into two accounts for accounting purposes:

- Central Valley Water Revenue Funds where all revenues pledged to revenue bonds are placed

- California Water Resources Development Bond Fund – Systems Revenue Account where all other SWP operating revenues area placed. Use of these funds is limited to paying operating costs and debt service.

#### *Operations and Maintenance (O&M) Costs*

Operations and maintenance costs are accumulated and paid on an annual basis. The costs cover operation, maintenance, and power costs plus a deposit to a replacement account (OMP&R). Power costs are the largest component of the OMP&R Costs. The replacement account has been used to fund replacement of SWP facilities over the years. In this series of White Papers O&M costs are synonymous with OMP&R costs and the terms are used interchangeably.

#### **SGPWA Current Revenue (Payment) Requirements**

SGPWA's Table A SWP amount assuming 100% reliability is 17,300 AFY or approximately 0.41% of the total SWP Table A (all contractors) of 4.1 million AFY. The costs to be paid by SGPWA to the DWR are the total of the following components:

- Delta Water Charge:
  - Capital Cost Component
  - Minimum OMP&R Component

The Capital Cost Component of the Delta Water Charge is the cost applied to each acre-foot of SPW the contractor receives from the SWP to repay all of the outstanding reimbursable costs of the Project Conservation Facilities including appropriate interest to the end of the repayment period (2035). The Project Conservation Facilities include Oroville Dam, Lake Oroville, and the dams and lakes on streams above Lake Oroville; Oroville Power Facilities, a portion of the California Aqueduct from the Delta to the Dos Amigos Pumping Plant, San Luis Dam and Reservoir and Gianelli Pumping-Generating Plant.

The Minimum OMP&R Component are those costs of operation, maintenance, power and replacement that are independent of the amount of water delivered, i.e., fixed operation and maintenance costs.

- Transportation Charge:
  - Capital Cost Component
  - Minimum OMP&R Component
  - Variable OMP&R Component

The Capital Cost Component of the Transportation Charge is for the facilities to transport water to the vicinity of each contractor's turnout and the annual charge represents each contractor's proportionate share of the reimbursable capital costs of the Project Transportation Facilities. The Project Transportation Facilities include, among others, the North Bay and South Bay Aqueducts, the remainder of the California Aqueduct from the Delta to Dos Amigos Pumping Plant, all facilities south including the dams and lakes

in Southern California, and the Off-aqueduct Power Facilities costs (Reid Garner Unit 4, Bottlerock Powerplant, and South Geysers Powerplant)<sup>1</sup>.

The Minimum OMP&R Component are those costs of operation, maintenance, power and replacement that are independent of the amount of water delivered, i.e., fixed operation and maintenance costs.

The Variable OMP&R Component includes those costs that depend on the amount of water delivered – typically power costs.

- Water System Revenue Bond (WSRB) Surcharge

This is the revenue bond surcharge to the Delta Water Charge and the transportation capital cost component to each contractor to cover financing costs of the WSRB in accordance with an amendment to all of the water supply contracts signed by all of the contractors.

The Bulletin 132 series “Management of the California State Water Project,” issued annually, provides a detailed summary of water deliveries for the given year as well as an accounting of all of the charges to each contractor up to the given year. DWR provides a projection of charges from the given year to year 2035, the end of the current bond payments. SGPWA will pay an estimated \$23,594,607 in 2018 which includes the Delta Water Charge, Transportation Charge and WSRB Surcharge. Table 1 presents a summary of SGPWA’s projected 2018 SWP charges. It is important to note these are projections and subject to change from year to year.

### **SGPWA Historical SWP Payments to DWR**

Figure 1 shows a timelines of the SWP Construction from 1957 to 2010. The timeline is a bit out of date and shows East Branch Extension Phase II as “future.” It is essentially complete as of 2017.

Figure 2 shows SGPWA historical payments for capital financing and total OMP&R for the SWP from inception through 2015. SGPWA’s contract with DWR is dated November 16, 1962 with a term of 75 years extending to 2037. The SGPWA began making payments in 1964 with payments minimal until the start of EBX Phase I in 1998; other increases occurred with the construction of EBX I improvements and EBX Phase 2. These payments include DWR’s Pass-through transportation charges.

After 2015, the amounts are projected and contained in DWR’s Bulletin 132. The projected payments for OMP&R are based on 10,380 AFY. The projected payments level off at about \$17 million for capital and \$7 million for OMP&R from 2018 to 2035, at total of just over \$24 million/year. Again these could change depending on the amount of water actually delivered to SGPWA.

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<sup>1</sup> DWR invested in several power plant projects which have on-going liabilities. Reid Gardner in Moapa, NV (coal fired) which has shut down; Bottle Rock (geothermal) in Napa, CA, operated for a few years then ran out of steam; and South Geysers in Napa, CA which was constructed, but never operated due to lack of steam.

DWR does not currently anticipate financing SWP capital costs beyond 2035 or when the contracts expire. This has caused DWR to issue bonds with shorter life terms in order for them to be fully paid off by 2035 which has resulted in a dramatic increase in the size of bond debt payments as bond issue dates get closer to 2035. For purposes of this analysis, it is assumed that SGPWA's capital financing will be complete by 2035, the last projection in the Bulletin 132 series, "Management of the State Water Project."

Table 1  
SGPWA's Projected 2018 SWP Charges

Cost Item	Amount	Bulletin 132-17 Source
Transportation Facilities Capital	\$16,270,264	Table B-15
Transportation Facilities Minimum OMP&R	\$ 3,302,187	Table B-16A
Transportation Facilities Minimum OMP&R for Off-aqueduct Power	\$ 10,165	Table B-16B
Transportation Facilities Variable OMP&R	\$ 2,377,151	Table B-18
Subtotal Transportation Facilities Total OMP&R	\$ 5,689,503	
Subtotal Transportation Charge	\$21,959,767	
Delta Water Charge	\$ 1,201,839	Table B-21
WSRB Surcharge	\$ 433,001	Table B-22
Total Transportation, Delta Water Charge and WSRB Surcharge	\$23,594,607	Table B-23
Projected Delivery based on 60% Reliability, AFY	10,380 <sup>(a)</sup>	Table B-5B
Total Cost \$/AF	\$2,270	
Estimated DWR Pass-Through Transportation Charges	\$260	
Estimated Capital Cost Component \$/AF	\$2,010	

(a) This will decrease to about 48% of Table A or 8,304 AFY over time without CWF

A number of contractors, including SGPWA, have requested an extension of the long-term contracts beyond 2035. In May 2013, DWR and the SWP Contractors initiated negotiations to develop contract amendments to extend the term and change certain financial provisions on the long-term water supply contracts. In June 2014, the parties reached a general agreement on principles for an amendment. Under the Agreement in Principle, contracts would extend to December 31, 2085. Payment provisions for capital cost and other costs would be amended from an amortization basis to an annual "pay as you go" basis, with sufficient revenue to allow DWR to operate the SWP in a fiscally sound manner including the collection of annual debt service to cover all of the bonds. The Agreement in Principle provides for an increase in DWR operating reserves, establishment of accounts to fund certain water resources development system expenses chargeable to the SWP Contractors, and the establishment of a finance

committee consisting of DWR and contractor representatives to serve as a forum for discussions on DWR financial policies.

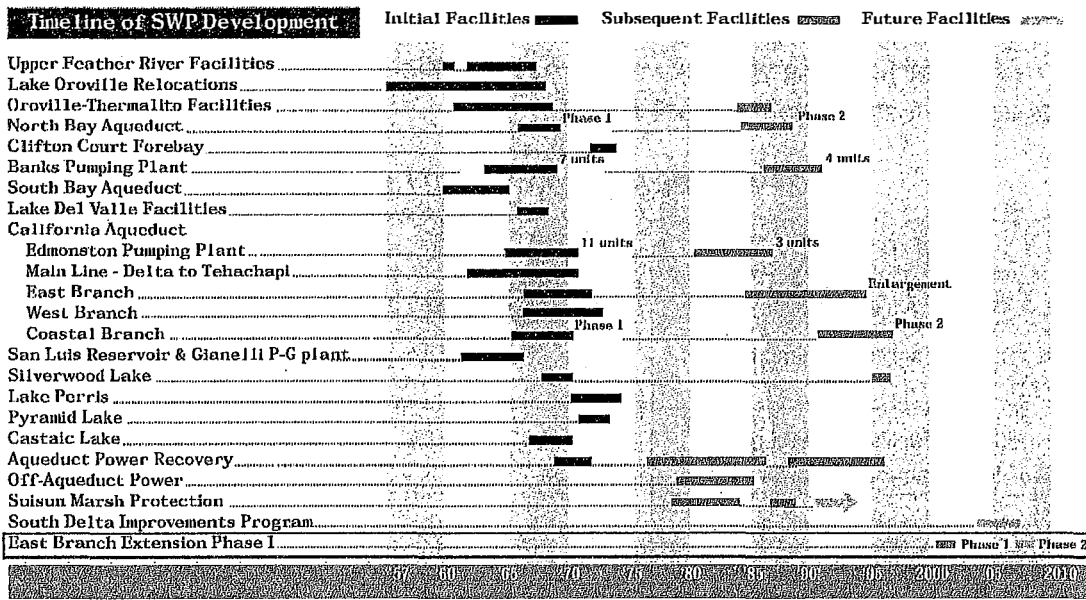


Figure 1  
Timeline of SWP Construction

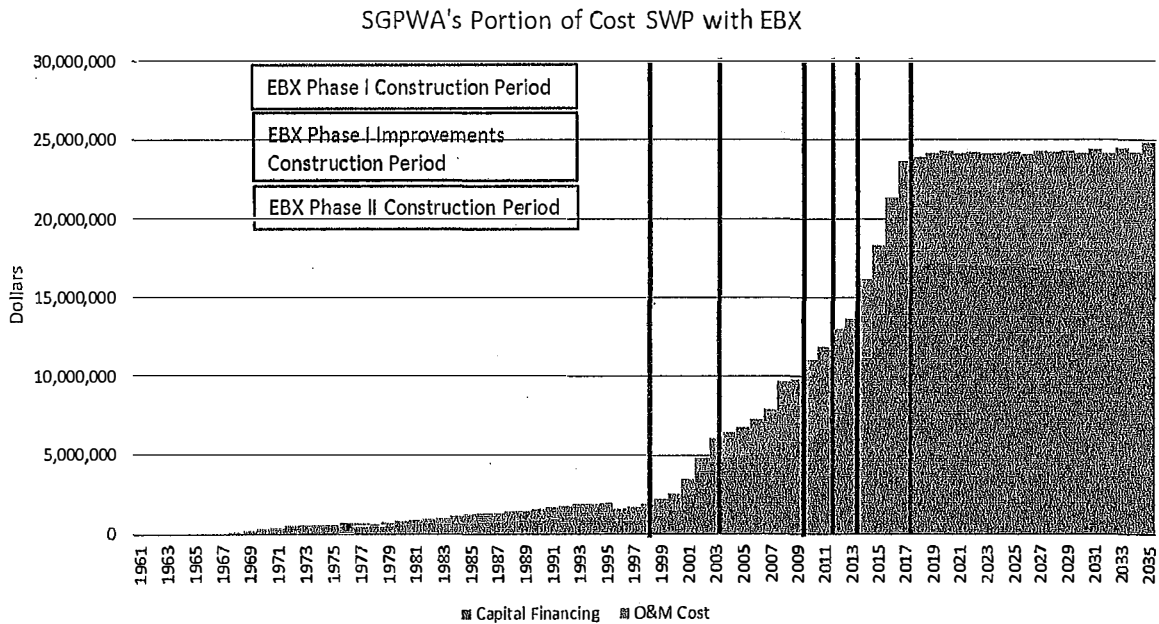


Figure 2  
SGPWA Historical and Projected Capital and OMP&R Costs for SWP to 2035

But before any long-term contract amendment is adopted, DWR must complete a CEQA review and deliver a presentation to the California Legislature in an informal hearing. In 2015, DWR has started preparing a draft Environmental Impact Report for the contract amendment. For

purposes of this white paper, a conservative approach will be taken and no contract extension refinancing is assumed.

Figure 3 shows SGPWA projected payments for the SWP after 2035. Under current conditions, capital cost bond debt payments will theoretically end in 2035. After 2035 the capital cost, i.e., debt service for the SWP including EBX Phases I and II, will be completely paid off, and the only cost which SGPWA will pay is for the fixed and variable OMP&R which are estimated to be \$8.14 million per year, the same as projected by DWR in Bulletin 132 for year 2035. It is based on 10,380 AFY annual delivery and it is assumed this cost would continue on indefinitely. Again this can vary from year to year depending on the amount of water delivered to SGPWA as well any changes in power and other costs over time.

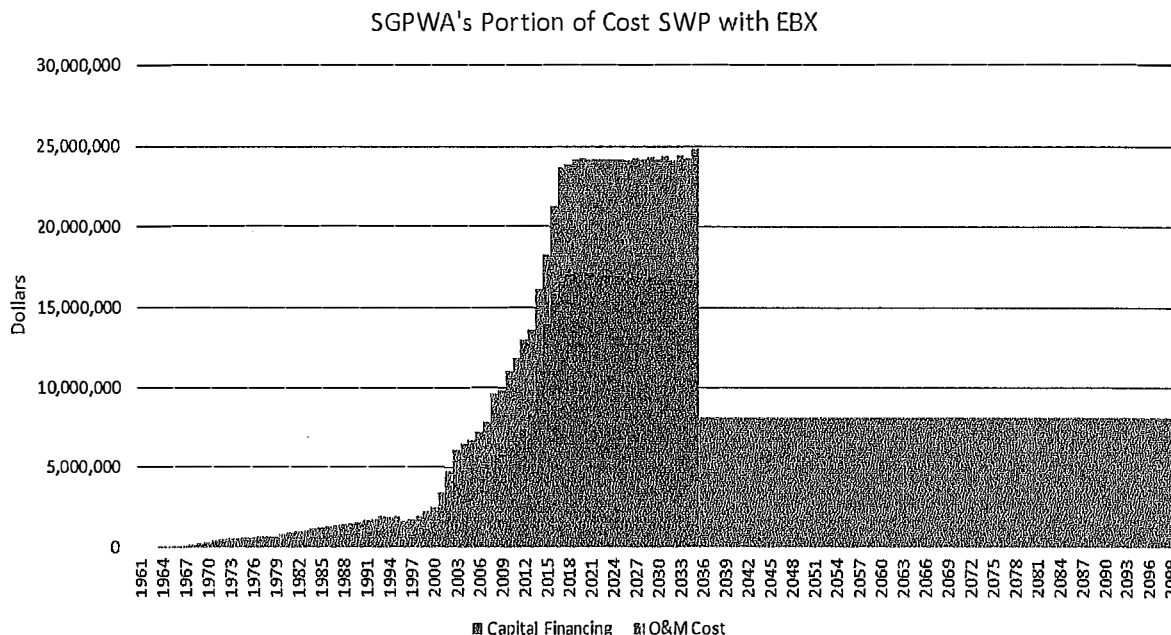


Figure 3  
SGPWA Historical and Projected Capital and OMP&R Costs for SWP to 2099

**The California Water Fix (CWF)**

The California Water Fix (CWF) is described in detail in White Paper No. 3 and involves construction of dual water tunnels under the Delta to convey Sacramento River water to the south side of the Delta to Clifton Court Forebay and the Banks Pumping Plant. Without the CWF the reliability of the SWP Table “A” water is projected to degrade to 48% over time resulting is only 8,304 AFY on the average for SGPWA. The CWF is projected to increase the future reliability of the SWP by 14% (DWR study) to 17.62% (MWD study) which would increase the overall reliability to 62% or in the best case 65.62% -- about what the reliability currently is.<sup>2</sup>

<sup>2</sup> Due to some opposition in the scope and cost of the dual tunnel project, there has been some discussion to reduce the scope and cost by constructing only one tunnel. The impact on the reliability increase due to CWF “reduced” is not known but will be assumed to be no change from 14% to 17.62%.

White Paper No. 3 summarized the cost of the SGPWA Table A water going forward with and without the CWF. These costs are summarized below.

Table 2  
Summary of Unit Costs with and without CWF

Item	Without CWF at 48% Reliability	With CWF at 62% Reliability	With CWF at 65.62% Reliability
Water Available to SGPWA, AFY	8,304	10,726	11,652
Pre-CWF, Cost, \$/AF without DWR Pass Through Transportation Charge	\$2,654	--	--
With CWF, Cost, \$/AF without DWR Pass Through Transportation Charge	--	\$2,200	\$2,060
DWR Pass Through Transportation Charge, \$/AF	\$260	\$260	\$260
Total Cost, \$/AF	\$2,914	\$2,460	\$2,320

The reliability percentage recovered, in terms of incremental AFY, resulting from the CWF would come at a component cost of \$705/AF to \$887/AF based on incremental increases of 3,048 AFY and 2,422 AFY respectively. These costs, as well as the costs in Table 2, are based on the assumption that the contractors currently involved in the SWP and Central Valley Project (CVP) will remain unchanged. There may be an opportunity for the SGPWA to secure more Table "A" supply through a potential transfer of State Water Project rights/supplies among State Water Project Contractors in the event that more contractors from the SWP or CVP withdraw or reduce their support and associated financing of the project.

The capital cost of the CWF was identified in White Paper No. 3 to be \$16.7 billion (2017 dollars) and annual operating costs estimated at \$64.4 million, with the participating SWP contractors responsible for 55% of the cost and the CVP contractors the remaining 45%. The SGPWA share of the total SWP Table A is 0.41%. But not all of the SWP contractors are participating and it is likely that SGPWA's share would increase to 0.43%. For purposes of this preliminary analysis, 0.43% will be the assumed SGPWA share of CWF costs.

The Metropolitan Water District of Southern California (Metropolitan) did an extensive financial review of the CWF to determine the impact of the costs on their rate payers. This analysis provided the basis for the analysis of the impact of CWF on the SGPWA. Table 3 presents a summary of the costs. SGPWA's share of the capital and O&M costs is \$2.15 million.



Table 3  
Summary of CWF Costs and Bonds

Cost Item	Total Project	SWP Contractor Share	SGPWA Share
Project Cost Share	100%	55%	0.43% of SWP Contractor Share
Capital Cost (2017)	\$16.7 billion	\$9.15 billion	\$39.4 million
O & M Cost (2017)	\$64.4 million	\$35.4 million	\$150,000
Interest Rate	4%		
Bond Term	40 years		
Bond Issuance Cost, (added to capital cost)	\$500,000/issue		
Annual Bond Payment		\$463 million	\$2 million
Total Payment Including O&M		\$498.4 million	\$2.15 million
Start of Project	2019		
Project Fully Operational	2033		
Escalation of Costs	None – all 2017 dollars		
Bonds Issued	Start in 2019 and step gradually to 2033 to cover design and construction		
Last Bond Payment	2073		

Figure 4 shows SGPWA's funding requirements for the CWF. These costs would be in addition to the funding requirements shown in Figure 3 above. In as much as the CWF brings the reliability back to about current levels, it is assumed that DWR's projected "pass through" transportation costs to convey the water to SGPWA are included in the annual payment, (approximately \$8 million), shown in Figure 3 beyond year 2035. Figure 4 shows that the costs for CWF would be paid until year 2073 or so.

