



# Santa Clara Valley Water District

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**Item No.:** 5.1.

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## BOARD AGENDA MEMORANDUM

### **SUBJECT:**

Update to the California WaterFix Business Case Analysis.

### **RECOMMENDATION:**

- A. Receive an update on and discuss the California WaterFix Business Case; and
- B. Receive, discuss and consider adopting a draft policy statement for the State Water Resources Control Board (SWRCB) Proceedings.

### **SUMMARY:**

This item provides an opportunity for the Board and the public to receive information and discuss ongoing Delta planning efforts that are critical both to restoring the health of the Delta ecosystem, and to ensuring the long-term reliability of water supplies conveyed through the Delta.

At the February 22, 2016 Bay Delta Conservation Plan (BDCP) Ad Hoc Committee meeting, staff presented the first phase of a comparison of costs and benefits of several water supply alternatives to the California WaterFix (WaterFix) (Attachment 1). In this updated analysis, the comparison is expanded to include (1) analysis of purchasing additional “permanent” contract or water right water as a new potential alternative to the WaterFix; (2) a breakdown of the cost components for the additional conservation and the purified water program options, as requested by members of the BDCP Ad Hoc Committee on February 22; and (3) a separate evaluation of WaterFix performance without baseline potable reuse compared to 45,000 acre-feet (AF) of potable reuse.

Staff plans to bring further updates to the Board on the WaterFix economic analysis once further information becomes available, including proposed specific methods for allocation of costs among WaterFix participants. The Board will also receive updates from staff on the economic analysis of the Expedited Purified Water Program once substantial work has been completed in the preliminary engineering phase of that program. Further, staff plans to present the Board with an economic analysis of various storage project alternatives in December 2016.

This agenda item also describes the State Water Resources Control Board’s (State Water Board’s) process to review the petition submitted by the California Department of Water Resources (DWR)

and U.S. Bureau of Reclamation (Reclamation) for a change in point of diversion in order to divert water from the WaterFix proposed intakes on the Sacramento River. The District submitted a notice of intent to make a policy statement at the hearing that begins July 26, 2016. A draft District policy statement (Attachment 5) is presented for Board consideration.

## **Overview of Agenda Memo**

- A. Background
  - A.1 Water Master Plan
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  - A.3 Water Master Plan Update
- B. Expanded California WaterFix Business Case Analysis
  - B.1 Purchase of additional imported water contract supply
  - B.2 Cost Comparison
- C. Cost of Additional Water Conservation and Potable Reuse Options
- D. California WaterFix without Future Baseline Potable Reuse
- E. State Water Board Hearing on Petition for Change in Point of Diversion
  - E.1 State Water Board Petition Review Process
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## **A. Background**

On February 22, 2016, staff provided to the BDCP Ad Hoc Committee an analysis of the WaterFix compared to other water supply options in the context of the 2012 Water Master Plan (Water Master Plan) findings and recommendations. The future baseline upon which each option was built incorporated the mix of conservation, non-potable and potable reuse, and infrastructure improvements identified in the Water Master Plan. The analysis indicated that the future baseline resources alone, without improvements in the reliability of imported supplies or development of alternatives to compensate for reductions in imported supplies, would be inadequate to meet the District's water supply reliability targets in the future. The effectiveness of the WaterFix and three alternatives in meeting 13 water supply criteria was evaluated. A summary of this evaluation is provided in the February 22 BDCP Ad Hoc Committee agenda memo, which is provided in Attachment 1.

As described below, staff has expanded upon the February 22 analysis. A new option of securing additional permanent contract or water right supply is analyzed and compared to the February 22 alternatives, and additional detail is provided regarding the cost of conservation and potable reuse options. In a separate analysis, the WaterFix is also compared to 45,000 AF of potable reuse.

All water supply options are evaluated in the context of the Water Master Plan and incorporate key components of that plan.

### **A.1 Water Master Plan**

Board Policy E-2.1 states, "Current and future water supply for municipalities, industries, agriculture,

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and the environment is reliable,” and Policy EL-4.2 states, “[A Board Appointed Officer (BAO) shall] spend in ways that are cost-efficient.” To address these policies, staff developed the Water Master Plan, which the Board adopted in October 2012. The Water Master Plan presents the District’s strategy for providing a reliable and sustainable water supply for Santa Clara County through 2035 (Policy E-2.1) and ensuring new water supply investments are effective and efficient (Policy EL-4.2).

The analysis for the Water Master Plan found that:

1. The County’s existing water supplies are insufficient to meet future water needs, primarily during droughts. Reserves will be depleted during extended droughts and short-term water use reductions of up to 30 percent will be needed to avoid undesirable results related to groundwater depletion such as land subsidence. Additional investments are needed to address these shortfalls.
2. The District needs to continue to make investments to maintain, restore, and replace its existing assets, some of which were constructed more than 75 years ago.

The Water Master Plan provides a strategy for investments in new water supply projects and programs that builds on the District’s existing assets and avoids making investments that are unnecessary or premature. The District has been following this strategy since it was adopted by the Board in 2012.

#### *A.2 Water Master Plan Strategy*

The Water Master Plan Strategy is comprised of three elements: 1) secure existing supplies and infrastructure, 2) optimize the use of existing supplies and infrastructure, and 3) increase recycling and conservation.

Element 1 - Secure Existing Supplies and Infrastructure: Securing the existing water supply system is the most critical element of the water supply strategy, because it encompasses most of the future water supply and is the foundation of future water supply investments. These foundational supplies include completing several capital improvement projects, increasing non-potable reuse to 30,000 acre-feet per year (AFY) by 2035, and increasing water conservation savings to 99,000 AFY by 2035. These components are incorporated into the alternatives and the Future Baseline evaluated for the WaterFix business case (see Attachment 1). Element 1 of the Water Master Plan also includes the priority of securing Delta-conveyed imported water supplies of about 170,000 AFY. The WaterFix is being considered as a project that has the potential to achieve this priority. Element 1 also includes securing local water rights through the Fisheries and Aquatic Habitat Collaborative Effort (FAHCE) process.

Element 2 - Optimize the Use of Existing Supplies and Infrastructure: Optimizing the use of existing supplies and infrastructure leverages the investments the District has already made in water supply reliability by increasing the system’s flexibility in delivering water to various facilities, increasing the ability to use wet year water, and reducing operational costs. These components are incorporated into the alternatives and Future Baseline evaluated for the WaterFix business case.