### Sites Reservoir Project

The Sites Reservoir Project is described in detail in White Paper No. 3. The project consists of a 1.27 to 1.81 million AF reservoir in foothills northwest of Sacramento. The purpose of the reservoir is to capture and store high flows in the Sacramento River. These high flows would otherwise flow out to the ocean. In addition to the dam construction, there are some pipelines to convey the water to Sites Reservoir and back to the Sacramento River where it can flow to the SPW Contractors who participated in the project. Pumping-generating stations would be constructed to pump water into Sites Reservoir and recover electrical power when the water is released back to the Sacramento River.

White Paper No. 3 contained a breakdown of the Sites Reservoir cost. Table 4 below presents an updated summary to bring 2015 Sites Reservoir costs to 2017, the base for the other cost estimates in this white paper. In addition a consultant, AECOM, completed a study in 2017 that estimated the interest during construction to be \$789,000, bringing the total 2015 construction

cost to \$5.489 billion. Escalation from 2015 to 2017, about 6.6% per Engineering News Record Construction Cost Index (ENRCCI), brings the cost in 2017 dollars to \$5.851 billion. The 2015 dollar estimate of the annual OMP&R for the Sites Reservoir was \$26.0 million or \$27.7 million in 2017 dollars using the ENRCCI as above. This is summarized in Table 4.

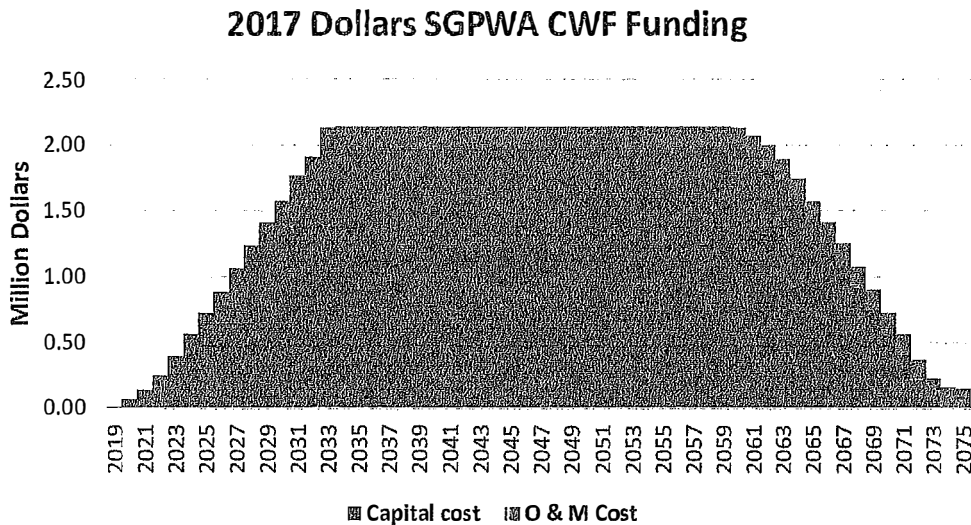


Figure 4  
SGPWA Funding Requirements for CWF

For purposes of this White Paper, and to be conservative due to the uncertainty of funding etc., the Sites Project Authority contribution is assumed to be 75%, (in lieu of the 59% shown in Table 4), of both the capital and the annual OMP&R costs to keep it simplified.

Table 4  
Sites Reservoir Cost Summary  
(All Costs are in thousands)

Item	Cost or %	Remark
Sites Reservoir Construction Cost	\$4,700,000	2015 cost
Interest During Construction	\$789,000	AECOM 2017 study
Total Costs, Oct 2015	\$5,489,000	
Escalation to 2017	6.6%	per ENRCCI
2017 Capital Costs	\$5,851,274	
Percent Water Supply Joint Powers Agency Funded	75%	AECOM 2017 Study estimated from 54% to 59%
Annual OM&R and Monitoring Cost	\$26,000	2015 Costs
Escalation to 2017	6.6%	per ENRCCI
2017 OM&R and Monitoring Costs	\$27,700	

The total cost for Sites Reservoir in Table 4 will be shared with other project beneficiaries: Water Storage Improvement Program (WSIP), federal funding, and Non-Prop.1 Eligible Benefits (Sites Project Authority). Federal funding is projected to be about for ecosystem improvement and flood control benefits. WSIP funding request was to cover other public purposes. If granted, the WSIP funding would provide sufficient matching funds to fully cover the capital cost

for all the project's public benefit categories and 100% funding for other elements such as Oroville cold water pool, Yolo Bypass., and recreation. WSIP funding would also provide the remaining funding needed after the federal contribution above.

AECOM prepared an allocation analysis in 2017 evaluating several methodologies: present value of capital and OM&R Costs, present value of capital costs only, and total annual costs. The range of participation for federal funding was 13%-14%, WSIP funding 28%-32% and Sites Joint Powers Authority 54-59%. A summary is shown in Table 5. For purposes of estimating the Sites Project Costs to be funded by the Sites Joint Powers Authority, 60% will be used.

Table 5  
AECOM's Sites Reservoir Project Cost Allocation

Funding Source	Percent of Present Value of Total Capital Cost <sup>(a)</sup>	Percent of Total Capital and OMP&R <sup>(b)</sup>	Total Annual Costs <sup>(c)</sup>
Federal non-reimbursable	14%	13%	13%
WSIP	32%	28%	28%
Sites Project Authority	54%	59%	59%

(a) Based on AECOM Report Table A10-3

(b) Based on AECOM Report Table A10-4

(c) Based on AECOM Report Table A10-2

The Sites Reservoir Project costs shown in Table 4 above are allocated to the Sites Project Authority and the SGPWA in Table 6. The annual costs for the SGPWA do not include the DWR Pass-through transportation costs, currently \$260/AF, as this cost is assumed to be included in the water rate charged by SGPWA. Figure 5 shows the projected capital cost bond debt and O&M costs for SGPWA. These costs would be over and above the costs shown in Figures 3 and 4 for the years 2035 to 2075.

Table 6  
 Sites Reservoir Project Cost Allocation  
 (All costs in thousands)

Item	Cost or %	Remark
2017 Capital Costs	\$5,851,274	Table 4
Sites Project Authority Share	60%	From AECOM Analysis
Cost Funded by Sites Project Authority	\$3,510,800	
Interest Rate	4%	
Number of Years	40	
Capital Recovery Factor, 4%, 40 year	0.05052	
Annual Capital Cost,	\$295,600	
SGPWA Requested Participation, AF	14,000	
SGPWA Allocated Class 1 Yield, AFY	9,748	
Total Sites Allocated Class 1 Yield, AFY	250,000	
SGPWA Share of Yield and Cost	0.039	Based on fraction of Class 1/Total Class 1
SGPWA Share of Annual Cost	\$6,916	
SGPWA Share of OM&R and Monitoring Costs, not including DWR transportation pass through charges	\$648	
SGPWA Total Annual Cost	\$7,565	

2017 Dollars SGPWA Sites Funding

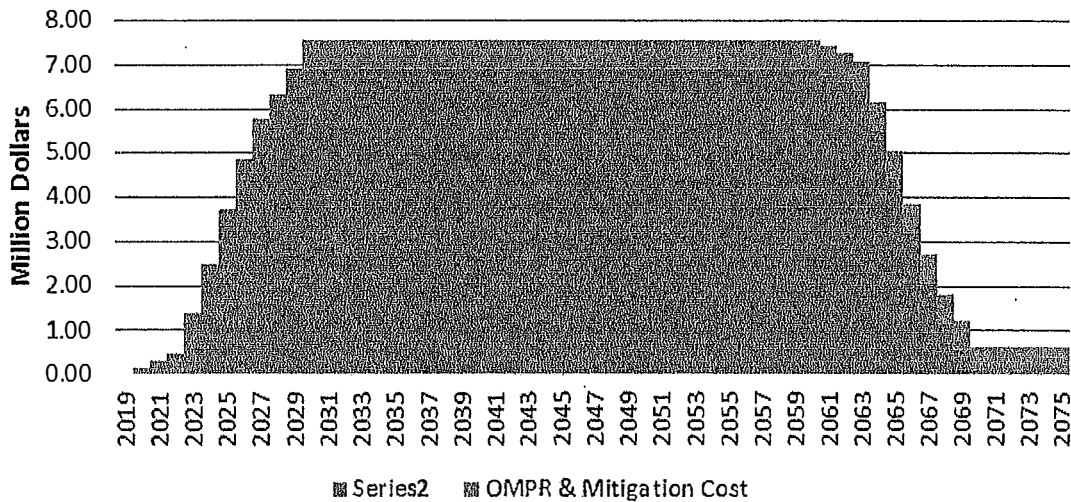
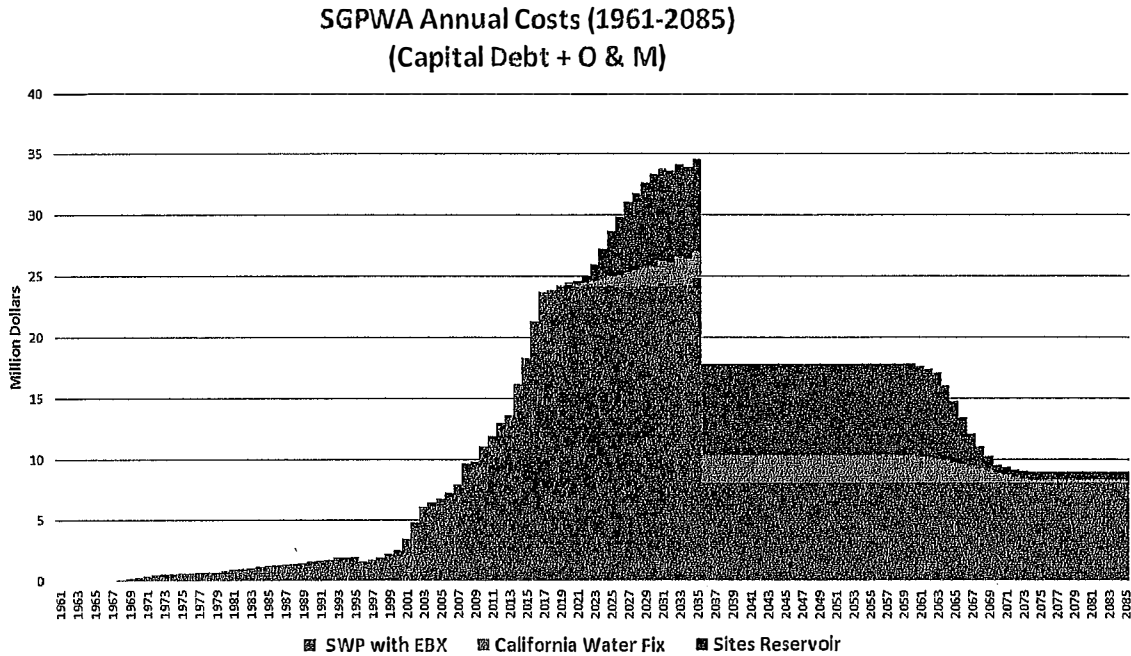


Figure 5  
 SGPWA Funding Requirements for Sites Reservoir

**Summary of SGPWA Future Funding Requirements**

Figure 6 shows the accumulated funding requirements for total annualized bond debt and OM&R for the existing SWP and EBX plus the California Water Fix and Sites Reservoir based on the cost presented above. The SGPWA will need another \$10 million in annual revenue between 2020 and 2035 to cover the costs for the CWF and Sites Reservoir. After 2035, the revenue requirements drop off dramatically to a relatively constant \$18 million, then eventually dropping to below \$10 million as the bonds for CWF and Sites Reservoir are paid off.



**Figure 6**  
 SGPWA Funding Historic and Projected Funding Requirements  
 including Existing SWP with EBX, California Water Fix and Sites Reservoir

The costs for the SGPWA three primary water sources maybe be able to be funded with debt service property tax revenues. Sites Reservoir was a part of the original SWP that was deferred and the CWF is only improving the reliability of the original SWP yield which has been eroded over the years by factors not known at the time the SWP was originally voted on would appear to be justification for using property tax revenues. However this will need to be evaluated by the SGPWA’s legal counsel.

These projects have the opportunity to provide a significant portion of the SGPWA’s future water supply requirement and a comprehensive strategy needs to be developed to fund these critical projects.

**Acknowledgments**

This white paper supports a series of presentations made by BCVWD management to the Board of Directors and members of the public. Additional information is contained in those presentations.

Analyses and evaluations in support of the white paper and presentations were prepared by BCVWD staff, Joseph C. Reichenberger P.E., BCEE, Senior Engineer under the direction of and with input from Dan Jaggars P.E., General Manager. Extensive analyses were prepared by Kaden Johnsen, Engineering Assistant, with help from Ivan Garcia, Engineering Intern.



Beaumont Cherry Valley Water District

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**DATE:** January 2, 2018  
**TO:** Dan Jagers, General Manager  
**FROM:** Joe Reichenberger PE, Senior Engineer  
**SUBJECT:** Funding Strategies – White Paper No. 5

White Paper No. 4 provided information on the capital and OMP&R costs for the original EBX Phases I and II, the California Water Fix (CWF), and Sites Reservoir. Figure 1 shows the annual costs that SGPWA would be paying to DWR for these three components over time. The peak payment amount is about \$35 million annually for a short period of time from 2028 to about 2035 when the original SWP Bonds are paid off. After 2035 the annual payments are about \$18 million eventually dropping to about \$13 million.

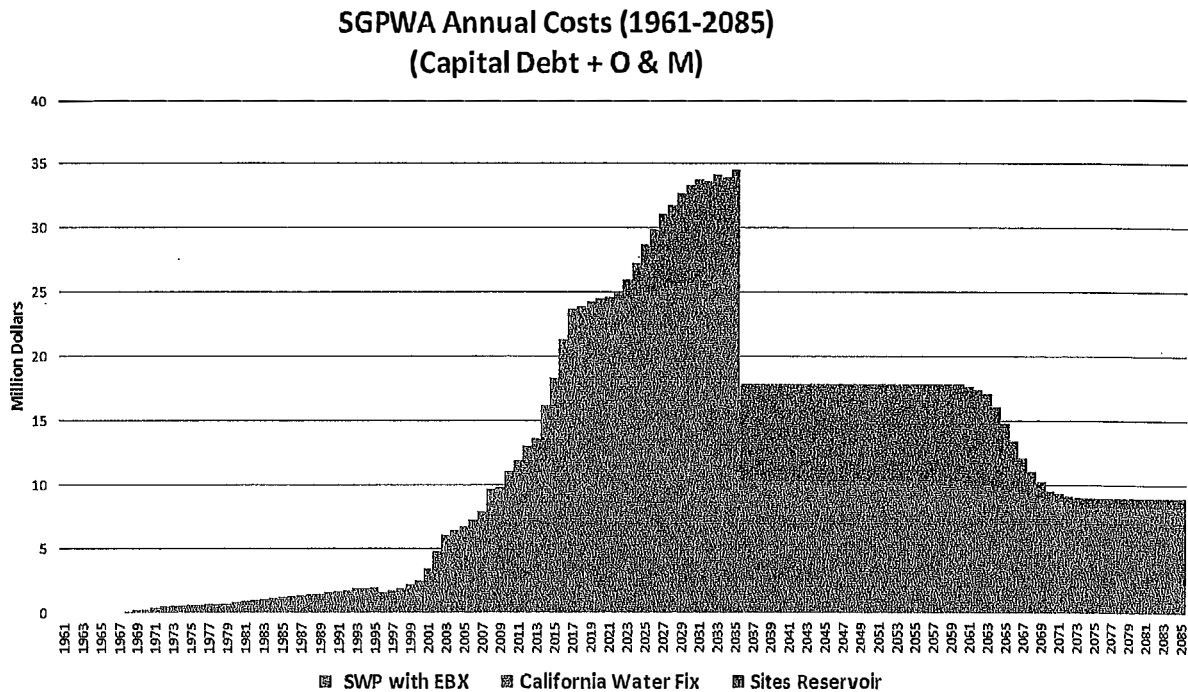


Figure 1  
 SGPWA Annual Payments to DWR for SWP w/EBX, CWF and Sites Reservoir

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## Sources of Funding

SGPWA has a number of alternatives to fund the amounts in Figure 1.

- Property Tax Revenue
- SGPWA Rate/AF ("water rates")
- SGPWA's Share of Riverside County's 1% property tax which is shared with other agencies
- Capacity fees charged to new developers
- Bonds
  - Assessment District Bonds covering new development areas only
  - Revenue Bonds repaid with pledged water rates over time
  - General Obligation Bonds
  - Community Facilities District Bonds (Mello-Roos)
- Combinations of the above

## Property Tax Revenue

Property tax revenue is based on the SGPWA Tax Rate, currently \$0.1825/\$100 assessed valuation (AV), and the total Assessed Valuation in the SGPWA service area. The 2016 AV in SGPWA service area based on data from Riverside County is \$8.377 billion. BCVWD's portion of that is \$4.519 billion, or 53.9% of the total. In 2002, before much of the development took place the AVs were \$2.436 and \$0.841 billion (34.5%) respectively. At the current tax rate and the 2016 AV, the annual property tax revenue is \$15.234 million. See Figure 1.

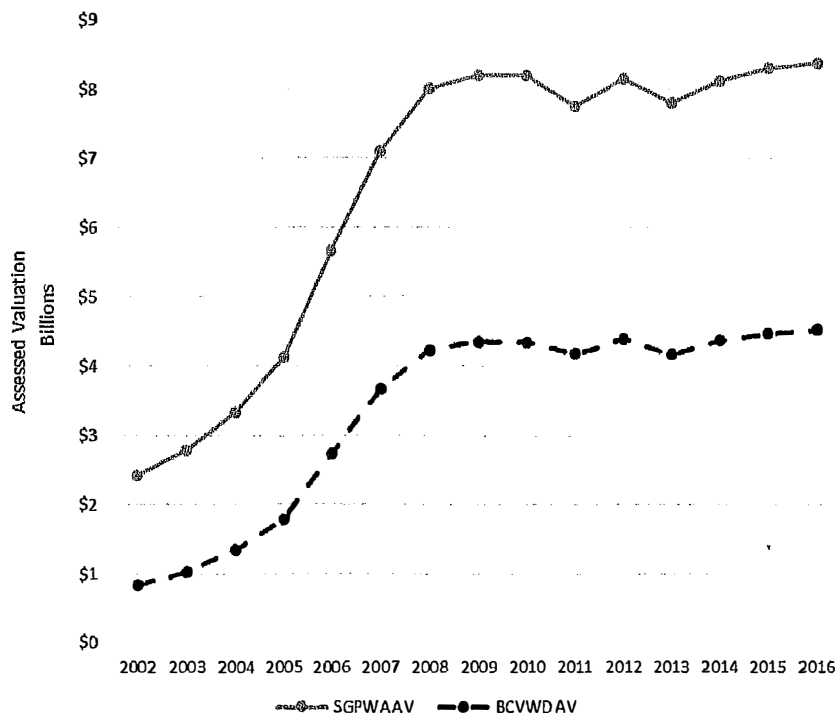




Figure 1  
SGPWA and BCVWD Assessed Valuation Over time

The total property tax revenue collected by the SGPWA from 2002 through 2016 was \$174.3 million of which BCVWD's residents contributed \$89.5 million or 53% of the total taxes paid to SGPWA. In fact since 2000, BCVWD, YVWD and the City of Banning contributed over 90% of the SGPWA's total property tax revenue. Figure 2 shows the property tax revenue paid to SGPWA over the years by each retailer.

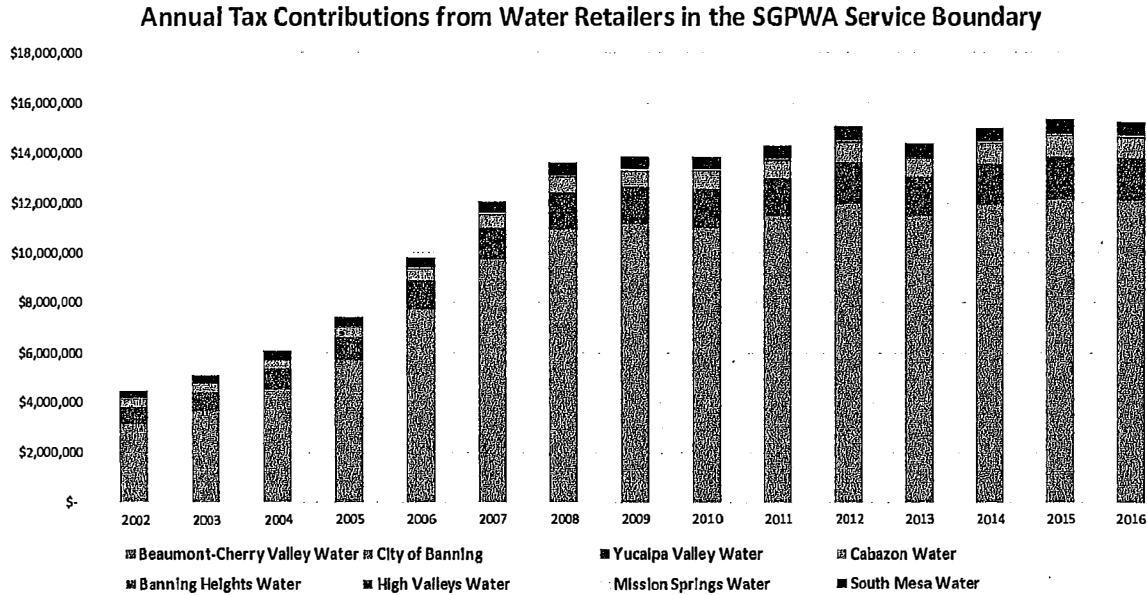


Figure 2  
Annual Property Tax Contributions to SGPWA by Retailers

To project the future property tax revenue, the following assumptions were made:

- Raw Land Value (2017) = \$50,000/acre
- 4 new homes/acre
- 650 new houses/year (the City of Beaumont alone from 2002 through 2016 averaged 772/year. From 2013 through 2016, average was 449/year.)
- Home value (2017) = \$350,000
- New home inflation rate 2%/year (very conservative, 2017 increase was 7.7%, The Riverside County Assessor forecasts 5.0% for 2018 and 2019 and 3.0% for 2020, 2021, and 2022)
- Land value escalation rate 2%/year
- Home assessed value annual increase 2%/year, maximum per Proposition 13
- Once a new home is built and sold, the selling price becomes the initial assessed valuation. Per Proposition 13, the assessed valuation cannot increase by more than 2%/year.
- Real estate turnover was not assumed in the analysis although it is reported to be 8.7% in Riverside County as a whole. This means that 8.7% of all residential homes are

resold and the assessed valuation would be the new, increased sales price. As a result the projected tax revenues are conservatively low.

- Base year was 2016 with total property tax revenue paid to SGPWA = \$15,288,758.
- Tax rate = \$0.1825/\$100 AV, the current tax rate; no increase was projected.

A spreadsheet was developed to project the total tax revenue which could be used to fund the capital cost of SPW with EBX Phases I and II, CWF, and Sites Reservoir. CWF and Sites Reservoir area assumed to be funded by DWR and SGPWA property tax revenue can be used to fund these projects. A plot of the tax revenue based on the assumptions above and the total annual costs for SWP with EBX I and II, CWF, and Sites Reservoir are shown in Figure 3.

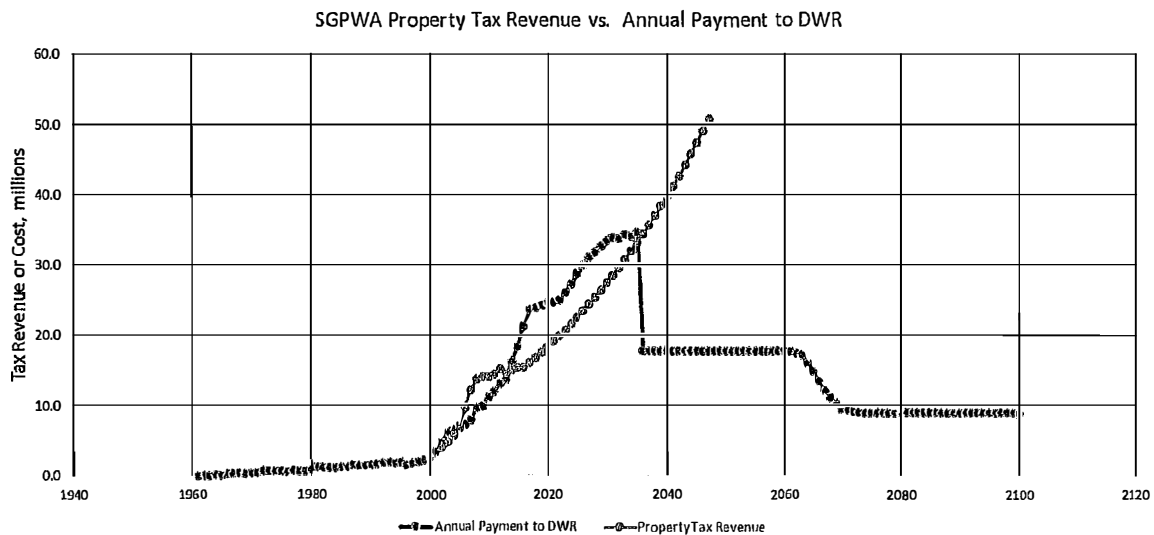


Figure 3  
Annual Property Tax Revenue and Annual SGPWA Cost  
for SWP, EBX I & II, CWF, and Sites Reservoir

In Figure 3 there is a leveling off of the property tax revenue from 2005 or so to 2016. This due to a reported reassessment of homes by the County that lost value during the recession. House values have risen since then and the assessed valuations are expected to grow. Once the assessed valuation reaches the 2% per year straight line projection from the time of reassessment, and assuming the homes are not sold in the interim, the assessed valuation will again be increasing at the 2% per year maximum Proposition 13 rate. Resell or turnover has not been included in the projections.

Figure 3 indicates that from 2017 through 2035, there is a shortfall of revenue to pay the annual costs for the water projects. Table 1 shows a sensitivity analysis of the cumulative shortfall based on different housing escalation rate assumptions. Table 1 and Figure 3 do not include the beneficial impact of the turnover rate which is about 8.7% currently (a home resells every 11.5 years). As can be seen, the cumulative annual shortfall is very dependent on the housing escalation rate.

The new home price escalation rate would have an impact on the financing strategy. At 4% or 5% escalation rate, it may be possible to fund the shortfall from reserves. This is discussed later.

Table 1  
Sensitivity of Home Price Escalation Rate on Tax Revenue  
(based on current SGPWA Tax Rate \$0.1825/\$100 AV)

New Home Price Escalation Percentage/year	Maximum Annual Shortfall, millions	Cumulative Annual Shortfall, millions
2%	\$7.7	\$63.3
4%	\$7.4	\$23.4
5%	\$7.2	\$16.3

**Other Sources of Supplementary Funding**

***Water Rates***

SGPWA currently has a water rate charge of \$317/AF delivered. This charge was described in detail in White Paper No. 3 and includes Agency operational and administrative expenses, a rate stabilization component, SBVMWD pass through charge, a component for Yuba Accord water and a component for new water purchases. The largest component is DWR’s pass through of \$260/AF for energy and transport to SGPWA.

This rate can be increased, however it is subject to the requirements of Proposition 218.

Water rate increases encourages water conservation which may be beneficial in the long run, but does decrease revenue over time. Agencies with significant “fixed” operating costs will be adversely impacted by revenue reductions due to conservation.

***SGPWA’s Share of Riverside County’s 1% Property Tax***

The largest tax item on the property tax is the 1% tax, i.e., \$1/\$100 AV or “General Tax Levy,” which stays with Riverside County. A portion of this is re-allocated to agencies within Riverside County according to a not-well understood formula. SGPWA gets a share of this 1% General Tax Levy. This amounted to about \$2.3 million on June 30, 2017. This tax revenue is unrestricted and can be used for any purpose. Many agencies use all or a portion of this to cover general operating expenses.

***Capacity Fee***

The SGPWA has been discussing a capacity fee for a number of years. One of the most recent was a study prepared by David Taussig and Associates, draft 2015. The study envisioned two components: a Facility Fee for new infrastructure and a Water Capacity Fee for new water rights. Capacity fees are restricted funds and must be used only for the purpose intended.

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The Facility Fee portion was to be applied to new residential (different rates for single family and multi-family) and new commercial (based on meter size). Also included was a Water Capacity Fee applied to new residential and commercial based on water consumption and a \$/AF cost (\$6,231/AF). Single family water use was based on 0.546 AF/yr/single family unit. The fees were never implemented.

A Capacity Fee could be implemented; it will require a new nexus study to ensure the fees are consistent with the costs. Capacity fees are not subject to Proposition 218 requirements.

It is commonly held that new development or new growth should pay for the supporting infrastructure and one way of ensuring this is to assess a capacity fee paid for by the developer of the property. Many agencies assess capacity fees but the developers ultimately pass this on to the sales price of the home which is ultimately paid for by the purchaser. Of course there is a market limit to the amount of fees that can be attached to the sale price before the home becomes unsellable at the particular price. Attaching the capacity fee to the house increases the purchase price and down payment and makes homes unaffordable.

### ***Bonds***

The SGPWA Act ("Enabling Legislation") specifically identified the authority of the SGPWA to issue bonds. Specifically listed were: General Obligation Bonds, Revenue Bonds per 1941 Law, and 1911 Act Improvement Bonds. On the surface, without legal counsel opinion it appears these vehicles could be used by the SGPWA to fund the future projects or fund the shortfall shown in Figure 3.

#### *General Obligation Bonds*

General obligation (GO) bonds are secured by a pledge of the full faith and credit of the issuer and/or by a promise to levy taxes in an unlimited amount as needed to pay the debt services. The State of California's GO bonds are full faith and credit funded from the general fund pledge rather than from any revenue source. Local agencies are not generally authorized to issue full faith and credit bonds and are only payable from ad valorem property taxes. GO bonds are typically the least expensive debt available to government agencies. They do require voter approval, typically 2/3 vote, and there may be debt limits imposed on the issuer. Securing approval of GO bonds by local agencies is very difficult.

#### *Revenue Bonds*

Revenue bonds are paid back from a dedicated revenue source such as water rates or other financial source. Revenue bonds do not require voter approval. Interest rates are higher than GO bonds.

#### *Improvement (Assessment District) Bonds (1911 Act)*

Assessment bonds are authorized under the Improvement Act of 1911 and are repaid from taxes collected from those who benefit from the project. An assessment is a levy or charge placed on real property by a local agency for a special benefit conferred on the real project from

a public improvement. The assessments are paid from scheduled installments collected by direct billing to the property owner or through the tax rolls, or through proceeds from prepayment of assessments by the owners to discharge the unpaid tax lien.

The SGPWA would be the sponsoring agency; a petition signed by the owners of the parcels interested in the particular improvement. A benefit assessment district would have to be set up and an Engineer's Report prepared to identify the benefits to each parcel. Once the report is completed and disseminated, a ballot is prepared for the parcels to vote. A public hearing is held, typically called a "protest hearing," and the ballots collected and tabulated. The assessment district is approved if there are more "yes" votes than "no" votes.

It is not easy to fund an assessment district, particularly if it covers a large area.

**Historic SGPWA SWP and EBX I and II Funding**

Since inception of the Agency in the early 1960s, the SGPWA has funded its SWP obligations from property taxes collected within the Agency. The first property tax rate was set at \$.10/\$100 AV in July 1962. The rates changed over time since then. See Figure 4.

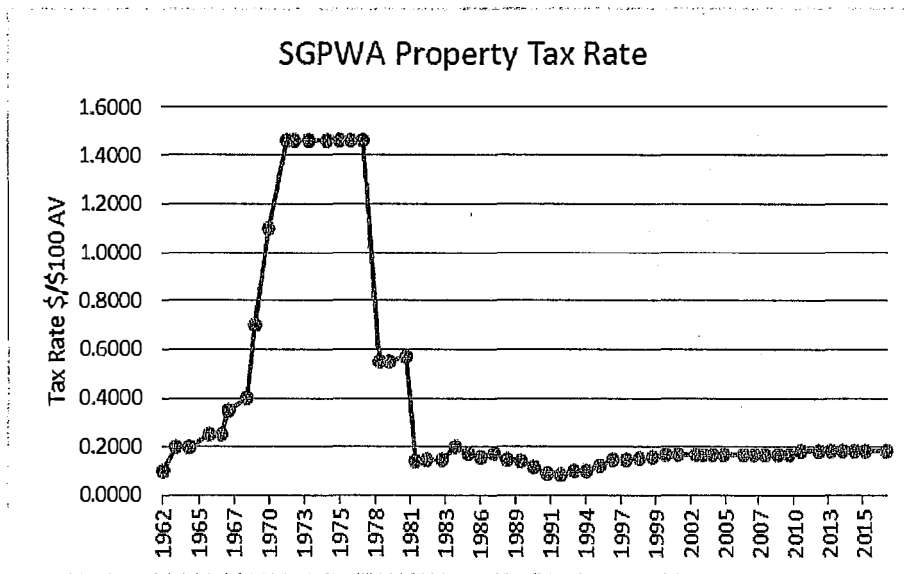


Figure 4  
SGPWA Property Tax Rate Over Time

When water deliveries started to BCVWD, the first retailer to purchase water, in 2006.SGPWA established a water rate, \$/AF delivered. The rate was \$277/AF in 2008. It was increased in 2009 to the current \$317/AF. This covers the various pass through charges identified in White Paper No. 3 and provides funding for rate stabilization and new water purchases.

**Tax Contributions to SGPWA Older vs. Newer Homes**

An analysis was performed on twenty homes within BCVWD which were purchased prior to 1992 and from 1992 through 2016 to determine how much property tax was paid by each home from 1976 through 2017. The homes were categorized by number of bedrooms. House

descriptions, sales year, sales price, etc. were obtained from Riverside County Assessor's Office. Refer to Figure 5. It is interesting to note that the 3-bedroom property purchased in 1976 when the tax rate was \$1.46/\$100 AV actually paid less cumulative property tax to the SGPWA than homes purchased as late as 2008. From Figure 5 it can be concluded that the owners of newer homes pay more in taxes to the SGPWA than some much older homes. Much of this has to do with the effects of Proposition 13.

This analysis was extended to the 2035 assuming the properties were not sold or reassessed. The results are shown in Figure 6. The results are similar. The newer homes pay a large portion of SGPWA's property tax revenue and confirms that new development does pay. Agencies that have taxing power may want to consider using property tax to fund infrastructure rather than capacity fees. It is not subject to the ups and downs of the market and provides a more stable form of revenue.