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Element 3 - Increase Recycling and Conservation: Additional recycling and conservation will bridge the gap between existing system capability and future demands, as well as manage risks from climate change and imported water uncertainties. This element includes developing 20,000 AFY of potable reuse capacity and is included in the alternatives and future baseline evaluated for the WaterFix business case.

Implementing the Water Master Plan will result in meeting future growth in the County's water needs through water use efficiency, and reducing the County's reliance on Delta-conveyed imported water from about 40 percent to 30 percent.

### *A.3 Water Master Plan Update*

The Board adopted the 2015 Urban Water Management Plan (UWMP) on May 24, 2016. The UWMP presents updated water supply and demand projections and evaluates water supply reliability based on those updated projections. The main change in the projections from the 2012 Water Master Plan was a decrease in drought supplies. The 2015 UWMP projection of average annual supplies during the 1987 to 1992 drought, based on 2035 demands, is approximately 26,000 AFY less than the projection in the 2012 Water Master Plan. A decrease was observed for all sources of supply, with the exception of recycled and purified water. As a result, the reliability analysis for the 2015 UWMP found that, even with implementation of the 2012 Water Master Plan, the District would be unable to meet the reliability target stated in District BAO Interpretation Strategy S 2.4, which states, "[d]evelop water supplies designed to meet at least 100 percent of average annual water demand identified in the District's Urban Water Management Plan during non-drought years and at least 90 percent of average annual water demand in drought years." In extended droughts, supplies are insufficient to meet 90 percent of average annual water demand. Staff will be evaluating projects and programs for meeting the shortfall as part of the Water Master Plan update scheduled to be completed in 2017.

The Water Master Plan update will consider, consistent with Board direction, incorporation of all or some of the elements of the Expedited Purified Water Program, additional long-term water conservation savings, additional groundwater recharge, stormwater capture and reuse, additional transfers/dry year options, storage, and the WaterFix. Combinations of these projects and programs will be evaluated under a variety of scenarios ranging from a low demand, high imported water scenario to a high demand, low imported water scenario. It is anticipated that the Water Master Plan update will recommend projects and programs that perform well under a variety of scenarios and provide for phasing in new investments in response to changing conditions and needs. The Water Master Plan update will be informed by the WaterFix economic analysis, ongoing evaluation of local, regional, and statewide storage projects, and additional analyses of the Expedited Purified Water Program. Staff is currently planning to provide an evaluation of potential storage projects to the Board in December and a discussion of the Expedited Purified Water Program Planning to the Board on multiple occasions through early 2017.

## **B. Expanded California WaterFix Business Case Analysis**

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**B.1 Purchase of Additional Imported Water Contract Supply**

The February 22 analysis (Attachment 1) included the Additional Transfer Supplies Option, which is generally predicated upon short-term or annual water purchases. In addition, staff evaluated an option involving acquiring long-term or permanent contractual water supplies (Additional Contract Supply Option). A hypothetical example is the purchase of additional State Water Project (SWP) contract supply. This option is hypothetically defined as the purchase of 64,000 AF of additional SWP Table A supply from another SWP contractor south of the Delta. Over the past several decades there have been a number of instances in which one SWP contractor south of the Delta purchased additional contract supplies from another. The approval process is typically less complex than purchases outside the SWP contractual environment, and there are no losses across the Delta associated with this type of transfer. However, as with the District's existing Table A supplies, the additional contract supply would be subject to reduction consistent with the annual SWP allocation. State Water Board approval is not required as point of delivery, place of use and purpose of use have already been established for each party entering an agreement. For this option, staff assumes that the additional contract supply would be secured from a willing seller and be subject to approval by the DWR under the terms and conditions contained in the District's SWP Water Supply Contract. The additional supply would increase the District's maximum Table A amount from 100,000 AF to 164,000 AF. The supply would be conveyed through the South Bay Aqueduct and be subject to the same Delta regulations as the District's current SWP contract supply.

Analysis of this option incorporates the same future baseline assumptions used in the February 22 alternatives analysis (i.e., the Future Baseline). As described in Attachment 1, the Future Baseline assumptions include 20,000 AFY of potable reuse capacity, 30,000 AFY of non-potable recycling, 99,000 AFY of water conservation savings, and 12,000 AF of transfers in critical years. The Future Baseline also assumes that new regulatory criteria affecting SWP and Central Valley Project (CVP) deliveries would be imposed (referred to as the High Outflow Scenario). Options are analyzed for demand year 2035.

The alternatives Additional Conservation, Additional Potable Reuse, and Additional Transfers analyzed and discussed below are so named to distinguish them from the amounts of conservation, potable reuse, and transfers incorporated in the Future Baseline.

**Results:**

All water supply options are evaluated using 13 water supply criteria described in Attachment 2. The results of the analysis for the Additional Contract Supply Option relative to the previously evaluated criteria are summarized in Attachment 3 and in Figures 1 through 4. The Additional Contract Supply Option is compared to the WaterFix and the three potential alternatives presented on February 22: (1) up to 25,000 AFY of additional indirect potable reuse (IPR); (2) 32,000 AFY of additional water conservation savings by 2035; and (3) 31,000 AF of additional transfers in critical years and 38,000 AF of transfers in dry years.

**Criteria Evaluation:**

As shown in Figures 1 through 4, the Additional Contract Supply Option effectively meets the annual

water supply targets identified in criteria 1 and 2. It also satisfies criterion 3 by ensuring that storage in Semitropic is greater than zero in at least 95% of years modeled; however, storage levels are not as high as they are with the California WaterFix High Outflow Scenario. This analysis indicates that the additional imported supplies secured through this option may effectively offset the projected decreases in imported supplies from potential increased regulatory restrictions. However, the option fails all other criteria; it does not address many of the risks facing existing imported supplies, nor does it improve the environment or water quality. The risk of impact from salinity intrusion from sea level rise and levee failure events would remain unchanged. This option does not reduce reliance on the Delta or provide Statewide benefits.