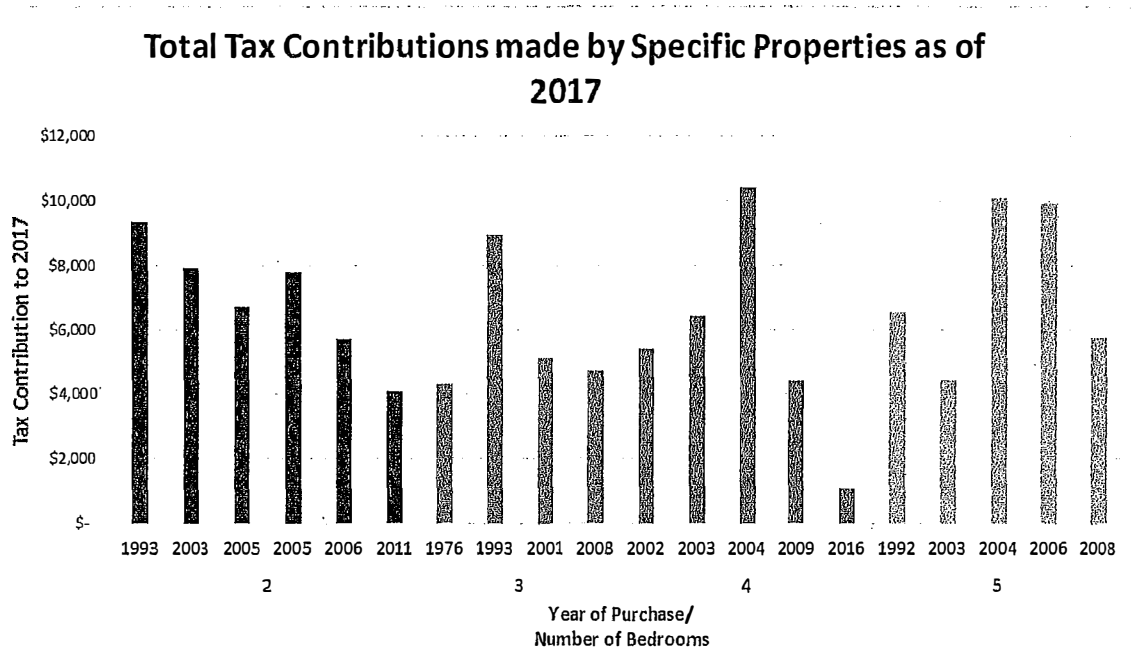


Figure 5  
SGPWA Property Tax Rate Contributions by Specific Properties through 2017

**Total Tax Contributions made by Specific Properties Projected to 2035**

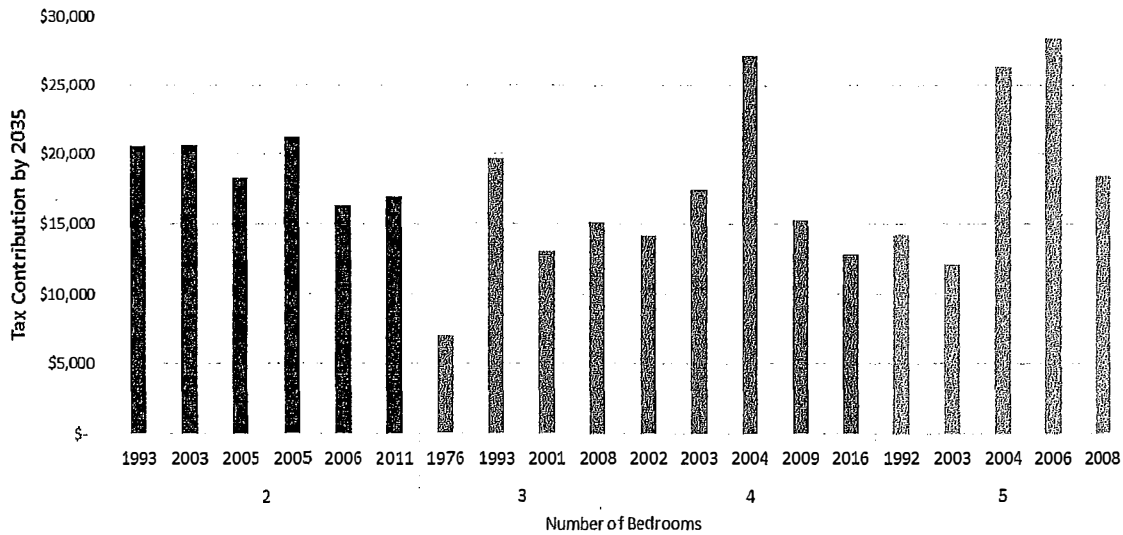


Figure 6  
SGPWA Property Tax Rate Contributions by Specific Properties through 2035

**Anticipated Future Development in the SGPWA Service Area**

There are a number of projects which have been approved by the Cities of Calimesa, Beaumont, and Banning over the last few years. Table 2 presents a summary of the known residential projects in the area. There may be developments in other areas of the SGPWA, e.g., Cabazon and Mission Springs. Some of the projects in Table 2 are under construction; the total units shown are an estimate of those yet to be constructed.

Table 2  
Ongoing and Planned Developments in SGPWA Service Area

Development Name	Total Units
City of Calimesa	
Mesa Verde	3,650
Summerwind Ranch	3,841
Subtotal Calimesa	7,491
City of Banning	
Rancho San Gorgonio	3,385
Butterfield	4,862
Diversified Pacific	98
St. Boniface	171
Subtotal Banning	8,516

City of Beaumont/BCVWD	
Tournament Hills	300 estimated
Sundance	1,000 estimated
Fairway Canyon	1,500 estimated
Heartland	922
Four Seasons	500 estimated
Kirkwood Ranch	403
Potrero Creek Estates	700
Noble Creek Meadows	648
Hidden Canyon	411
Sunny Cal Egg Ranch	560
Jack Rabbit Trail	2,000
The Preserve/Legacy Highlands	3,412
<b>Subtotal Beaumont/BCVWD</b>	<b>12,356</b>
<b>Total</b>	<b>28,363</b>

### Funding Strategy for the Future

Figure 3 showed a shortfall between the projected revenues using the current tax rate (\$0.1825/\$100 AV) and the required annual payment to DWR for the original SWP, EBX I and II, not to mention the CWF and Sites Reservoir. Just to cover the cost for the SWP and EBX I and II, a little of \$24 million of revenue will be needed through year 2035. Current property tax revenues are about \$16 million, leaving a shortfall of about \$8 million. The funding requirement will peak about 2035 when Sites Reservoir Project comes on line. Projected tax revenues will increase so the annual shortfall will not change much. Refer to Table 1.

There are several options for SGPWA to cover this shortfall based on the funding options described above and shown in Figure 3 and Table 1:

- Increase the property tax rate during this period
- Withdraw money from reserves. SGPWA has a reported reserve of \$36.8 million as of June 2016 projected to be \$42.0 million by June 2017.
- Increase the water rate
- Issue a Revenue Bond
- Take out a "bridge loan"
- Some combination of all of these

Increasing the property tax rate may require about doubling the current rate to about \$0.37/\$100 AV. For a new house this would be about \$650 more on property taxes. For comparison, from 1971 through 1977 the property tax rate was as high as \$1.46/\$100 AV.



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Withdrawing this the much money on an annual basis for an extended period of time would not be recommended. But a portion could be taken from reserves with the plan to increase the property tax rate sufficient to cover the remaining portion.

The water rate could be increased. Assuming about 11,000 AF/yr is imported the water rate would need to be \$455/AF more than it is now (\$317). This surcharge would be a hardship on the current customers. It is possible a portion of the shortfall could be covered by the water rate since a large portion (CWF) is improving the reliability of the water supply Table A. Then when no longer needed, past year 2035, this "surcharge" could be eliminated.

A revenue bond is a possibility as it would extend the payment term.

A bridge loan is possible to cover a portion of the difference also, and might be an option if interest rates are not too high.

The funding strategy could be a combination of all of these.

Whatever funding strategy, or combination, is chosen, it must be flexible. Changes in the development rate, housing prices, and housing turnover will have a major impact on the revenue generated from property tax. Another consideration, and a very important one, is the impact of overall water conservation and the new, low water using "water smart" homes will have on the water demand. SGPWA must take this in small steps, evaluating the strategy on a regular basis – perhaps every 2 to 3 years at most.

### **Funding for Other Sources of Water**

Short term contracts e.g. AVEK-Nickel Water, one-time purchases, e.g. South Mesa Water Company, multiple year purchases, SBVMWD and Yuba Accord water would likely need to be funded from sources other than property tax for debt service. Possible alternatives include:

- Funding through water rates
- Funding through temporary surcharges or water rates
- Use of SGPWA's Share of Riverside County's 1% property tax which with shared with other agencies
- A combination of the above methods

### **Water Supply Requirements for SGPWA till 2040**

White Paper No. 1 identified the SGPWA imported water demands to the year 2050 as about 28,000 AFY. This is an extremely conservative projection and does not take into account:

- Recycled water use in the service area by BCVWD and perhaps the City of Banning
- Reduction in demand due to the new landscape ordinance and probable tightening of even the new landscape irrigation regulations over time
- Construction of more water-smart homes which are quite effective in reducing water demand inside and outside the home. BCVWD has observed a noticeable reduction in demand in these homes which has shown the demand dropping from about 0.64 AFY/home (historical) to about 0.5 AFY/home – a 22% reduction

- 
- A water conservation ethic that has been promoted at the state and local levels
  - Reduction in demand due to the cost of water

Attached hereafter in Appendix A are nine scenarios which represent a snapshot in time as to how SGPWA demands might be met between now and 2040 using recycled water, Yuba Accord, SBVMWD, and AVEK-Nickel water until the CWF is in place and Sites Reservoir project is fully operational. As can be seen by the attached information, the planning of future supplies is complex and has a significant number of variables that should be vetted by the regional water system managers and their respective Boards and Councils.

### **Description of Appendix A Scenarios are as follows**

**Scenario I (Pages A-1, A-2, and A-3)** presents a “Best Case” supply scenario which includes the following conditions.

- Scenario 1A** The California Water Fix and maximum supplies from Sites Reservoir, no conservation, and no decrease to water storage requirements for future dwelling unit drought proofing by BCVWD.
- Scenario 1B** The California Water Fix and maximum supplies from Sites Reservoir, conservation, and no decrease to water storage requirements for future dwelling unit drought proofing by BCVWD.
- Scenario 1C** The California Water Fix and maximum supplies from Sites Reservoir, conservation, and decrease to water storage requirements for future dwelling unit drought proofing by BCVWD.

**Scenario 2 (Pages A-4, A-5, and A-6)** presents a “Worst Case” supply scenario which includes the following conditions.

- Scenario 2A** The California Water Fix and minimum supplies from Sites Reservoir, no conservation, and no decrease to water storage requirements for future dwelling unit drought proofing by BCVWD.
- Scenario 2B** The California Water Fix and minimum supplies from Sites Reservoir, conservation, and no decrease to water storage requirements for future dwelling unit drought proofing by BCVWD.
- Scenario 2C** The California Water Fix and minimum supplies from Sites Reservoir, conservation, and decrease to water storage requirements for future dwelling unit drought proofing by BCVWD.

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**Scenario 3 (Pages A-7, A-8, and A-9)** presents a “Worst Case” supply scenario with supplemental water supplies which includes the following conditions.

**Scenario 3A** The California Water Fix and minimum supplies from Sites Reservoir, Supplemental Water Supplies including long term leases, no conservation, and no decrease to water storage requirements for future dwelling unit drought proofing by BCVWD.

**Scenario 3B** The California Water Fix and minimum supplies from Sites Reservoir, Supplemental Water Supplies including long term leases, conservation, and no decrease to water storage requirements for future dwelling unit drought proofing by BCVWD.

**Scenario 3C** The California Water Fix and minimum supplies from Sites Reservoir, Supplemental Water Supplies including long term leases, conservation, and decrease to water storage requirements for future dwelling unit drought proofing by BCVWD.

# Appendix A

## San Geronio Pass Water Agency

Analysis of Supply and Demand Scenarios

Scenarios 1, 2, and 3

**Appendix A  
BEAUMONT-CHERRY VALLEY WATER DISTRICT**

Scenario: **1A** BASELINE - CURRENTLY PLANNED SUPPLY

Water Supplies						
Variable Table A Water Supply	Start Year	Annual Amount	Ultimate Annual Amount	Start Year	Ultimate Reliability	End of Degradation Year
	SGPWA SWP Table A @ 60%	2018	10,380 AFY	8,304 AFY	2018	60%

Could Degrade to 48% (8,304)

Non-Variable Water Supplies	Annual Amount	Start Year	End Year	Table A Recovered Reliability
California WaterFix	2,422 AFY	2033	2040	14%
YUBA Water AFY	800 AFY	2017	2040	
Nickle Water AFY	1,700 AFY	2017	2037	
SBVMWD AFY	2,000 AFY	2020	2040	
<b>Subtotal</b>	<b>16,802 AFY</b>			

(Could Improve Reliability 14% to 17.62%)

Potential Water Supplies	Annual Amount	Start Year	End Year
Long Term Lease 1	500 AFY	2018	2035
City of Ventura Lease	- AFY	2020	2030
Table A Increment	- AFY	2035	2040
<b>Subtotal</b>	<b>500 AFY</b>		

<b>Total Supply and Lease</b>	<b>17,302 AFY</b>		
Long Term Water Supplies			
Sites Reservoir Yield (after 2035)	14,000 AFY		
		Trans Delta Loss	
		No Loss	Loss @ 25%
		14,000	10,500

Agency Name	2018 (1)	2020	2025	2030	2035	2040
BCVWD	9,800	10,860	12,476	14,087	15,886	17,334
City of Banning	500	-	501	1,344	2,237	2,718
YVWD	850	1,809	1,967	2,162	2,391	2,644
Other	-	500	1,600	2,800	3,900	5,000
<b>Total Water Demands</b>	<b>11,150</b>	<b>13,169</b>	<b>16,544</b>	<b>20,393</b>	<b>24,414</b>	<b>27,696</b>

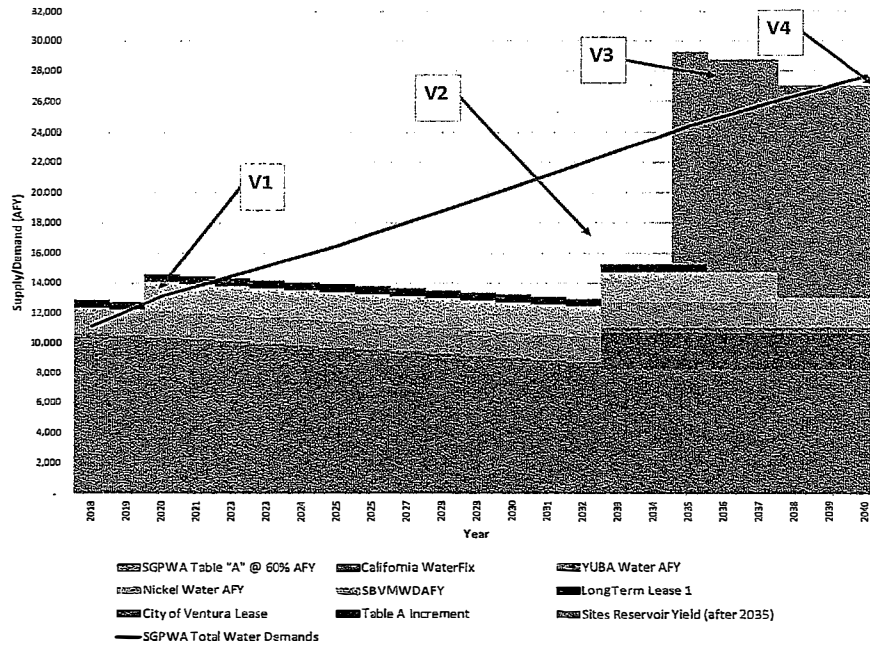
Int. Factors for Landscape and Conservation by Agency (AFY per EDU)	Original Value	Adjusted Value	Adjustment Factor	Old Homes Conservation Factor
A	0.6459	0.6459	1.0000	0%
B	1.0000	1.0000	1.0000	0%
C	1.0000	1.0000	1.0000	0%
D	1.0000	1.0000	1.0000	0%

Agency Name	2018 (1)	2020	2025	2030	2035	2040
BCVWD	9,800	10,860	12,476	14,087	15,886	17,334
City of Banning	500	-	501	1,344	2,237	2,718
YVWD	850	1,809	1,967	2,162	2,391	2,644
Other	-	500	1,600	2,800	3,900	5,000
<b>Total Water Demands Adj. for Conservation</b>	<b>11,150</b>	<b>13,169</b>	<b>16,544</b>	<b>20,393</b>	<b>24,414</b>	<b>27,696</b>

Agency Name	2018 (1)	2020	2025	2030	2035	2040	Adjustment Factor
BCVWD	(1,000)	(1,000)	(1,500)	(2,000)	(2,500)	(2,500)	0
City of Banning	-	-	-	-	-	-	0
YVWD	-	-	-	-	-	-	0
Other	-	-	-	-	-	-	0
<b>Water Demand Adjustment for Storage Component</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0</b>

	2018	2020	2025	2030	2035	2040
<b>Total Water Demand (Adjusted for Conservation and Storage Component)</b>	<b>11,150</b>	<b>13,169</b>	<b>16,544</b>	<b>20,393</b>	<b>24,414</b>	<b>27,696</b>

**Scenario: 1A BASELINE - CURRENTLY PLANNED SUPPLY**



Surplus/Deficit Water Volumes	
V1 =	4,367
V2 =	65,577
V3 =	12,110
V4 =	684
V1 - V2 =	(61,210)
V1 - V2 + V3 - V4 =	(69,784)

In this scenario, the imported water supplies do not provide enough surplus water to make it through the deficit years until the Sites Project begins providing water. When the Sites Project comes online some water is regained but the supply still has major deficits that would need to be overcome with other or improved water supply sources.