*Other Considerations:* There have been several purchases by others of permanent SWP contract supply in the last twenty-five years in quantities ranging from less than a thousand acre-feet to 41,000 AF. Costs have been increasing, reaching close to \$6,000 per AF several years ago. It is not uncommon for a proposed permanent transfer of SWP supply to meet stiff local opposition in the service area of the water being transferred. In comparison, the purchase of *appropriative water rights* faces significantly greater challenges and, possibly because of this, it appears there have been very few significant purchases of these types of rights in recent decades. Records of such transfers are not readily available and further research would be required to identify and describe them. A purchased water right could be subject to potentially significant losses during conveyance to the buyer. For instance, if the water right water was originally used to irrigate crops and the sale of the water right would result in fallowing of land to free up the water for conveyance to the buyer, the transferable portion of the water supply would most likely be limited to that portion that would have evapotranspired during crop irrigation. If the water right supply must be conveyed across the Delta, additional carriage water losses of roughly 20 to 30% would be imposed as well. Depending upon the type of water right, approval may be needed from the State Water Board to change the place of use of the water, lengthy California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) analysis may be required, and regulatory agencies -- not the buyer or the seller -- would determine the portion of the purchased right that may be conveyed to the buyer. If the purchased water would pass through the Delta, approval would also be required from the Delta Stewardship Council, which would evaluate the proposed permanent transfer for consistency with the Delta Plan, including an evaluation of whether the buyer is also reducing reliance upon the Delta. Counties and local agencies from where the water would be sourced have historically attempted to block transfers, and adjacent landowners and water agencies have expressed strong political opposition to the concept of permanent transfers outside of the area of origin.

## **B.2 Cost Comparison**

The cost comparison in Section A.2.2 of Attachment 1 is expanded in Table 1 below to include the Additional Contract Supply Option. Capital and O&M costs and costs per acre-foot of yield for the various alternatives are compared in the updated tables below. An estimate of incremental cost increases to the District's M&I groundwater charges, SWP tax, and average household costs are also provided for each option for fiscal year 2029. See Section A.2.2 in Attachment 1 and the footnotes in the tables for more details about the procedure used in the cost analysis. All costs are estimates based on the best information available. Actual costs may vary.

**Table 1. Fully financed capital and O&M costs for WaterFix and Alternatives**

Option	Undiscounted Cost (\$ millions)			Present Value Cost (\$ millions)		
	Capital	O&M	Total Cost	Capital	O&M	Total PV Cost
<b>WaterFix - SCVWD share:</b>						
• Low cost allocation	1,065	425	1,490	390	80	470
• High cost allocation	2,955	640	3,595	1,080	125	1,205
• Conveyance pumping allocation	1,615	485	2,100	590	95	685
<b>Additional Potable Reuse (a)</b>	1,100	905	2,005	520	295	815
<b>Additional Conservation (b)</b>	0	1,545	1,545	0	615	615
<b>Additional Transfers (c)</b>	0	1,825	1,825	0	450	450
<b>Additional Contract Supply (d)</b>	850	1,875	2,725	410	465	875

- (a) Costs for the Additional Potable Reuse option assume the following:
- 1) The total capital cost to provide 45,000 AFY of potable reuse is \$945 million based on the 2014 South Bay Water Recycling Master Plan. Approximately two-thirds of the fully financed costs are shown in Table 1, which represents the costs allocated to provide 25,000 AFY of additional potable reuse capacity on top of the 20,000 AFY in the Water Master Plan. These costs are in the process of being re-evaluated based on detailed engineering analysis.
  - 2) The financing plan assumes that 70% of capital costs will be financed through three series of tax-exempt, fixed-rate long term bond issuances in 2017, 2020, and 2022, and the remaining 30% of capital costs, as well as the annual O&M costs, will be paid as incurred from water utility revenues.
  - 3) Each series of bonds is assumed to be amortized over 30 years at interest rates ranging from 3.9% to 5.5% which is consistent with the interest rate assumptions used for developing the FY 2016-17 long-term forecast and budget for debt service for the Water Utility fund.
- (b) The costs of the Additional Conservation and Additional Transfers options are considered O&M costs and are not financed.
- (c) In order to ensure comparable costs in present value, a discount rate of 4.5% is used for the WaterFix to reflect the project's assumed 2% rate of inflation, while a discount rate of 5.5% is used for the other options consistent with the District's standard assumption of a 3% rate of inflation for local projects. It is not appropriate to compare total undiscounted costs because these costs are summed over different time frames; however, the present value calculation discounts each option to 2016 and results in cost estimates that can be compared.
- (d) The capital cost of the Additional Contract Supply option includes the seller's purchase price and DWR's one-time retroactive charge, 70% of which are assumed to be financed over 30 years. The O&M cost represents the District's additional obligation for the seller's portion of prospective SWP costs for the next 50 years.

**Table 2. Total costs adjusted to reflect cost savings from partial optimization of water supplies (a)**

Option	Undiscounted Costs (g)			Present Value (g)		
	Total Cost (\$millions)	Reduction in O&M Cost (\$ millions)	Adjusted Cost (\$ millions)	Total Cost (\$millions)	Reduction in O&M Cost (\$ millions)	Adjusted Cost (\$ millions)
<b>WaterFix - SCVWD share (b)</b>						
<b>Low cost allocation</b>	1,490	(435)	1,055	470	(80)	390

High cost allocation	3,595	(435)	3,160	1,205	(80)	1,125
Conveyance pumping allocation	2,100	(435)	1,665	685	(80)	605
Additional Potable Reuse (c)	2,005	(120)	1,885	815	(50)	765
Additional Conservation (d)	1,545	(315)	1,230	615	(110)	505
Additional Transfers (e)	1,825	(135)	1,690	450	(35)	415
Additional Contract Supply (f)	2,725	(290)	2,435	875	(70)	805

- (a) Computer modeling achieves partial optimization of the county's water supply portfolio and costs, but further refinement is needed to fully optimize costs and yields.
- (b) The WaterFix secures additional imported supplies above the Future Baseline that reduce the need for indirect potable reuse in the model. The resulting reduction in indirect potable O&M expense offsets the O&M cost of the WaterFix option by roughly \$435 million, undiscounted.
- (c) The Additional Potable Reuse option is not fully utilized because less water is needed in wetter years and when groundwater levels are high. Therefore, the total cost that reflects maximum water production is reduced accordingly. Staff are evaluating alternatives to more fully utilize the full capacity across different hydrological conditions.
- (d) Additional Conservation results in a reduced need for indirect potable reuse in the model, with corresponding reductions in operating costs of roughly \$315 million, undiscounted.
- (e) Additional Transfers reduce the need for indirect potable reuse in the model, with corresponding reductions in operating costs of \$135 million, undiscounted.
- (f) The Additional Contract Supply option reduces the need for indirect potable reuse in the model, with corresponding reductions in operating costs of \$290 million, undiscounted.
- (g) It is not appropriate to compare the undiscounted total costs because these costs are summed over different time frames; however, the present value calculation discounts each option to 2016 and results in cost estimates that can be compared. Costs are rounded to the nearest \$5 million.

**Table 3. Estimated cost per acre-foot of water supply for WaterFix and alternatives**

Option	Potential Average Project Yield (AF per year)	Average Incremental Portfolio Yield (HOS) (AF per year)	Total Cost per AF Potential Yield (\$/AF)		Adjusted Cost per AF Portfolio Yield (\$/AF)	
			Undiscounted	Present Value (f)	Undiscounted (f)	Present Value (f)
WaterFix - SCVWD share:	40,000	28,000 (a)				
• Low cost allocation			930	295	940	350
• High cost allocation			2,245	755	2,820	1,005
• Conveyance pumping allocation			1,315	430	1,485	540
• Additional Potable Reuse	25,000	15,000 (b)	2,675	1,085	4,190	1,700
• Additional Conservation (b)	15,000	15,000 (c)	3,030	1,205	2,410	990

• Additional Transfers	13,000	11,000 (d)	2,810	690	3,075	755
Additional Contract Supply	27,000	20,000 (e)	2,020	650	2,435	805

- (a) Water Fix deliveries are offset by a roughly 12,000 AF per year reduction in future baseline indirect potable reuse and other local supplies such that the overall water supply portfolio is increased by 28,000 AF per year instead of 40,000 AF per year above the Future Baseline. The portfolio yield is larger than that of the other options because the WaterFix produces additional supplies that can be stored in the Semitropic groundwater bank. Other options were designed to produce enough water to only meet water supply criterion 1 (see Attachment 2). Expanding or combining the non-WaterFix alternatives would be needed to produce additional supplies to maintain storage in the Semitropic groundwater bank without the WaterFix.
- (b) Recent updates to the Additional Conservation costs result in slight differences from cost numbers shown in Attachment 1. The model reduces Additional Potable Reuse production in wetter years when local surface supplies are available and in years when groundwater levels are high to minimize costs and avoid “wasting” water through unnecessary operations, resulting in a lower overall water supply portfolio increase relative to the Future Baseline than in the WaterFix option. This scenario was partially optimized; additional modeling is being conducted as part of the Expedited Purified Water Program to evaluate methods of increasing the incremental portfolio yield. In addition, potential partnerships with regional agencies are being evaluated.
- (c) Additional Conservation savings and costs differ slightly from those in Attachment 1 as a result of updated analyses. The Additional Conservation option is designed to increase the amount of conservation gradually over 20 years to achieve 32,000 AF per year by year 2035. The average annual yield of the Additional Conservation option is roughly 15,000 AF per year over the 35 year period. Note that while the potential project yield and average portfolio yields are the same, the costs per AF differ because the adjusted total costs used to determine partially optimized unit costs are less than the total project costs, as shown in Table 2.
- (d) Additional Transfers are secured only in dry and critically dry years, resulting in a lower average annual yield. This option assumes that 38,000 AF of transfers is secured in dry years and 31,000 AF in critically dry years.
- (e) Without the WaterFix, the long term SWP allocation under the High Outflow Scenario is estimated to be 42%. This results in an average project yield of 27,000 AF per year for the Additional Contract Supply option. Additional Contract Supply potential deliveries are offset by a 7,000 AF per year decrease in future baseline potable reuse and other local supplies such that the overall portfolio yield is 20,000 AF per year.
- (f) Both undiscounted and present value costs are normalized by the total amount of water produced during the project time period. Time periods for the options are as follows: WaterFix - 50 years (10 years construction, 40 years operation); Additional Potable Reuse - 35 years (5 years construction, 30 years operation), Additional Conservation - 35 years, Additional Transfers and Additional Contract Supply - 50 years. Unit costs are rounded to the nearest \$5/AF.

Table 4 below shows the estimated increase in groundwater charge, average SWP tax, and average cost per household per month for each option for FY29.

**Table 4. Groundwater charge and SWP tax increase for WaterFix and alternatives**

Incremental Cost Increase (FY 2028-29)(a)							
	WaterFix Cost Scenario			Additional Potable Reuse	Additional Conservation (b)	Additional Transfers (c)	Additional Contract Supply (d)
	Low	High	Conveyance Pumping	Incremental to Future Baseline			

<b>M&amp;I groundwater charge increase (\$/AF)</b>							
North County	66	316	137	436	306	144	0
South County	3	229	64	0	60	76	0
<b>SWP tax increase, average single family (\$/yr)</b>							
North County	28	22	27	0	0	0	112
South County	22	17	21	0	0	0	86
<b>Total increase per average household (\$/month)</b>							
North County	5	13	7	15	11	5	9
South County	2	9	4	0	2	3	0

- (a) Analysis of all options assumes maximum O&M costs associated with 100% utilization.
- (b) Additional Conservation option is projected to result in 9,600 AF per year of water use reduction by FY 2028-29.
- (c) Additional Transfers option would require large spikes in operations expenditures in a given year that could lead to water rate volatility.
- (d) The South County total increase per average household nets to zero since the increase in SWP tax would be offset by a corresponding decrease in the groundwater production charge.

### **C. Cost of Conservation and Potable Reuse Options**

In response to questions raised during the February 22, 2016 BDCP Ad Hoc Committee meeting, the following provides additional information related to elements of the 20,000 AFY potable reuse project in the Future Baseline and a breakout of costs for individual programs that make up the 32,000 AFY Additional Conservation alternative.