**Appendix A  
BEAUMONT-CHERRY VALLEY WATER DISTRICT**

Scenario: **1B** BASELINE - CURRENTLY PLANNED SUPPLY W/ CONSERVATION

Water Supplies						
Variable Table A Water Supply	Start Year	Annual	Ultimate Annual	Start Year	Ultimate	End of Degradation
	Amount	Amount	Amount	Reliability	Reliability	Year
SGPWA SWP Table A @ 60%	2018	10,380 AFY	8,304 AFY	60%	48%	2033

Could Degrade to 48% (8,304)

Non-Variable Water Supplies					
Annual Amount	Start Year	End Year	Table A Recovered Reliability		
California WaterFix	2,422 AFY	2033	2040	14%	(Could Improve Reliability 14% to 17.62%)
YUBA Water AFY	300 AFY	2017	2040		
Nickle Water AFY	1,700 AFY	2017	2037		
SBVMWD AFY	2,000 AFY	2020	2040		
<b>Subtotal</b>	<b>16,802 AFY</b>				

Potential Water Supplies				
Annual Amount	Start Year	End Year		
Long Term Lease 1	500 AFY	2018	2035	
City of Ventura Lease	- AFY	2020	2030	
Table A Increment	- AFY	2035	2040	
<b>Subtotal</b>	<b>500 AFY</b>			

Total Supply and Lease		Trans Delta Loss	
Amount	Year	No Loss	Loss @ 25%
17,302 AFY		14,000	10,500

SGPWA UWMP TABLE 2-4						
Agency Name	2018	2020	2025	2030	2035	2040
BCVWD	9,800	10,860	12,476	14,087	15,886	17,334
City of Banning	500	-	501	1,344	2,237	2,718
YVWD	850	1,809	1,967	2,162	2,391	2,644
Other	-	500	1,600	2,800	3,900	5,000
<b>Total Water Demands</b>	<b>11,150</b>	<b>13,169</b>	<b>16,544</b>	<b>20,393</b>	<b>24,414</b>	<b>27,696</b>

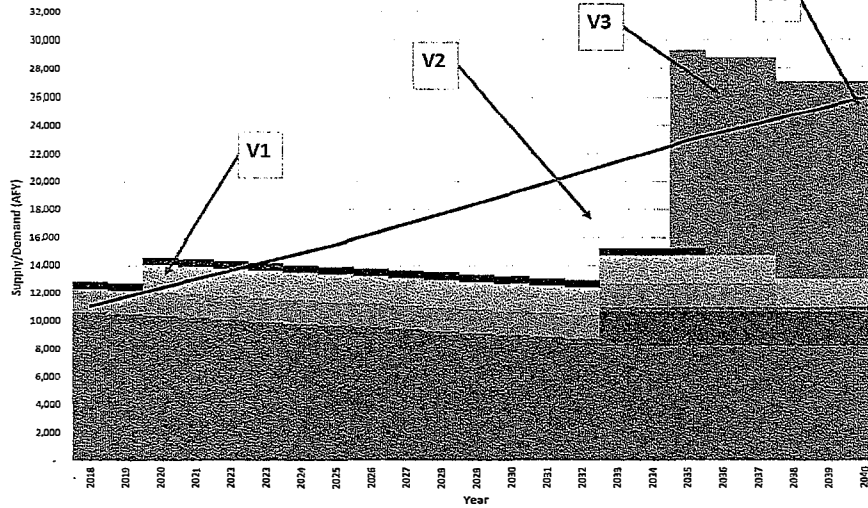
Agency Name	Original Value		Adjusted Value		Old Homes Conservation Factor
	Value	Value	Value	Value	
Banning	0.6459	0.5460	0.8453	5%	
YVWD	1.0000	1.0000	1.0000	5%	
Other	1.0000	1.0000	1.0000	5%	

SGPWA UWMP TABLE 2-5 - ADJUSTED FOR CONSERVATION						
Agency Name	2018	2020	2025	2030	2035	2040
BCVWD	9,800	10,206	11,572	12,834	14,455	15,679
City of Banning	500	-	476	1,319	2,212	2,693
YVWD	850	1,767	1,925	2,120	2,349	2,602
Other	-	500	1,600	2,800	3,900	5,000
<b>Total Water Demands Adj. for Conservation</b>	<b>11,150</b>	<b>12,473</b>	<b>15,573</b>	<b>19,172</b>	<b>22,915</b>	<b>25,973</b>

UWMP WATER TO STORAGE COMPONENT (BCVWD TABLE 6-26; pg 6-62)						
Agency Name	2018	2020	2025	2030	2035	2040
BCVWD	(1,000)	(1,000)	(1,500)	(2,000)	(2,500)	(2,500)
City of Banning	-	-	-	-	-	-
YVWD	-	-	-	-	-	-
Other	-	-	-	-	-	-
<b>Water Demand Adjustment for Storage Component</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

Total Water Demand (Adjusted for Conservation and Storage Component)						
Agency Name	2018	2020	2025	2030	2035	2040
<b>Total</b>	<b>11,150</b>	<b>12,473</b>	<b>15,573</b>	<b>19,172</b>	<b>22,915</b>	<b>25,973</b>

**Scenario: 1B BASELINE - CURRENTLY PLANNED SUPPLY W/  
CONSERVATION**



Surplus/Deficit Water Volumes	
V1 =	6,777
V2 =	51,592
V3 =	21,091
V4 =	-
V1 - V2 =	(44,815)
V1 - V2 + V3 - V4 =	(23,724)

In this scenario, with conservation, the imported water supplies accumulate enough surplus water to make it through the deficit years until the Sites Project begins providing water. When the Sites Project comes online, more water is added to the surplus.

**Appendix A  
BEAUMONT-CHERRY VALLEY WATER DISTRICT**

Scenario: **1C** BASELINE - CURRENTLY PLANNED SUPPLY W/ CONSERVATION NO STORAGE

Water Supplies						
Variable Table A Water Supply	Start Year	Annual Amount	Ultimate Annual Amount	Table A Reliability	Table A Reliability	End of Degradation Year
SGPWA SWP Table A @ 60%		10,380 AFY	8,304 AFY	60%	48%	2018 - 2033

Could Degrade to 48% (8,304)

Non-Variable Water Supplies	Annual Amount	Start Year	End Year	Table A Recovered Reliability
California WaterFix	2,422 AFY	2033	2040	14%
YUBA Water AFY	300 AFY	2017	2040	
Nickle Water AFY	1,700 AFY	2017	2037	
SBVMWD AFY	2,000 AFY	2020	2040	
<b>Subtotal</b>	<b>16,802 AFY</b>			

(Could Improve Reliability 14% to 17.62%)

Potential Water Supplies	Annual Amount	Start Year	End Year
Long Term Lease 1	500 AFY	2018	2035
City of Ventura Lease	- AFY	2020	2030
Table A Increment	- AFY	2035	2040
<b>Subtotal</b>	<b>500 AFY</b>		

Total Supply and Lease	Trans Delta Loss
17,302 AFY	No Loss Loss @ 25%
	13,000 - 10,500

SGPWA UWMP TABLE 2-4						
Agency Name	2018 (1)	2020	2025	2030	2035	2040
BCVWD	9,800	10,860	12,476	14,087	15,886	17,334
City of Banning	500	-	501	1,344	2,237	2,718
YVWD	850	1,809	1,967	2,162	2,391	2,644
Other	-	500	1,600	2,800	3,900	5,000
<b>Total Water Demands</b>	<b>11,150</b>	<b>13,169</b>	<b>16,544</b>	<b>20,393</b>	<b>24,414</b>	<b>27,696</b>

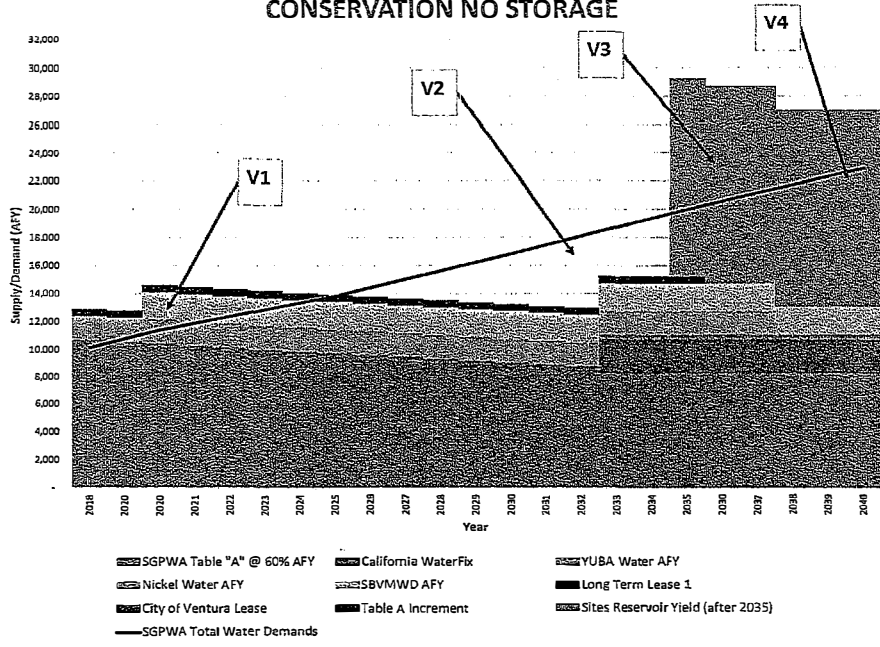
Agency	Original Value	Adjusted Value	Adjustment Factor	Old Homes Conservation Factor
BCVWD	0.6459	0.5000	0.7741	5%
City of Banning	1.0000	1.0000	1.0000	5%
YVWD	1.0000	1.0000	1.0000	5%
Other	1.0000	1.0000	1.0000	5%

SGPWA UWMP TABLE 2-ADJUSTED FOR CONSERVATION						
Agency Name	2018	2020	2025	2030	2035	2040
BCVWD	9,800	10,131	11,382	12,629	14,021	15,142
City of Banning	500	-	476	1,319	2,212	2,693
YVWD	850	1,767	1,925	2,120	2,349	2,602
Other	-	500	1,600	2,800	3,900	5,000
<b>Total Water Demands Adj. for Conservation</b>	<b>11,150</b>	<b>12,397</b>	<b>15,382</b>	<b>18,867</b>	<b>22,482</b>	<b>25,437</b>

UWMP WATER TO STORAGE COMPONENT (BCVWD TABLE 6-26, pg 6-62)						
Agency Name	2018 (1)	2020	2025	2030	2035	2040
BCVWD	(1,000)	(1,000)	(1,500)	(2,000)	(2,500)	(2,500)
City of Banning	-	-	-	-	-	-
YVWD	-	-	-	-	-	-
Other	-	-	-	-	-	-
<b>Water Demand Adjustment for Storage Component</b>	<b>(1,000)</b>	<b>(1,000)</b>	<b>(1,500)</b>	<b>(2,000)</b>	<b>(2,500)</b>	<b>(2,500)</b>

	2018	2020	2025	2030	2035	2040
<b>Total Water Demand (Adjusted for Conservation and Storage Component)</b>	<b>10,150</b>	<b>11,397</b>	<b>13,882</b>	<b>16,867</b>	<b>19,982</b>	<b>22,937</b>

**Scenario: 1C BASELINE - CURRENTLY PLANNED SUPPLY W/  
CONSERVATION NO STORAGE**



Surplus/Deficit Water Volumes	
V1 =	14,404
V2 =	28,108
V3 =	39,001
V4 =	-
<b>V1 - V2 =</b>	<b>(13,704)</b>
<b>V1 - V2 + V3 - V4 =</b>	<b>25,297</b>

In this scenario, with conservation and no storage, the Imported water supplies accumulate an excessive amount of surplus water to make it through the deficit years until the Sites Project begins providing water. When the Sites Project comes online, more water is added to the surplus.

Appendix A  
BEAUMONT-CHERRY VALLEY WATER DISTRICT

Scenario: 2A BASELINE - MINIMUM PLANNED SUPPLY

Water Supplies						
Variable Table A Water Supply	Start Year	Annual	Ultimate	Start Year	Ultimate	End of Degradation
	Year	Amount	Amount	Year	Amount	
SGPWA SWP Table A @ 60 %	2018	10,380 AFY	8,304 AFY	2018	48%	2033

Could Degrade to 48% (8,304)

Non-Variable Water Supplies	Annual Amount	Start Year	End Year	Table A Recovered Reliability
California Water Fix	2,422 AFY	2033	2040	14%
YUBA Water AFY	300 AFY	2017	2040	
Nickle Water AFY	1,700 AFY	2017	2037	
SBVMWD AFY	2,000 AFY	2020	2040	
<b>Subtotal</b>	<b>16,802 AFY</b>			

(Could Improve Reliability 14% to 17.62%)

Potential Water Supplies	Annual Amount	Start Year	End Year
Long Term Lease 1	500 AFY	2018	2035
City of Ventura Lease	- AFY	2020	2030
Table A Increment	- AFY	2035	2040
<b>Subtotal</b>	<b>500 AFY</b>		

<b>Total Supply and Lease</b>	<b>17,302 AFY</b>
Long Term Water Supplies	
Sites Reservoir Yield (after 2035)	7,338 AFY
<b>Trans Delta Loss</b>	<b>No Loss Loss @ 25%</b>
	<b>18,040 AFY 17,338 AFY</b>

SGPWA UWMP TABLE 2-4						
Agency Name	2018 (1)	2020	2025	2030	2035	2040
BCVWD	9,800	10,860	12,476	14,087	15,886	17,334
City of Banning	500	-	501	1,344	2,237	2,718
YVWD	850	1,809	1,967	2,162	2,391	2,644
Other	-	500	1,600	2,800	3,900	5,000
<b>Total Water Demands</b>	<b>11,150</b>	<b>13,169</b>	<b>16,544</b>	<b>20,393</b>	<b>24,414</b>	<b>27,696</b>

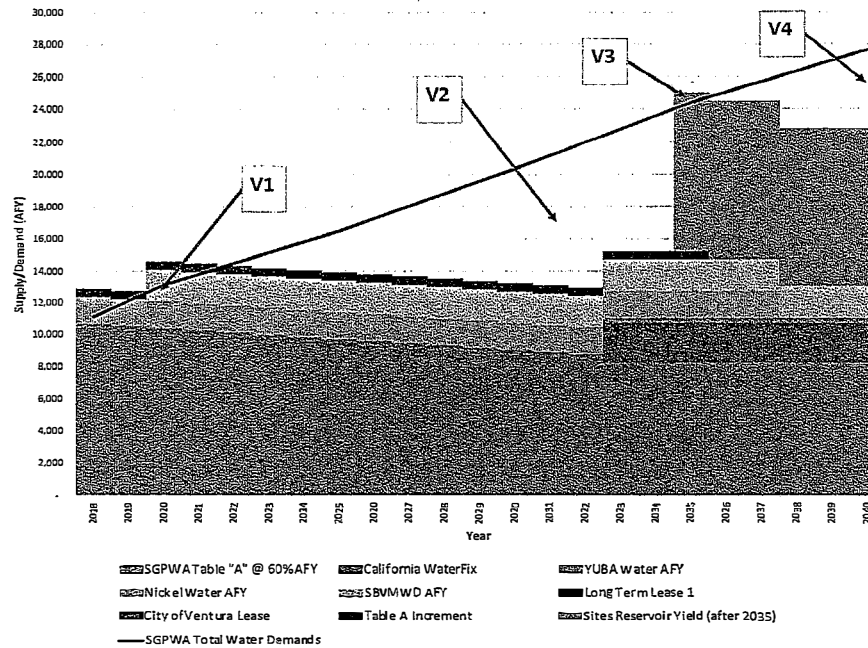
Agency Name	Adjustment Factor for Landscape and Conservation by Agency (AFY per EDU)		Adjustment Factor	Old Homes Conservation Factor
	Original Value	Adjusted Value		
Banning	0.6459	0.6459	1.0000	0%
City of Banning	1.0000	1.0000	1.0000	0%
YVWD	1.0000	1.0000	1.0000	0%
Other	1.0000	1.0000	1.0000	0%

SGPWA UWMP TABLE 2-ADJUSTED FOR CONSERVATION						
Agency Name	2018 (1)	2020	2025	2030	2035	2040
BCVWD	9,800	10,860	12,476	14,087	15,886	17,334
City of Banning	500	-	501	1,344	2,237	2,718
YVWD	850	1,809	1,967	2,162	2,391	2,644
Other	-	500	1,600	2,800	3,900	5,000
<b>Total Water Demands Adj. for Conservation</b>	<b>11,150</b>	<b>13,169</b>	<b>16,544</b>	<b>20,393</b>	<b>24,414</b>	<b>27,696</b>

UWMP WATER TO STORAGE COMPONENT (BCVWD TABLE G-26, pg 6-62)						
Agency Name	2018 (1)	2020	2025	2030	2035	2040
BCVWD	(1,000)	(1,000)	(1,500)	(2,000)	(2,500)	(2,500)
City of Banning	-	-	-	-	-	-
YVWD	-	-	-	-	-	-
Other	-	-	-	-	-	-
<b>Water Demand Adjustment for Storage Component</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

	2018	2020	2025	2030	2035	2040
<b>Total Water Demand (Adjusted for Conservation and Storage Component)</b>	<b>11,150</b>	<b>13,169</b>	<b>16,544</b>	<b>20,393</b>	<b>24,414</b>	<b>27,696</b>

Scenario: 2A BASELINE - MINIMUM PLANNED SUPPLY



Surplus/Deficit Water Volume	
V1 =	4,367
V2 =	65,577
V3 =	596
V4 =	14,466
V1 - V2 =	(61,210)
V1 - V2 + V3 - V4 =	(75,080)

In this scenario relieving the minimum of the primary planned supplies the imported water supplies do not provide enough surplus water to make it through the deficit years until the Sites Project begins providing water. When the Sites Project comes online some water is required initially but the supply still has major deficits that would need to be overcome with other or improved water supply sources.



**Appendix A  
BEAUMONT-CHERRY VALLEY WATER DISTRICT**

Scenario: **ZB** BASELINE - MINIMUM PLANNED SUPPLY W/ CONSERVATION

Water Supplies						
Variable Table A Water Supply	Start Year	Annual Amount	Ultimate Annual Amount	Start Year	Ultimate Reliability	End of Degradation Year
	SGPWA SWP Table A @ 60 %	2018	10,380 AFY	8,304 AFY	2018	60% 48%

Could Degrade to 48% (8,304)

Non-Variable Water Supplies						
Variable Table A Water Supply	Annual Amount	Start Year	End Year	Table A Recovered Reliability		
California WaterFix	2,422 AFY	2033	2040	14%	(Could Improve Reliability 14% to 17.62%)	
YUBA Water AFY	300 AFY	2017	2040			
Nickle Water AFY	1,700 AFY	2017	2037			
SEVMWD AFY	2,000 AFY	2020	2040			
<b>Subtotal</b>	<b>16,802 AFY</b>					

Potential Water Supplies				
Variable Table A Water Supply	Annual Amount	Start Year	End Year	
Long Term Lease 1	500 AFY	2018	2035	
City of Ventura Lease	- AFY	2020	2030	
Table A Increment	- AFY	2035	2040	
<b>Subtotal</b>	<b>500 AFY</b>			

Total Supply and Lease		Trans Delta Loss	
17,302 AFY		No Loss	Loss @ 25%
		9,784	7,338

SGPWA UWMP TABLE 2-4						
Agency Name	2018 (1)	2020	2025	2030	2035	2040
BCVWD	9,800	10,860	12,476	14,087	15,886	17,334
City of Banning	500	-	501	1,344	2,237	2,718
YVWD	850	1,809	1,967	2,162	2,391	2,644
Other	-	500	1,600	2,800	3,900	5,000
<b>Total Water Demands</b>	<b>11,150</b>	<b>13,169</b>	<b>16,544</b>	<b>20,393</b>	<b>24,414</b>	<b>27,696</b>

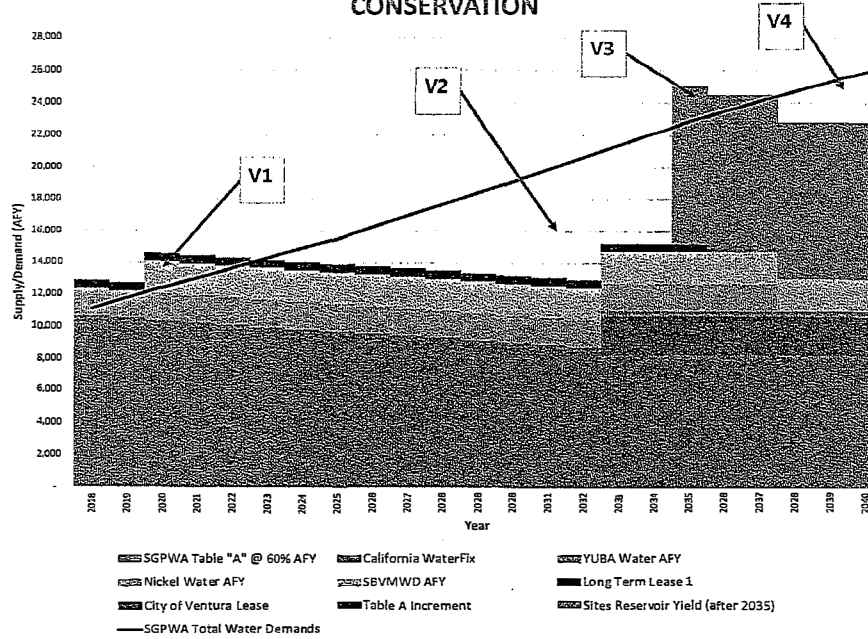
Agency Name	Adjustment Factor		Old Homes Conservation Factor
	Original Value	Adjusted Value	
BCVWD	0.6459	0.5460	0.8453 5%
City of Banning	1.0000	1.0000	5%
YVWD	1.0000	1.0000	5%
Other	1.0000	1.0000	5%