#### ***C.1. Cost of Potable Reuse Elements***

The alternatives analysis in Attachment 1 and in Section B included 20,000 AFY of potable reuse in the Future Baseline; costs for this baseline component was not included in the cost tables above but are provided in Table 5 below. The 20,000 AFY potable reuse component, as currently envisioned, includes an expansion of the Silicon Valley Advanced Purification Center, pipelines to the Los Gatos recharge ponds, and an allocation of planning costs. The actual configuration of the project may change. In addition, more detailed engineering is currently being conducted which will refine the cost estimates. Table 5 lists the undiscounted and present value costs of the Future Baseline potable reuse project. Also shown for comparison are the costs of the incremental 25,000 AFY Additional Potable Reuse option analyzed in Attachment 1 as a potential alternative to the WaterFix. The combination of the baseline and incremental components yield a total of 45,000 AF per year of potable reuse, with total costs described in Table 5. These costs are also being refined based on current engineering work underway.

**Table 5. Capital and O&M costs for Future Baseline and Incremental Indirect Potable Reuse Alternatives**

Activity	Undiscounted Cost (\$ millions)			Present Value Cost (\$ millions)		
	Capital	O&M	Total Cost	Capital	O&M	Total PV Cost
Future Baseline 20,000 AFY Potable Reuse (a) (b)	430	570	1,000	180	190	370
Additional 25,000 AFY Potable Reuse	1,100	905	2,005	520	295	815
<b>Total 45,000 AFY Potable Reuse</b>	<b>1,530</b>	<b>1,475</b>	<b>3,005</b>	<b>700</b>	<b>485</b>	<b>1,185</b>

(a) It was assumed that 70% of the capital costs would be financed over a period of 30 years with an interest rate of 5.5%.

(b) For O&M costs the District's standard assumption of a 3% rate of inflation for local projects was applied for 30 years. And a discount rate of 5.5% was applied to be consistent with the earlier analysis.

### C.2. Cost of Conservation Option

Achieving an additional 32,000 AFY in conservation savings by 2035 above the 99,000 AFY included in the Future Baseline would require the expansion of the existing conservation program and the implementation of new program activities. Costs for these activities would be incurred as an annual O&M expense in the years in which the activity was implemented. Table 6 lists the undiscounted and present value cost of each activity over a period of 35 years. The loss in revenue associated with reduced water use was included as an additional cost for each activity. A description of the each activity is provided in Attachment 4.

The water savings and costs associated with each conservation activity vary within the program. Table 6 lists the average water savings of each activity and the cost per acre-foot yield associated with each activity.

**Table 6. O&M costs and estimated cost per AF for 32,000 AFY of Additional Conservation**

Activity	Average Water Savings (AF/Yr) (a)	Undiscounted Cost (b)		Present Value Costs (b)	
		Total millions)	(Cost per AF Yield (\$/AF)	Total millions)	(Cost per AF Yield (\$/AF)
<b>Conservation Program Total</b>	15,000	1,545	3,030	615	1,205
<b>Baseline Programs (c)</b>	175	10	2,070	5	745
<b>Home Reports</b>	2,300	185	2,395	45	590
<b>Turf Replacement</b>	3,760	585	4,645	260	2,040
<b>Residential Irrigation Controller</b>	220	25	3,710	10	1,620

Commercial Irrigation Controller	710	60	2,425	25	1,010
Large Landscape Water Budgets	595	35	1,805	10	580
Sub-meter Installation	2,385	235	2,900	90	1,135
High Efficiency Irrigation Nozzles	525	45	2,500	20	1,045
Rotary Nozzles With Check Valves	170	15	2,890	5	1,190
Advanced Metering Infrastructure - AMI	4,160	350	2,515	145	1,045

- (a) Each activity will be phased in and will produce water savings over a differing time period. For this analysis the savings was averaged over 35 years to be consistent with the earlier analysis.
- (b) Costs for these activities were escalated from 2016 dollars by the District's standard 3% inflation rate and discounted at a rate of 5.5% to be consistent with the other alternatives. Costs include the loss in revenue associated with the amount of water savings for each activity.
- (c) The Baseline Programs activity involves extending relevant baseline programs from 2030 to 2035.

#### **D. California WaterFix Comparison to Potable Reuse**

The analysis in Attachment 1 and in Section B indicates that the WaterFix performs relatively well when it includes the 20,000 AFY of future baseline potable reuse. Staff further explored the performance of the WaterFix in the absence of the 20,000 AFY of Future Baseline potable reuse and compared this to performance of the Additional Potable Reuse Option in the February 22, 2016 analysis.

In the absence of potable reuse but incorporating all other components and assumptions in the Future Baseline described in Attachment 1, the WaterFix does not meet the District's annual water supply target for drought years (Criterion 1 in Attachment 2). The criterion would be met if supplemental transfers of roughly 23,000 AF in dry years and 8,000 AF in critical years, on top of 12,000 AF of critical year transfers assumed in the baseline, are combined with the WaterFix. Supplemental transfers are short-term annual transfers and cannot be assured to be available; however, for the purposes of this exercise, it is assumed that these quantities are consistently secured in every dry and critically dry year. This amount of supplemental transfers would cost roughly \$147 million in present value (\$770 million undiscounted). Table 7 below compares the costs of the WaterFix when (1) combined with future baseline potable reuse, (2) combined with supplemental transfers, and (3) implemented without either baseline potable reuse or supplemental transfers. The cost of the Additional Potable Reuse Option is also shown for comparison. For convenience, the Conveyance Pumping approach for the WaterFix is selected to illustrate potential costs (see Attachment 1 for more detail about this approach).

Figures 5 and 6 show how the four options perform in droughts and how effective they are in supporting Semitropic storage.

This analysis indicates that supplemental transfers perform as well or better in some aspects than 20,000 AF per year of potable reuse when combined with the WaterFix, and may be less costly. However, it was recognized during development of the 2012 Water Master Plan that potable reuse reduces reliance on the Delta, better diversifies the District's supply portfolio, and meets the objective of drought-proof local supplies; therefore, 20,000 AF per year of potable reuse was preferred over additional transfers (above a baseline amount of 12,000 AF) as a key component of the Water Master Plan. In addition, there is significant uncertainty regarding the future cost and availability of supplemental transfers.