SGPWA UWMP TABLE 2-4 ADJUSTED FOR CONSERVATION						
Agency Name	2018	2020	2025	2030	2035	2040
BCVWD	9,800	10,206	11,572	12,934	14,455	15,679
City of Banning	500	-	476	1,319	2,212	2,693
YVWD	850	1,767	1,925	2,120	2,349	2,602
Other	-	500	1,600	2,800	3,900	5,000
<b>Total Water Demands Adj. for Conservation</b>	<b>11,150</b>	<b>12,473</b>	<b>15,573</b>	<b>19,172</b>	<b>22,915</b>	<b>25,973</b>

UWMP WATER TO STORAGE COMPONENT (BCVWD TABLE 6-26, pg 6-62)						
Agency Name	2018 (1)	2020	2025	2030	2035	2040
BCVWD	(1,000)	(1,000)	(1,500)	(2,000)	(2,500)	(2,500)
City of Banning	-	-	-	-	-	-
YVWD	-	-	-	-	-	-
Other	-	-	-	-	-	-
<b>Water Demand Adjustment for Storage Component</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

Total Water Demand (Adjusted for Conservation and Storage Component)						
Agency Name	2018	2020	2025	2030	2035	2040
BCVWD	9,800	10,206	11,572	12,934	14,455	15,679
City of Banning	500	-	476	1,319	2,212	2,693
YVWD	850	1,767	1,925	2,120	2,349	2,602
Other	-	500	1,600	2,800	3,900	5,000
<b>Total Water Demand (Adjusted for Conservation and Storage Component)</b>	<b>11,150</b>	<b>12,473</b>	<b>15,573</b>	<b>19,172</b>	<b>22,915</b>	<b>25,973</b>

**Scenario: ZB BASELINE - MINIMUM PLANNED SUPPLY W/  
CONSERVATION**



Surplus/Deficit Water Volumes:	
V1 =	6,777
V2 =	51,592
V3 =	3,450
V4 =	7,655
V1 - V2 =	(44,815)
V1 - V2 + V3 - V4 =	(49,020)

In this scenario reducing the minimum of the primary planned supplies, with conservation, the imported water supplies do not provide enough surplus water to make it through the deficit years until the Sites Project begins providing water. When the Sites Project comes online some water is regained initially but the supply still has major deficits that would need to be overcome with other or improved water supply sources.

**Appendix A  
BEAUMONT-CHERRY VALLEY WATER DISTRICT**

Scenario: **2C** BASELINE - MINIMUM PLANNED SUPPLY W/ CONSERVATION NO STORAGE

Water Supplies							
Variable Table A Water Supply	Start Year	Annual	Ultimate Annual	Table A	Ultimate	Table A	End of Degradation
	Year	Amount	Amount	Reliability	Reliability	Start Year	Year
SGPWA SWP Table A @ 60%		10,380 AFY	8,304 AFY	60%	48%	2018	2033

Could Degrade to 48% (8,304)

Non-Variable Water Supplies				
	Annual Amount	Start Year	End Year	Table A: Recovered Reliability
California WaterFix	2,422 AFY	2033	2040	14%
YUBA Water AFY	300 AFY	2017	2040	
Nickle Water AFY	1,700 AFY	2017	2037	
SBVMWD AFY	2,000 AFY	2020	2040	
<b>Subtotal</b>	<b>16,802 AFY</b>			

(Could Improve Reliability 14% to 17.62%)

Potential Water Supplies			
	Annual Amount	Start Year	End Year
Long Term Lease 1	500 AFY	2018	2035
City of Ventura Lease	- AFY	2020	2030
Table A Increment	- AFY	2035	2040
<b>Subtotal</b>	<b>500 AFY</b>		

Total Supply and Lease		Trans Delta Loss	
	Amount	No Loss	Loss @ 25%
Long Term Water Supplies	17,302 AFY		
Sites Reservoir Yield (after 2035)	7,338 AFY	9,784	7,338

SGPWA U/WMP TABLE 2-4						
Agency Name	2018 (1)	2020	2025	2030	2035	2040
BCVWD	9,800	10,860	12,476	14,087	15,886	17,334
City of Banning	500	-	501	1,344	2,237	2,718
YVWD	850	1,809	1,967	2,162	2,391	2,644
Other	-	500	1,600	2,800	3,900	5,000
<b>Total Water Demands</b>	<b>11,150</b>	<b>13,169</b>	<b>16,544</b>	<b>20,393</b>	<b>24,414</b>	<b>27,696</b>

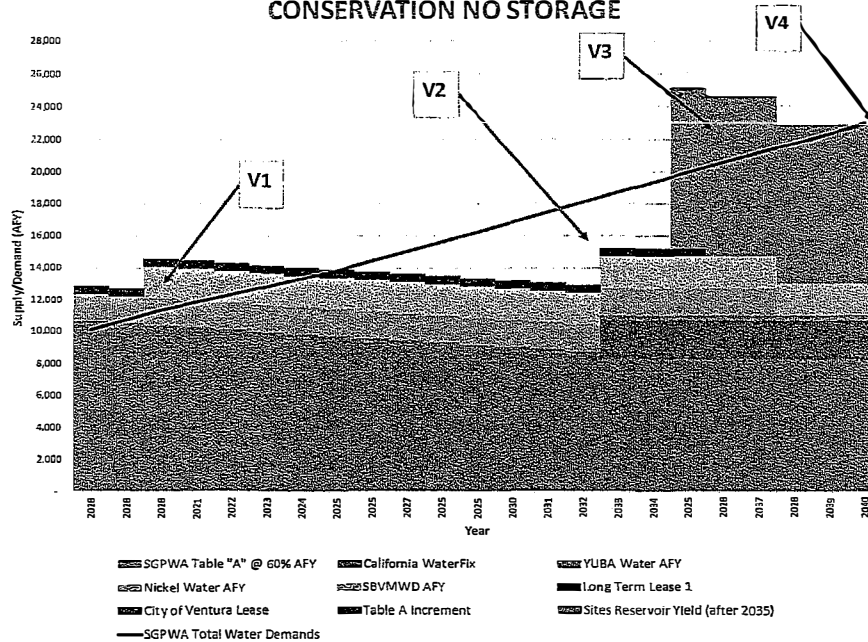
Adjustment Factors for Landscape and Reduction by Agency (AFY per Acre)				
	Original Value	Adjusted Value	Adjustment Factor	Old Homes Conservation Factor
Banning	0.6459	0.5000	0.7741	5%
YVWD	1.0000	1.0000	1.0000	5%
Other	1.0000	1.0000	1.0000	5%

SGPWA U/WMP TABLE 2- ADJUSTED FOR CONSERVATION						
Agency Name	2018	2020	2025	2030	2035	2040
Banning	9,800	10,131	11,382	12,629	14,021	15,142
YVWD	500	-	476	1,319	2,212	2,693
Other	850	1,767	1,925	2,120	2,349	2,602
<b>Total Water Demands Adj. for Conservation</b>	<b>11,150</b>	<b>12,397</b>	<b>15,382</b>	<b>18,867</b>	<b>22,482</b>	<b>25,437</b>

U/WMP WATER TO STORAGE COMPONENT (BCVWD TABLE 6-26, pg 9-62)						
Agency Name	2018 (1)	2020	2025	2030	2035	2040
BCVWD	(1,000)	(1,000)	(1,500)	(2,000)	(2,500)	(2,500)
City of Banning	-	-	-	-	-	-
YVWD	-	-	-	-	-	-
Other	-	-	-	-	-	-
<b>Water Demand Adjustment for Storage Component</b>	<b>(1,000)</b>	<b>(1,000)</b>	<b>(1,500)</b>	<b>(2,000)</b>	<b>(2,500)</b>	<b>(2,500)</b>

Total Water Demand Adjusted for Conservation and Storage Component						
	2018	2020	2025	2030	2035	2040
	10,150	11,397	13,882	16,867	19,982	22,937

**Scenario: 2C BASELINE - MINIMUM PLANNED SUPPLY W/  
CONSERVATION NO STORAGE**



Surplus/Deficit Water Volumes	
V1 =	14,404
V2 =	28,108
V3 =	13,831
V4 =	127
V1 - V2 =	(13,704)
V1 - V2 + V3 - V4 =	-

In this scenario relieving the minimum of the primary planned supplies, with conservation and no storage, the imported water supplies do not provide enough surplus water to make it through the deficit years until the Sites Project begins providing water. When the Sites Project comes online some water is regained initially but the supply still has major deficits that would need to be overcome with other or improved water supply sources.

**Appendix A  
BEAUMONT-CHERRY VALLEY WATER DISTRICT**

Scenario: **3A** BASELINE - MINIMUM PLANNED SUPPLY W/ SUPPLEMENTARY SUPPLIES

Water Supplies						
Variable Table A Water Supply	Start Year Annual Amount	Ultimate Annual Amount	Start Year Reliability	Ultimate Table A Reliability	Start Year	End of Degradation Year
SGPWA SWP Table A @ 60 %	10,380 AFY	8,304 AFY	60%	48%	2018	2033

Could Degrade to 48% (8,304)

Non-Variable Water Supplies	Annual Amount	Start Year	End Year	Table A Recovered Reliability
California WaterFix	2,422 AFY	2033	2040	14%
YUBA Water AFY	300 AFY	2017	2040	
Nickle Water AFY	1,700 AFY	2017	2037	
SBVMWDAFY	2,000 AFY	2020	2040	
<b>Subtotal</b>	<b>16,802 AFY</b>			

(could Improve Reliability 14% to 17.62%)

Potential Water Supplies	Annual Amount	Start Year	End Year
Long Term Lease 1	500 AFY	2018	2035
City of Ventura Lease	6,500 AFY	2020	2030
Table A Increment	3,500 AFY	2035	2040
<b>Subtotal</b>	<b>10,500 AFY</b>		

**Total Supply and Lease 27,302 AFY**

Long Term Water Supplies Sites Reservoir Yield (after 2035)	7,338 AFY	Trans Delta Loss	
		No Loss	Loss @ 25%
		9,784	7,338

SGPWA UWMP TABLE 2 - ADJUSTED FOR CONSERVATION						
Agency Name	2018 (1)	2020	2025	2030	2035	2040
BCVWD	9,800	10,860	12,476	14,087	15,886	17,334
City of Banning	500	-	501	1,344	2,237	2,718
YVWD	850	1,809	1,567	2,162	2,391	2,644
Other	-	500	1,600	2,800	3,900	5,000
<b>Total Water Demands</b>	<b>11,150</b>	<b>13,169</b>	<b>16,544</b>	<b>20,393</b>	<b>24,414</b>	<b>27,696</b>

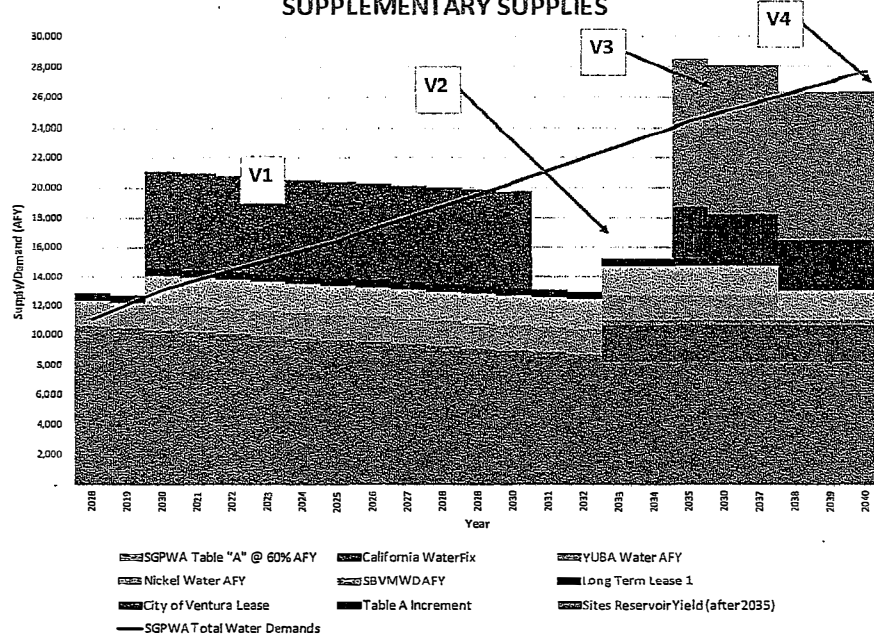
Conservation Factor for Landscape and Irrigation by Agency (AFY per EDU)	Original Value		Adjusted Value		Adjustment Factor	Old Homes Conservation Factor
	Value	Value	Value	Value		
Banning	0.6459	0.6459	1.0000	0%		
YVWD	1.0000	1.0000	1.0000	0%		
Other	1.0000	1.0000	1.0000	0%		

SGPWA UWMP TABLE 2 - ADJUSTED FOR CONSERVATION						
Agency Name	2018 (1)	2020	2025	2030	2035	2040
BCVWD	9,800	10,860	12,476	14,087	15,886	17,334
City of Banning	500	-	501	1,344	2,237	2,718
YVWD	850	1,809	1,567	2,162	2,391	2,644
Other	-	500	1,600	2,800	3,900	5,000
<b>Total Water Demands Adj. for Conservation</b>	<b>11,150</b>	<b>13,169</b>	<b>16,544</b>	<b>20,393</b>	<b>24,414</b>	<b>27,696</b>

UWMP WATER TO STORAGE COMPONENT I (BCVWD TABLE 26, pg 6-62)						
Agency Name	2018 (1)	2020	2025	2030	2035	2040
BCVWD	(1,000)	(1,000)	(1,500)	(2,000)	(2,500)	(2,500)
City of Banning	-	-	-	-	-	-
YVWD	-	-	-	-	-	-
Other	-	-	-	-	-	-
<b>Water Demand Adjustment for Storage Component</b>	<b>(1,000)</b>	<b>(1,000)</b>	<b>(1,500)</b>	<b>(2,000)</b>	<b>(2,500)</b>	<b>(2,500)</b>

Total Water Demands (Adjusted for Conservation and Storage Component)						
Agency Name	2018 (1)	2020	2025	2030	2035	2040
<b>Total Water Demands</b>	<b>11,150</b>	<b>13,169</b>	<b>16,544</b>	<b>20,393</b>	<b>24,414</b>	<b>27,696</b>

**Scenario: 3A BASELINE - MINIMUM PLANNED SUPPLY W/  
SUPPLEMENTARY SUPPLIES**



Surplus/Deficit Water Volumes	
V1 =	44,103
V2 =	33,813
V3 =	9,319
V4 =	2,189
V1 - V2 =	10,291
V1 - V2 - V3 - V4 =	17,421

In this scenario, relieving the minimum of the primary planned supplies, with the securing of supplementary water supplies, the imported water supplies accumulate an surplus water which brings the region through the deficit years until the Sites Project begins providing water. When the Sites Project comes online, even more water is added to the surplus for a few years. However, in this scenario, the imported water goes back into deficit years around 2039, thus more supplies would have to be secured past that point.

**Appendix A  
BEAUMONT-CHERRY VALLEY WATER DISTRICT**

Scenario: **3B** BASELINE - MINIMUM PLANNED SUPPLY W/ CONSERVATION W/ SUPPLEMENTARY SUPPLIES

Water Supplies						
Variable Table A Water Supply	Start Year	Annual	Ultimate	Start Year	Ultimate	End of Degradation
	Reliability	Amount	Amount	Reliability	Table A	
SGPWA SWP Table A @ 60%	2018	10,380 AFY	8,304 AFY	2033	48%	2033

Could Degrade to 48% (8,304)

Non-Variable Water Supplies				
Annual Amount	Start Year	End Year	Table A Recovered Reliability	
California Water Fix	2,422 AFY	2033	2040	14%
YUBA Water AFY	300 AFY	2017	2040	
Nickle Water AFY	1,700 AFY	2017	2037	
SBVMWD AFY	2,000 AFY	2020	2040	
<b>Subtotal</b>	<b>16,802 AFY</b>			

(Could Improve Reliability 14% to 17.62%)

Potential Water Supplies			
Annual Amount	Start Year	End Year	
Long Term Lease 1	500 AFY	2018	2035
City of Ventura Lease	6,500 AFY	2020	2030
Table A Increment	3,500 AFY	2035	2040
<b>Subtotal</b>	<b>10,500 AFY</b>		

Total Supply and Lease **27,302 AFY**

Long Term Water Supplies	Sites Reservoir Yield (after 2035)	Trans Delta Loss	
		No Loss	Loss @ 25%
	7,338 AFY	9,784	7,338

SGPWA UWMP TABLE 2-4						
Agency Name	2018 (1)	2020	2025	2030	2035	2040
BCVWD	9,800	10,860	12,476	14,087	15,886	17,334
City of Banning	500	-	501	1,344	2,237	2,718
YVWD	850	1,809	1,957	2,162	2,391	2,644
Other	-	500	1,600	2,800	3,900	5,000
<b>Total Water Demands</b>	<b>11,150</b>	<b>13,169</b>	<b>16,544</b>	<b>20,393</b>	<b>24,414</b>	<b>27,696</b>