**Table 7: Cost of WaterFix Combinations with Potable Reuse and Supplemental Transfers**

Option	Total Undiscounted Cost (a) (\$ millions)	Total PV Cost (a) (\$ millions)
<b>WaterFix - SCVWD share (Conveyance Pumping Allocation), combinations:</b>		
WaterFix, No Baseline Potable Reuse (b)	2,100	685
WaterFix with 20,000 AFY Baseline Potable Reuse	3,100	1,055
WaterFix, No Potable Reuse Baseline, -with Supplemental Transfers (23,000 AF in dry and 8,000 AF in critical years)	2,870	830
<b>Additional Potable Reuse Option (45,000 AFY of Potable Reuse, No WaterFix)</b>	3,005	1,185

(a) Costs are approximate. Actual costs may differ.

(b) This alternative does not meet supply target Criterion 1.

Table 8 shows the average project yield and cost per acre-foot for the combinations described above.

**Table 8: Estimated cost per acre-foot of water supply for WaterFix combinations and 45,000 AFY of Potable Reuse**

Option	Potential Average Project Yield (AF per year)	Average Incremental Portfolio Yield (HOS) (AF per year)	Total Cost per AF Potential Yield (\$/AF) (a)		Cost per AF Portfolio Yield (\$/AF) (a)	
			Undiscounted	Present Value (d)	Undiscounted	Present Value (d)
<b>WaterFix - SCVWD share (Conveyance Pumping Allocation), combinations:</b>						

WaterFix, No Baseline Potable Reuse (b)	40,000	39,000	1,315	430	1,345	440
WaterFix with 20 TAF Baseline Potable Reuse	60,000	47,000	1,410	480	1,720	585
WaterFix with Supplemental Transfers (23,000 AF in dry and 8,000 AF in critical years) (c)	46,000	44,000	1,560	450	1,630	470
<b>Additional Potable Reuse Option (45,000 AFY of Potable Reuse, No WaterFix)</b>	<b>45,000</b>	<b>35,000</b>	<b>2,225</b>	<b>880</b>	<b>2,860</b>	<b>1,130</b>

- (a) Costs are approximate. Actual costs may differ.
- (b) This alternative does not meet supply target Criterion 1
- (c) Supplemental Transfers are secured only in dry and critically dry years. This option assumes that 23,000 AF of transfers is secured in dry years and 8,000 AF in critically dry years on top of the 12,000 AF in critically dry years in the baseline assumptions.
- (d) Both the undiscounted and present value costs are normalized by the total amount of water produced during the project time period. Time periods for the options are as follows: WaterFix - 50 years (10 years construction, 40 years operation); Potable Reuse - 35 years (5 years construction, 30 years operation), Supplemental Transfers - 40 years (starts when WaterFix is operating after its construction period). Unit costs are rounded to the nearest \$5/AF.

## E. State Water Board Hearing on Petition for Change in Point of Diversion

In order to divert water from the proposed intakes on the Sacramento River, DWR and Reclamation must obtain a change in their appropriative water right licenses with the State Water Board. DWR and Reclamation submitted a petition to change their water right licenses' point of diversions on August 26, 2015, which launched a lengthy and complex review process by the State Water Board. All parties wishing to participate in the hearing, which is now scheduled to start on July 26, 2016, were required to submit a notice of intent by January 5, 2016. The District submitted a notice of intent to make a policy statement only at the hearing along with 45 other individuals or entities. Approximately 87 additional individuals or entities submitted notices of intent to participate in the evidentiary portion of the hearing through direct testimony, cross-examination or rebuttal; of the 87, 60 are protesting the petition.

### E.1 State Water Board Petition Review Process:

In order for the State Water Board to approve a change petition, DWR and Reclamation must demonstrate that the change to their water right licenses will not injure any legal user of the water, provide information concerning the extent to which fish and wildlife would be affected by the change, and identify proposed measures to protect fish and wildlife from any unreasonable impacts, if any, resulting from the change. In addition, the Delta Reform Act imposes unique requirements on the processing of a water right change petition for the WaterFix. The Delta Reform Act requires that any State Water Board order approving the petition include "appropriate Delta flow criteria," and that the State Water Board's decision must be informed by flow criteria to protect the Delta ecosystem, which the State Water Board was required to develop in 2010.

The State Water Board must also certify that the California WaterFix Project would comply with water quality standards under Section 401 of the Clean Water Act. A certification that the project will comply with standards as conditioned is needed for the project to proceed. While the two approvals are separate issues, testimony and evidence gathered at the public hearing on the change petition will help inform the decision on the water quality certification.

The State Water Board received several comments on the adequacy of the petition as well as concerns about whether the petition can be processed prior to completion of the CEQA/ NEPA process and the Endangered Species Act (ESA) consultation process. Under the California Water Code, the petitioners must provide information demonstrating that the project will comply with the Fish and Game Code and the ESA. While this information and a final CEQA document are required before the State Water Board can take final action, this information does not necessarily need to be available before the State Water Board can begin processing the petition.

The State Water Board plans to conduct the hearing on the change petition in two parts so that the hearing can proceed while DWR and Reclamation complete necessary State and federal environmental documents, and obtain approvals required by the federal and State ESA for the WaterFix. Part I of the hearing will address the potential effects of the project on legal users of water. Part II will address the potential effects of the project on fish and wildlife, including what appropriate Delta flow criteria should be included in any approval of the change petition. Part II is planned to consider inclusion of the final CEQA document in the hearing record.

### *E.2 Petition Review Status:*

On February 11, 2016 the State Water Board Hearing Officers, Felicia Marcus and Tam Doduc, issued a ruling on the pre-hearing conference procedural issues that included a statement that the flow criteria “will be more stringent than petitioners’ current obligations and may well be more stringent than the petitioners’ preferred project.” Several water agencies viewed this statement as pre-decisional. The State Water Contractors (SWC) and DWR/Reclamation each submitted letters asking that this language be removed and the San Luis & Delta-Mendota Water Authority submitted a petition requesting that the Hearing Officers be removed. In a ruling on March 4, the State Water Board responded with an explanation of why they do not think the statement was prejudicial and agreed that the statement regarding appropriate flow criteria should not be considered a final determination. On April 25, the State Water Board issued a ruling denying the request for dismissal. DWR/Reclamation also asked for a second extension of time to submit testimony which was subsequently granted, delaying the hearing start until July 26.