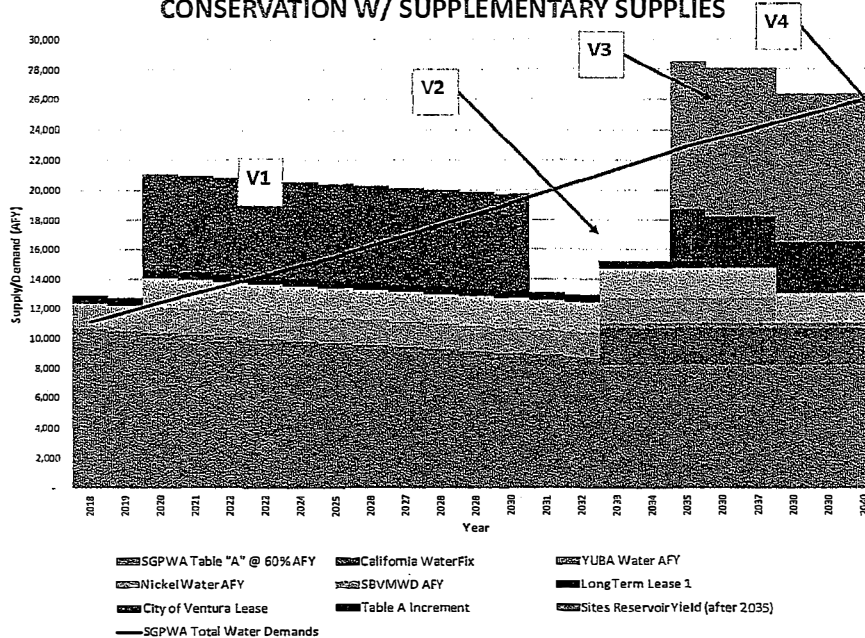
Factors for Landscape and Agency (AFY per EDU)	Original Value	Adjusted Value	Adjustment Factor	Old Homes Conservation Factor
	Banning	0.6459	0.5460	0.8453
YVWD	1.0000	1.0000	1.0000	5%
Other	1.0000	1.0000	1.0000	5%

SGPWA UWMP TABLE 2-3 ADJUSTED FOR CONSERVATION						
Name	2018	2020	2025	2030	2035	2040
Banning	9,800	10,206	11,572	12,934	14,455	15,679
City of Banning	500	-	476	1,319	2,212	2,693
YVWD	850	1,767	1,925	2,120	2,349	2,602
Other	-	500	1,600	2,800	3,900	5,000
<b>Total Water Demands Adj. for Conservation</b>	<b>11,150</b>	<b>12,473</b>	<b>15,573</b>	<b>19,172</b>	<b>22,915</b>	<b>25,973</b>

UWMP WATER TO STORAGE COMPONENT (BCVWD TABLE 26 pg 6-62)						
Agency Name	2018 (1)	2020	2025	2030	2035	2040
BCVWD	(1,000)	(1,000)	(1,500)	(2,000)	(2,500)	(2,500)
City of Banning	-	-	-	-	-	-
YVWD	-	-	-	-	-	-
Other	-	-	-	-	-	-
<b>Water Demand Adjustment for Storage Component</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

Total Water Demand (Adjusted for Conservation and Storage Component)						
	2018	2020	2025	2030	2035	2040
	11,150	12,473	15,573	19,172	22,915	25,973

**Scenario: 3B BASELINE - MINIMUM PLANNED SUPPLY W/  
CONSERVATION W/ SUPPLEMENTARY SUPPLIES**



Surplus/Deficit Water Volumes:	
V1 =	54,386
V2 =	27,700
V3 =	16,795
V4 =	-
V1 - V2 =	26,685
V1 - V2 + V3 - V4 =	43,480

In this scenario, relieving the minimum of the primary planned supplies, with conservation and the securing of supplementary water supplies, the imported water supplies accumulate an large amount of surplus water which easily brings the region through the deficit years until the Sites Project begins providing water. When the Sites Project comes online, even more water is added to the surplus.

**Appendix A  
BEAUMONT-CHERRY VALLEY WATER DISTRICT**

Scenario: **3C** BASELINE - MINIMUM PLANNED SUPPLY W/ CONSERVATION NO STORAGE W/ SUPPLEMENTARY SUPPLIES

Water Supplies						
Variable Table A Water Supply	Start Year	Annual	Ultimate	Start Year	Ultimate	End of Degradation
	Year	Amount	Annual	Year	Annual	
SGPWA SWP Table A @ 60%	2018	10,380 AFY	8,304 AFY	2018	48%	2033

Could Degrade to 48% (8,304)

Non-Variable Water Supplies				
Annual Amount	Start Year	End Year	Table A Recovered Reliability	
California WaterFix	2,422 AFY	2033	2040	14%
YUBA Water AFY	300 AFY	2017	2040	
Nickle Water AFY	1,700 AFY	2017	2037	
SBVMWD AFY	2,000 AFY	2020	2040	
<b>Subtotal</b>	<b>16,802 AFY</b>			

(Could Improve Reliability 14% to 17.62%)

Potential Water Supplies			
Annual Amount	Start Year	End Year	
Long Term Lease 1	500 AFY	2018	2035
City of Ventura Lease	6,500 AFY	2020	2030
Table A Increment	3,500 AFY	2035	2040
<b>Subtotal</b>	<b>10,500 AFY</b>		

Total Supply and Lease **27,302 AFY**

Trans Delta Loss	
No Loss	Loss @ 25%
7,338 AFY	7,338 AFY

SGPWA UWMP TABLE 2-4						
Agency Name	2018 (1)	2020	2025	2030	2035	2040
BCVWD	9,800	10,860	12,476	14,087	15,886	17,334
City of Banning	500	501	1,344	2,237	2,718	
YVWD	850	1,809	1,967	2,162	2,391	2,644
Other	-	500	1,600	2,800	3,900	5,000
<b>Total Water Demands (Lowered water for 2018)</b>	<b>11,150</b>	<b>13,169</b>	<b>16,544</b>	<b>20,393</b>	<b>24,414</b>	<b>27,696</b>

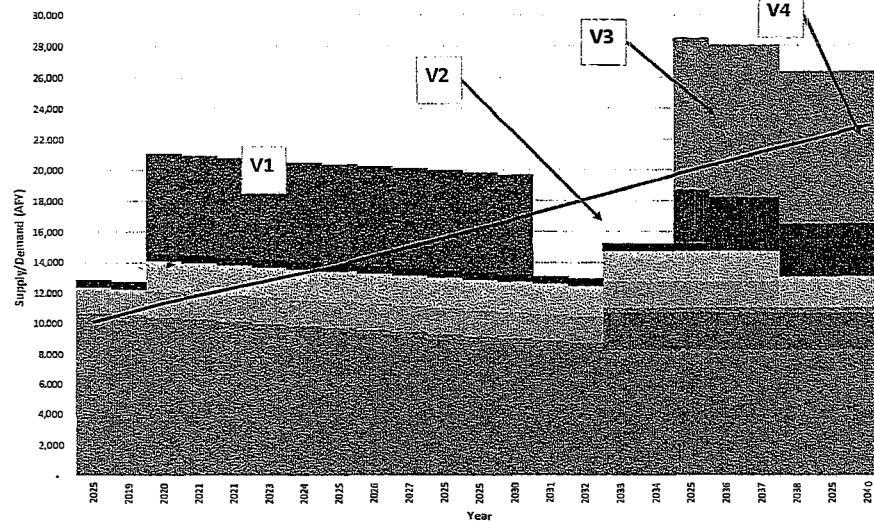
Agency Name	Original Value		Adjusted Value		Old Homes Conservation Factor
	Original Value	Adjusted Value	Adjustment Factor	Old Homes Conservation Factor	
Banning	0.6459	0.5000	0.7741	5%	
City of Banning	1.0000	1.0000	1.0000	5%	
YVWD	1.0000	1.0000	1.0000	5%	
Other	1.0000	1.0000	1.0000	5%	

SGPWA UWMP TABLE 2--ADJUSTED FOR CONSERVATION						
Name	2018	2020	2025	2030	2035	2040
BCVWD	9,800	10,131	11,382	12,629	14,021	15,142
City of Banning	500	-	476	1,319	2,212	2,693
YVWD	850	1,767	1,925	2,120	2,349	2,602
Other	-	500	1,600	2,800	3,900	5,000
<b>Total Water Demands Adj. for Conservation</b>	<b>11,150</b>	<b>12,397</b>	<b>15,382</b>	<b>18,867</b>	<b>22,482</b>	<b>25,437</b>

UWMP WATER TO STORAGE COMPONENT (BCVWD TABLE 6-26, pg 6-62)						
Agency Name	2018 (1)	2020	2025	2030	2035	2040
BCVWD	(1,000)	(1,000)	(1,500)	(2,000)	(2,500)	(2,500)
City of Banning	-	-	-	-	-	-
YVWD	-	-	-	-	-	-
Other	-	-	-	-	-	-
<b>Water Demand Adjustment for Storage Component</b>	<b>(1,000)</b>	<b>(1,000)</b>	<b>(1,500)</b>	<b>(2,000)</b>	<b>(2,500)</b>	<b>(2,500)</b>

Total Water Demand (Adjusted for Conservation and Storage Component)						
Name	2018	2020	2025	2030	2035	2040
<b>Total Water Demand (Adjusted for Conservation and Storage Component)</b>	<b>10,150</b>	<b>11,397</b>	<b>13,882</b>	<b>16,867</b>	<b>19,982</b>	<b>22,937</b>

**Scenario: 3C BASELINE - MINIMUM PLANNED SUPPLY W/  
CONSERVATION NO STORAGE W/ SUPPLEMENTARY SUPPLIES**




Surplus/Deficit Water Volumes	
V1 =	75,019
V2 =	17,223
V3 =	34,705
V4 =	-
V1 - V2 =	57,796
V1 - V2 + V3 - V4 =	92,501

In this scenario, receiving the minimum of the primary planned supplies, with conservation, no storage, and the securing of supplementary water supplies, the imported water supplies accumulate an excessive amount of surplus water which easily brings the region through the deficit years until the Sites Project begins providing water. When the Sites Project comes online, even more water is added to the surplus.

- SGPWA Table "A" @ 60% AFY
- California WaterFix
- YUBA Water AFY
- Nickle Water AFY
- SBVMWD AFY
- Long Term Lease 1
- City of Ventura Lease
- Table A Increment
- Sites Reservoir Yield (after 2035)
- SGPWA Total Water Demands

**A Strategy to Secure and Fund  
Water Supply for the San  
Gorgonio Pass Water Agency to  
Ensure Regional Sustainability to  
the Year 2050**

San Gorgonio Pass Regional Water Alliance  
January 24, 2018  
Presentation by Dan Jagers, BCVWD



**Beaumont-Cherry Valley Water District**  
*Serving the Beaumont, Cherry Valley and environs of Colton*

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**Presentation Outline**

- ▶ BCVWD's analysis regarding SGPWA's water supply and funding Alternatives (White Papers 1 through 5)
- ▶ San Gorgonio Pass Water Agency's role in Regional Water Supply
- ▶ Background of Regional Water Supply Alternatives in the Pass Area and SGPWA's Projected Demands
- ▶ Discussion of SGPWA Planned Primary and Supplementary Water Supply Portfolio
- ▶ BCVWD's research to analyze current demand and supply portfolio and possible funding strategies and planning documents (White Papers 1 to 5)
- ▶ Need for Continued Water Supply Planning
- ▶ Conclusions

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**BCVWD Analysis-SGPWA  
Demand and Supply**

- ▶ BCVWD was requested by the SGPWA to participate in collection of their Capacity Fee for new water supply
- ▶ BCVWD needed to understand the complete water supply portfolio and associated funding strategy prior to proceeding with support of Capacity Fee
- ▶ BCVWD's performed water supply and funding analysis using SGPWA's UWNP as a basis and prepared 4 Board Presentations and 5 White Papers between September 2017 and January 2018 to inform BCVWD's Board on alternatives related to Supply and Funding
- ▶ BCVWD realized early on in the process that this activity must be approached regionally to fully assess the situation and identify the best approach
- ▶ BCVWD is committed to working with Stake Holders to provide the best alternative to meet the Area's Water Supply
- ▶ BCVWD prepared 5 White Papers that set forth our analysis

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### San Gorgonio Pass Water Agency

(From the SGPWA State of the Supply Presentation, September 30, 2016)

- › Created by Legislature in 1961
- › One of 29 State Water Contractors
- › Responsible for Importing Water over 400 miles from Lake Oroville through the State Water Project
- › Water Wholesaler that currently serves Calimesa, Cherry Valley, Beaumont, and Banning
- › Mission: Protect and enhance local water supplies now and for the future

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### San Gorgonio Pass Water Agency

The SGPWA's Service Area encompasses the following local water agencies:

- City of Banning
- Beaumont-Cherry Valley Water District (BCVWD)
- Yucaipa Valley Water District (YVWD)
- South Mesa Water Company (SMWC)
- Cabazon Water District (CWD)
- Banning Heights Mutual Water Company (BHMWC)
- High Valleys Water District (HVWD)
- Mission Springs Water District (MSWD)
- Morongo Band of Mission Indians

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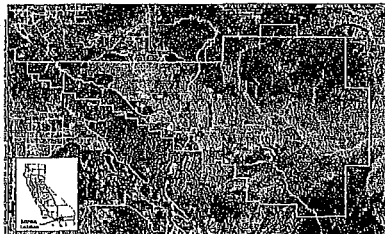


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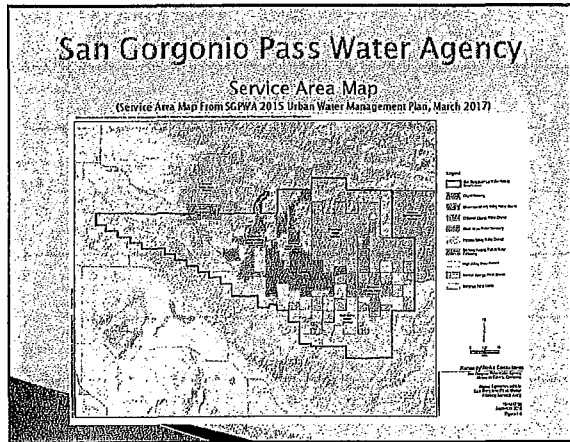
### San Gorgonio Pass Water Agency

#### Service Area Map

(Service Area Map from SGPWA 2015 Urban Water Management Plan, March 2017)




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### SGPWA Projected Demands

(Projected Water Demands From SGPWA 2015 Urban Water Management Plan, March 2017)

**TABLE 2-4  
PROJECTED WATER DEMANDS ON SGPWA (AF)**

Agency Name	2020	2025	2030	2035	2040
BCVWD <sup>(a)</sup>	10,680	12,478	14,087	15,866	17,334
City of Banning <sup>(b)</sup>	-	501	1,344	2,237	2,718
YVWD <sup>(c)</sup>	1,809	1,957	2,162	2,391	2,644
Other <sup>(d)</sup>	800	1,800	2,800	3,900	6,000
<b>Total Water Demands</b>	<b>15,169</b>	<b>18,544</b>	<b>23,363</b>	<b>24,414</b>	<b>27,686</b>

<sup>(a)</sup> BCVWD Demands include Water Banking Demands for drought pooling future growth.  
<sup>(b)</sup> Other Demands are conservative projections of future demand on SGPWA from Agencies within the service area that do not have current demands on the Agency including SMHC, CWD, BIRAWC, MSWD, and Monrovia based of Mission Indios. For the SGPWA 2015 UWMP, this value may increase through time as service area demands are re-evaluated.

› Projected Water Demand sets the stage for Water Supply Needs (very important to fully understand and analyze)

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### SGPWA Water Supply Portfolio

› SGPWA's current and planned water supply comes from the following Primary and Supplementary sources:

**Primary Sources** (significant existing and planned portion of the total SGPWA water portfolio):

- State Water Project (SWP) Current Table "A" Water (SWP @ 60% reliable = 10,380 AFY). Contract ends 2035; needs to be extended to ~2085 (could erode to ~48% in the future)
- California Water Fix (CWF) Increases Table "A" Water Reliability to 62% (10,726 AFY) to 65.62% (11,353 AFY)
- Sites Reservoir Project (Maximum Project Yield of 14,000 AFY to SGPWA and BCVWD) (see BCVWD White Paper No. 1 for explanation of yield parameters) (most likely ~9,748 AFY)



### Primary Water Supply Funding of the SWP, CWF and Sites Projects

If the SGPWA participates in each of these projects, there will be two primary types of annual costs associated with each project:

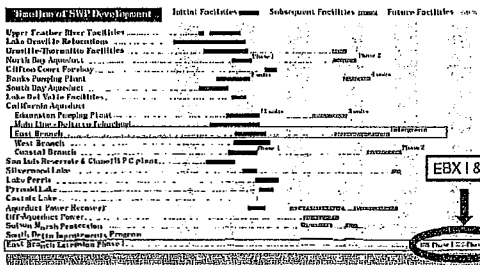
**Bond Debt Service:**

The Capital costs associated with each project are distributed proportionately to each of the State Water Contractors involved via Municipal Bonds. These Bonds have various life terms (typically around 40 years) and are typically issued every year a project is in its construction phase. The Bonds ultimately result in annual charges or debt payments that last for the life term of the Bond.

**Operations and Maintenance (O&M) Costs:**

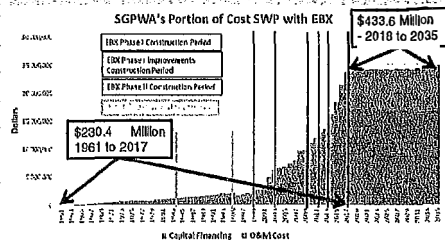
Operations and maintenance costs are accumulated and paid on an annual basis. They typically reach their maximum value once the project becomes fully operational.

### Timeline of the SWP Facilities Development - EBX Compressed Financing/Increased Cost



### State Water Project Projected Capital Cost Bond Debt and O&M Costs for SGPWA

- The SGPWA has been heavily involved in funding the three construction phases of the East Branch Extension Project since 1999.
- The three construction phases of this project have greatly increased the SGPWA Capital Financing Costs for SWP Facilities.
- SGPWA will be paying approximately 24 million dollars a year to fund their participation in the SWP from now to 2035.