On May 31, 2016 DWR and Reclamation submitted their cases in chief, witnesses' proposed testimony, list of witnesses, statements of witnesses' qualification, and exhibits. All submissions to date (154 files) can be found on the State Water Board's California WaterFix petition hearing website: [http://www.waterboards.ca.gov/waterrights/water\\_issues/programs/bay\\_delta/california\\_waterfix/exhibits/index.shtml](http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/index.shtml)

Any objections to DWR's and Reclamation's case in chief are due by July 12, 2016.

### E.3 District Participation:

The District will not be a party in the hearing and will not be submitting testimony or evidence as an individual party. However, the District has a unique position, being a northern California water agency that: (a) contracts with both the SWP and CVP, (b) strongly supports restoration of the Delta and environmental stewardship, and (c) relies on water conveyed from the Delta to meet nearly half of its demands. Therefore, staff recommends that the District provide a policy statement in these proceedings.

Because the District Board has not taken a position on the WaterFix, staff proposes to submit a policy statement that describes the importance of the Delta to Santa Clara County, our concerns with the current status, and why the status quo is unsustainable for both fish and wildlife and for reliable water supplies. A draft of that policy statement was presented to the BDCP Ad Hoc Committee on February 22, 2016 and revised in response to Committee Member comments. The revised draft policy statement is provided in Attachment 5. Should the District submit a policy statement, it will be heard on July 26, 2016.

Figure 1a. Average annual water supplies under High Outflow Scenario.

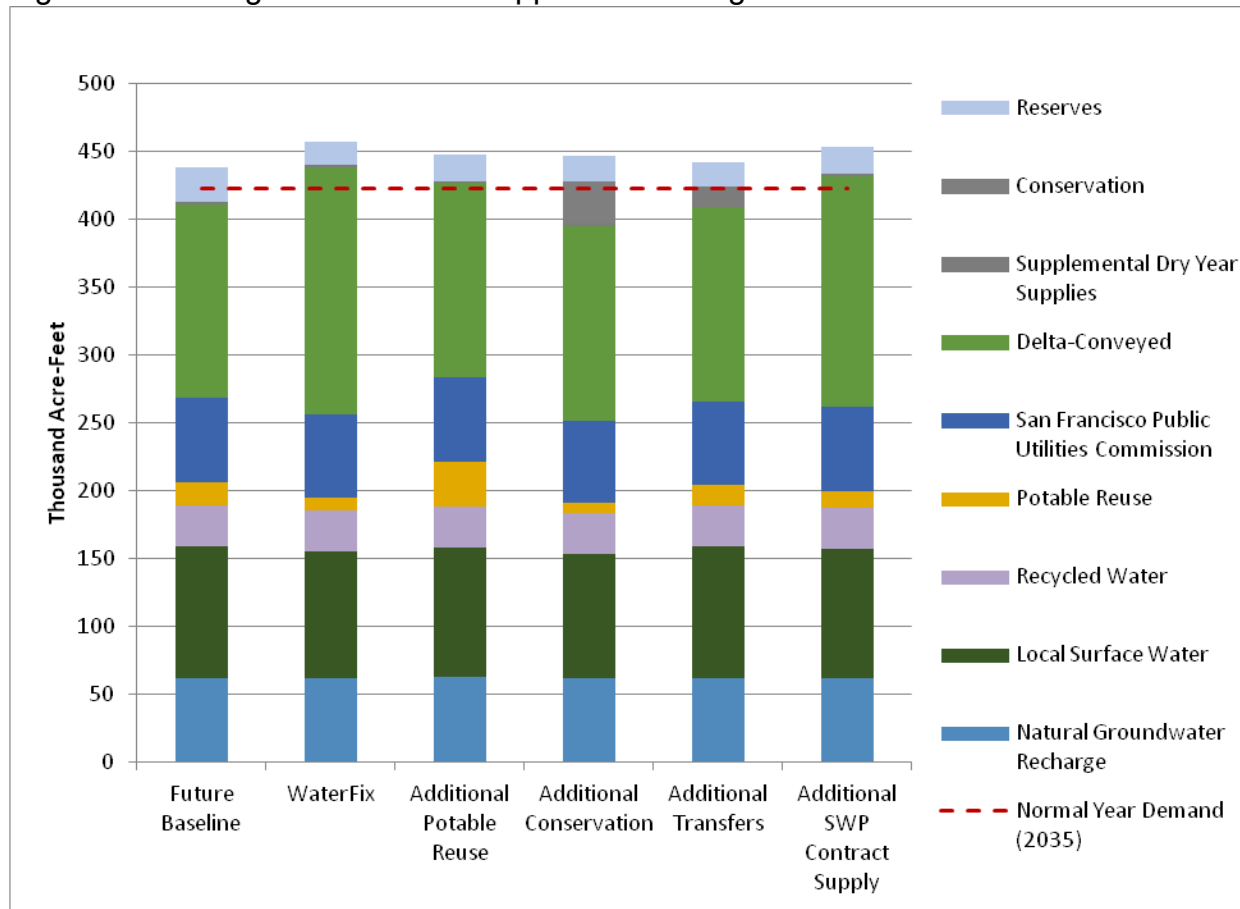


Figure 1b. Average water supplies by water year type under High Outflow Scenario.