### SGPWA Water Supply Portfolio

#### California Water Fix (Delta Tunnel Project)

CWF:

- Improve water quality
- Supply Reliability

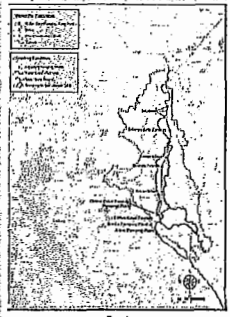


Figure 1  
California Water Fix Location

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### SGPWA Water Supply Portfolio

#### Sites Reservoir (North of Delta Storage)

Sites Reservoir:

- Capture and Store High Flows lost to the ocean

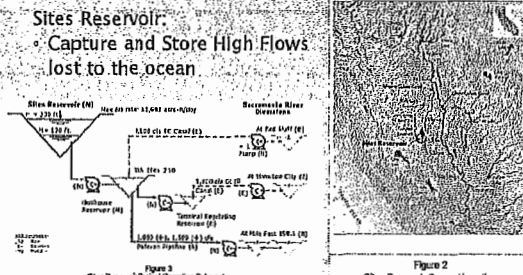


Figure 3  
Sites Reservoir Project Operating Schematic

Figure 2  
Sites Reservoir General Location

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### SGPWA Water Supply Portfolio

#### Supplementary Sources with Different Costs per AF:

- Yuba Accord Water (300 AFY)
- AVEK, Nickel Water (1,700 AFY, 20 year lease with option)
- SBVMWD Water Agreement up to 5,000 AFY (~2,000 AFY)
- Temporary Table "A" Supplies (Short Term Leases)
- City of Ventura Lease Possibility (~6,000 to ~6,500 AFY)
- Other Lease Opportunities
- Limited Term Leases
  - ~500 to ~1,000 AFY
- Possible Transfer of State Water Project Rights/Supplies Subsequent to completion of the California Water Fix
  - ~3,500 AFY

BCVWD White Paper No. 1 (September 2017)

Discussion and Analysis of State Water Project Requirements for SGPWA and BCVWD as of September 2017

- Analysis of the SGPWA's regional needs and BCVWD's Needs
- Projections of SGPWA's anticipated Supply and Demand Needs (Best Case, Average Case, and Worst Case)
- Projections of BCVWD's anticipated Supply and Demand Needs (Best Case, Average Case, and Worst Case) with and without recycled water supply from the City of Beaumont

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BCVWD White Paper No. 1 (September 2017)

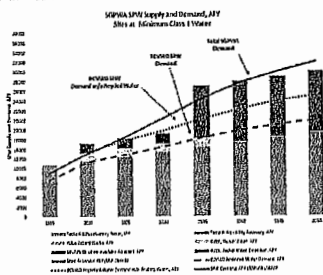


Figure 2  
SGPWA Imported Water Sources and Demands  
(Sites Reservoir at Minimum Class 1 Water)

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BCVWD White Paper No. 1 (September 2017)

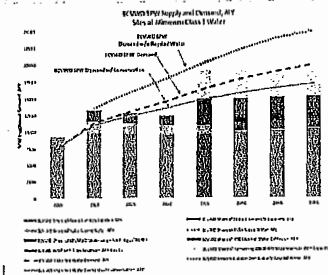


Figure 5  
BCVWD Imported Water Sources and Demands  
(Sites Reservoir at Minimum Class 1 Water)



**BCVWD White Paper No. 3 (December 2017)**

Discussion of SGPWA's Water Supply Portfolio Unit Costs as of December 2017

- Provides an analysis of the SGPWA's water portfolio anticipated Unit Costs (i.e. \$/AF)
- Provides analysis of Water Supply Source Costs for following:

Existing SGPWA Table "A"
Future Table "A" w/o California Water Fix
Future Table "A" with California Water Fix
Sites Reservoir Project
Yuba Accord Water
AVEK/Nickel Water
SBVMWD

**BCVWD White Paper No. 3 (December 2017)**

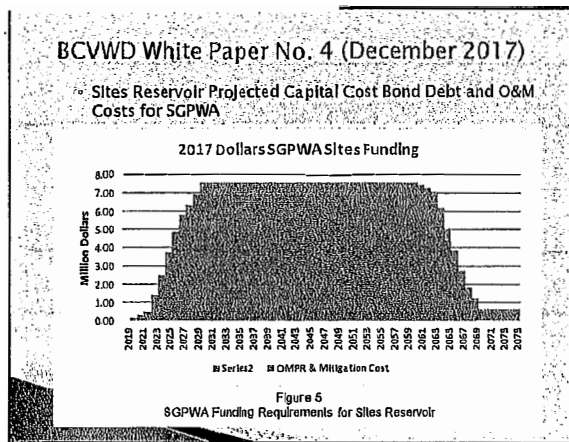
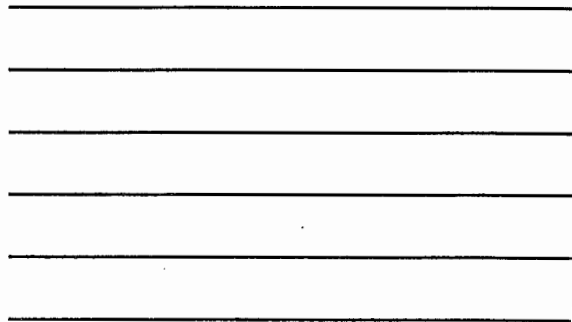
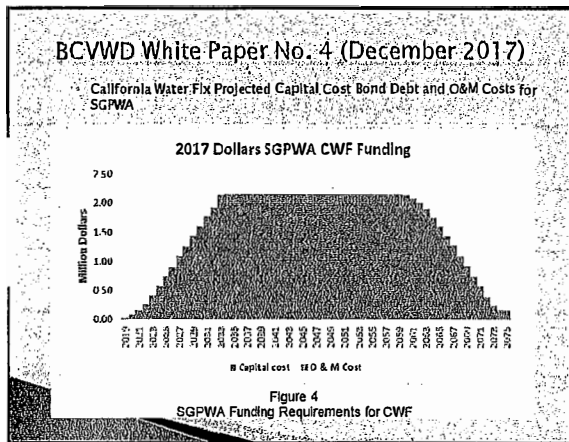
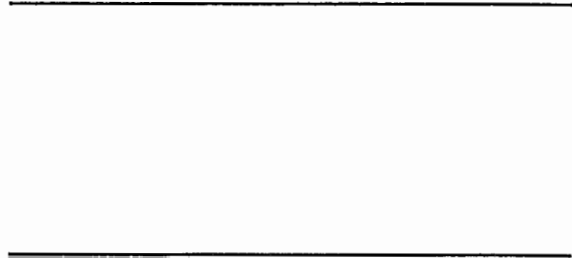
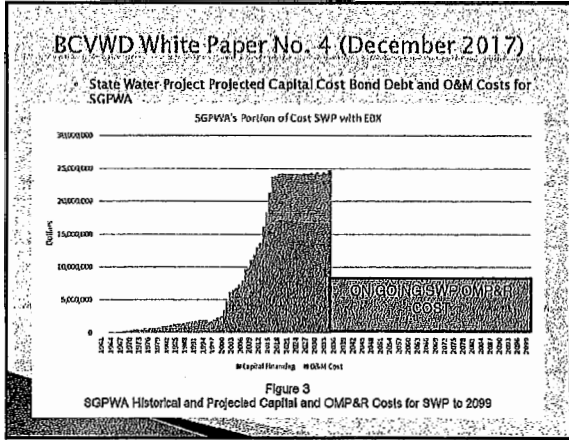
**Table 8  
Summary of Unit Cost and Additional Water Supply for SGPWA**

Water Supply Source	Annual Volume Reliability Factor (AFY)	Reliability Factor		Opportunity for Purchase with Reliability Factor		Probable Cost Range	
		Min.	Max.	Min AFY	Max AFY	Lowest Cost/AF	Highest Cost/AF
Existing SGPWA Table "A"	17,300	80%	00%	10,319	10,319	\$2,220	\$2,220
Future Table "A" w/o California Water Fix	17,300	49%	49%	0,304	0,304	\$2,914	\$2,914
Future Table "A" with California Water Fix	17,300	62%	65.62%	10,715	11,352	\$2,330	\$2,460
Sites Reservoir Project	14,000	75%	100%	7,311	14,000	\$800	\$1,400
Yuba Accord Water	300	100%	100%	300	300	\$305	\$305
AVEK, Nickel Water	1,700	100%	100%	1,700	1,700	\$1,617	\$1,617
SBVMWD	2,000	100%	100%	2,000	2,000	\$500	\$500
Water Supply with CWF, AFY				19,615	20,304		
Blended Cost with CWF						\$1,626	\$1,855
Water Supply with CWF, AFY				22,637	29,262		
Blended Cost with CWF						\$1,606	\$2,007

**BCVWD White Paper No. 4 (December 2017)**

Discussion of SGPWA's Water Supply Funding Requirements as of December 2017

- Provides review of primary water supply costs
- SGPWA Current Revenue (Payment) Requirements
- SGPWA Historic SWP Payments to DWR
- California Water Fix Anticipated Project Costs
- Sites Reservoir Anticipated Project Costs
- Summary of SGPWA Planned Future Funding Requirements





**BCVWD White Paper No. 5 (January 2018)**

**SGPWA Alternative Sources of Funding**

- Property Tax Revenue
- SGPWA Rate/AF ("water rates")
- SGPWA's Share of Riverside County's 1% property tax which is shared with other agencies
- Capacity fees charged to new developers
- Bonds
  - Assessment District Bonds covering new development areas only
  - Revenue Bonds repaid with pledged water rates over time
  - General Obligation Bonds (2/3 voter approval required)
  - Community Facilities District Bonds (Mello-Roos)
- Combinations of the above

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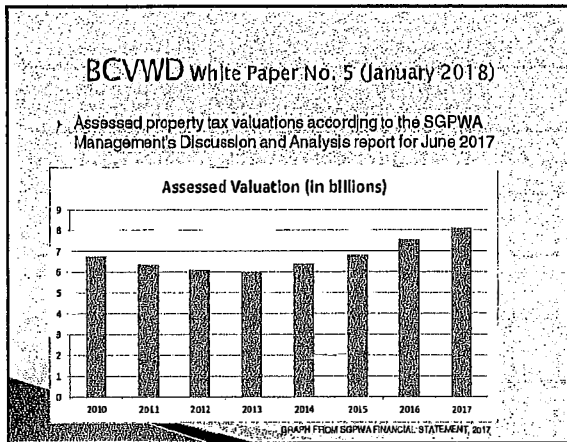
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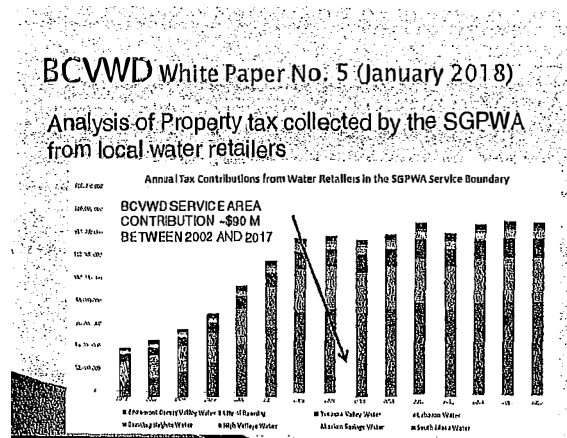
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### BCVWD White Paper No. 5 (January 2018)

BCVWD Analysis of Future Possible Property Tax Revenue from Ongoing and Future Development

BCVWD performed a tax revenue projection based upon the following assumptions:

- Current Undeveloped Land Value: \$50,000 per Acre
- Current Average New House Value in Beaumont: \$350,000
- # of Houses Per Acre of Land: 4
- Tax Rate: 0.1825%
- # of New Houses per year: 650
- Inflation of New Home Value: 2% (Probably Conservative)
- Existing Home Assessed Value Increase: 2% (Prop 13 limits)
- Existing Land Value Assessed Value Increase: 2% (Prop 13 limits)

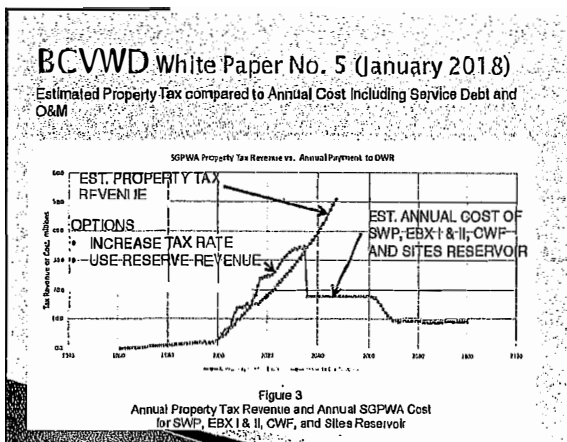
### BCVWD White Paper No. 5 (January 2018)

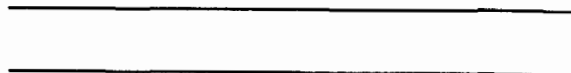
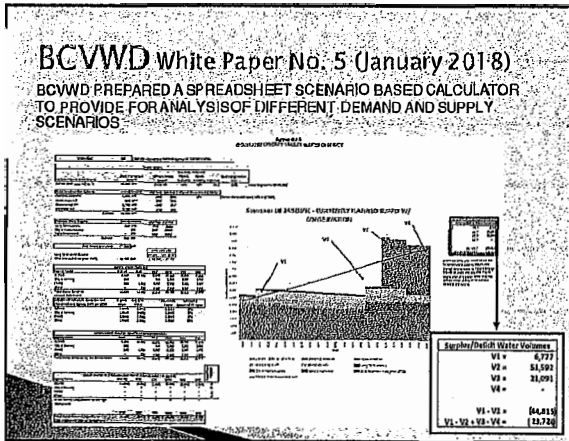
SGPWA Total Property Tax Revenue Projected Forward

Year	SGPWA Total Property Tax Revenue	Annual Payment to DWR	Annual Property Tax Revenue	Annual Payment to DWR	Annual Property Tax Revenue	Annual Payment to DWR	Annual Property Tax Revenue	Annual Payment to DWR	Annual Property Tax Revenue	Annual Payment to DWR
2017	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
2018	1,050,000	1,050,000	1,050,000	1,050,000	1,050,000	1,050,000	1,050,000	1,050,000	1,050,000	1,050,000
2019	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000
2020	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000
2021	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
2022	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000
2023	1,300,000	1,300,000	1,300,000	1,300,000	1,300,000	1,300,000	1,300,000	1,300,000	1,300,000	1,300,000
2024	1,350,000	1,350,000	1,350,000	1,350,000	1,350,000	1,350,000	1,350,000	1,350,000	1,350,000	1,350,000
2025	1,400,000	1,400,000	1,400,000	1,400,000	1,400,000	1,400,000	1,400,000	1,400,000	1,400,000	1,400,000
2026	1,450,000	1,450,000	1,450,000	1,450,000	1,450,000	1,450,000	1,450,000	1,450,000	1,450,000	1,450,000
2027	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
2028	1,550,000	1,550,000	1,550,000	1,550,000	1,550,000	1,550,000	1,550,000	1,550,000	1,550,000	1,550,000
2029	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000
2030	1,650,000	1,650,000	1,650,000	1,650,000	1,650,000	1,650,000	1,650,000	1,650,000	1,650,000	1,650,000
2031	1,700,000	1,700,000	1,700,000	1,700,000	1,700,000	1,700,000	1,700,000	1,700,000	1,700,000	1,700,000
2032	1,750,000	1,750,000	1,750,000	1,750,000	1,750,000	1,750,000	1,750,000	1,750,000	1,750,000	1,750,000
2033	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000
2034	1,850,000	1,850,000	1,850,000	1,850,000	1,850,000	1,850,000	1,850,000	1,850,000	1,850,000	1,850,000
2035	1,900,000	1,900,000	1,900,000	1,900,000	1,900,000	1,900,000	1,900,000	1,900,000	1,900,000	1,900,000
2036	1,950,000	1,950,000	1,950,000	1,950,000	1,950,000	1,950,000	1,950,000	1,950,000	1,950,000	1,950,000
2037	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000
2038	2,050,000	2,050,000	2,050,000	2,050,000	2,050,000	2,050,000	2,050,000	2,050,000	2,050,000	2,050,000
2039	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000
2040	2,150,000	2,150,000	2,150,000	2,150,000	2,150,000	2,150,000	2,150,000	2,150,000	2,150,000	2,150,000
2041	2,200,000	2,200,000	2,200,000	2,200,000	2,200,000	2,200,000	2,200,000	2,200,000	2,200,000	2,200,000
2042	2,250,000	2,250,000	2,250,000	2,250,000	2,250,000	2,250,000	2,250,000	2,250,000	2,250,000	2,250,000
2043	2,300,000	2,300,000	2,300,000	2,300,000	2,300,000	2,300,000	2,300,000	2,300,000	2,300,000	2,300,000
2044	2,350,000	2,350,000	2,350,000	2,350,000	2,350,000	2,350,000	2,350,000	2,350,000	2,350,000	2,350,000
2045	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000
2046	2,450,000	2,450,000	2,450,000	2,450,000	2,450,000	2,450,000	2,450,000	2,450,000	2,450,000	2,450,000
2047	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000

19,500 New Homes in 2047

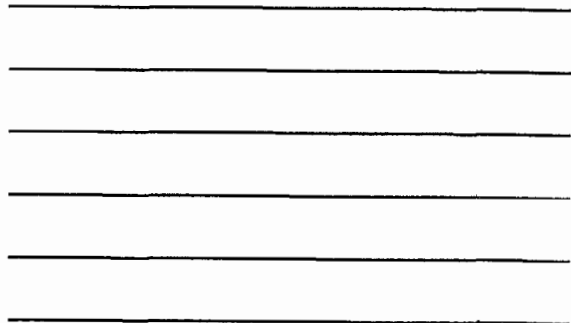
Over \$50 Million at Current Tax Rate of 0.1825/\$100 AV





**Conclusions**

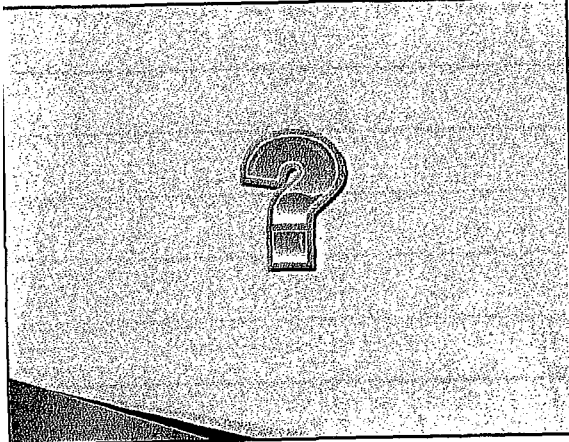
- ▶ PLANNING OF WATER SUPPLY, DEMANDS, AND FUNDING AS WELL AS MANAGEMENT OF GROUNDWATER STORAGE IS CRITICAL FOR SUCCESS-ONGOING ANALYSIS AND ADJUSTMENTS WILL BE REQUIRED
- ▶ California Water Fix and/or Sites Reservoir are critical to meeting Regional long term water demands.
- ▶ The SGPWA must continue to work to extend State Water Contract to 2085.
- ▶ A complete strategy for funding of the water portfolio should be prepared to set forth a comprehensive strategy for new water including the following components:
  - Capacity fees
  - Rates
  - Tax based contributions
  - Others



**Conclusions (Continued)**

- ▶ Development of local water resources is imperative to minimizing reliance on imported water supplies
  - Recycled Water
  - Storm Water Capture
  - Non-Potable Groundwater
- ▶ Additional water supplies appear necessary and capacity fees, rates, and other methods of funding may need to be adjusted to supplement the tax based funding in the coming years.





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