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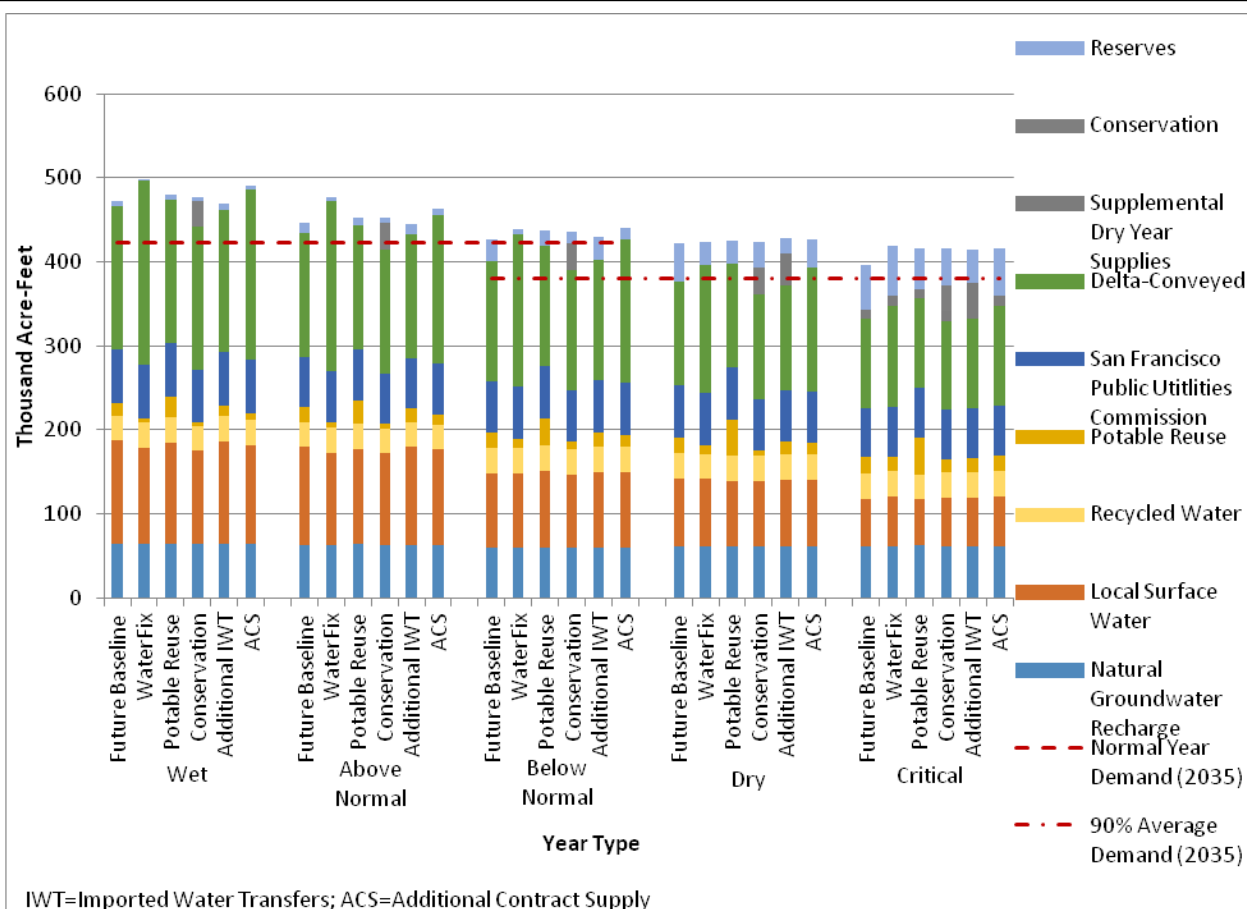


Figure 2. Water supply during drought conditions (1987-1992) under High Outflow Scenario.

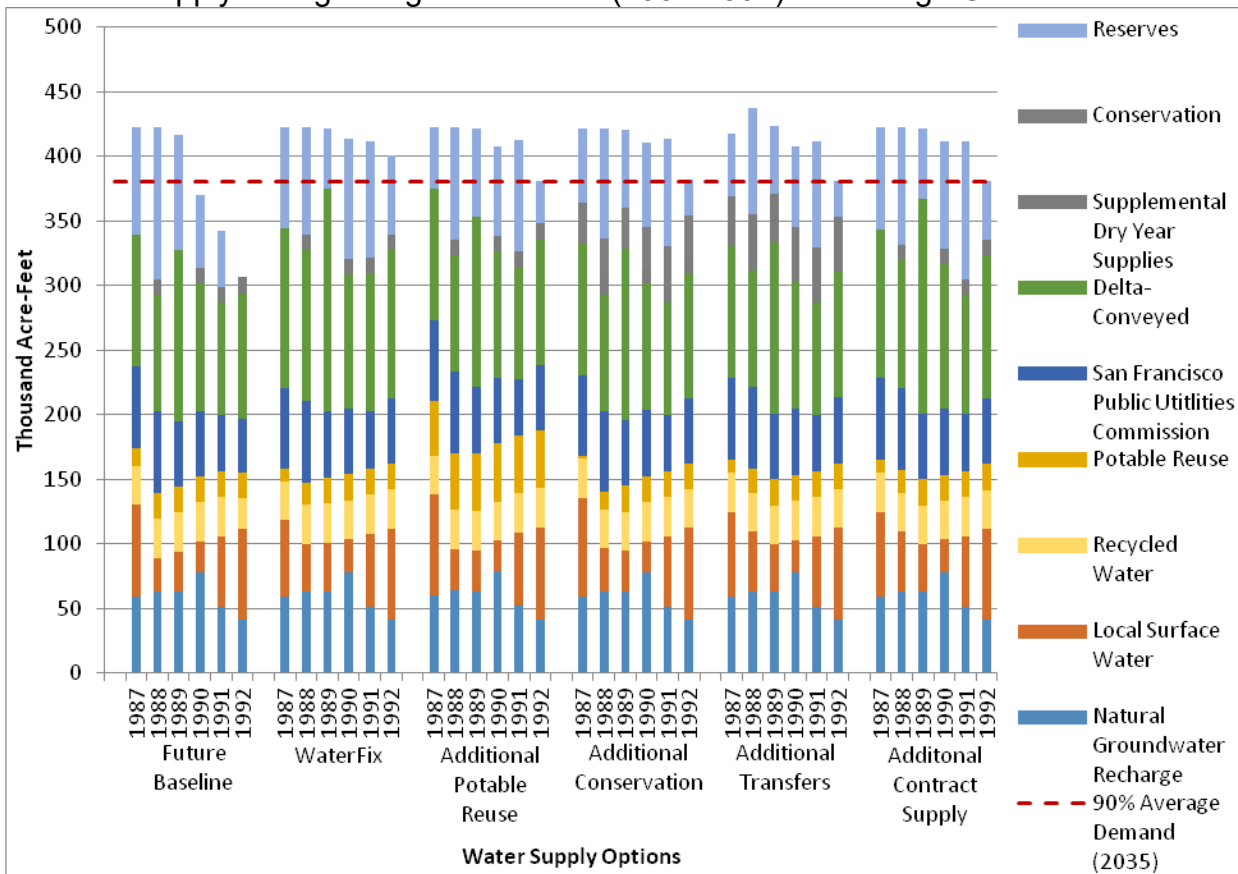


Figure 3. Local groundwater storage under High Outflow Scenario.

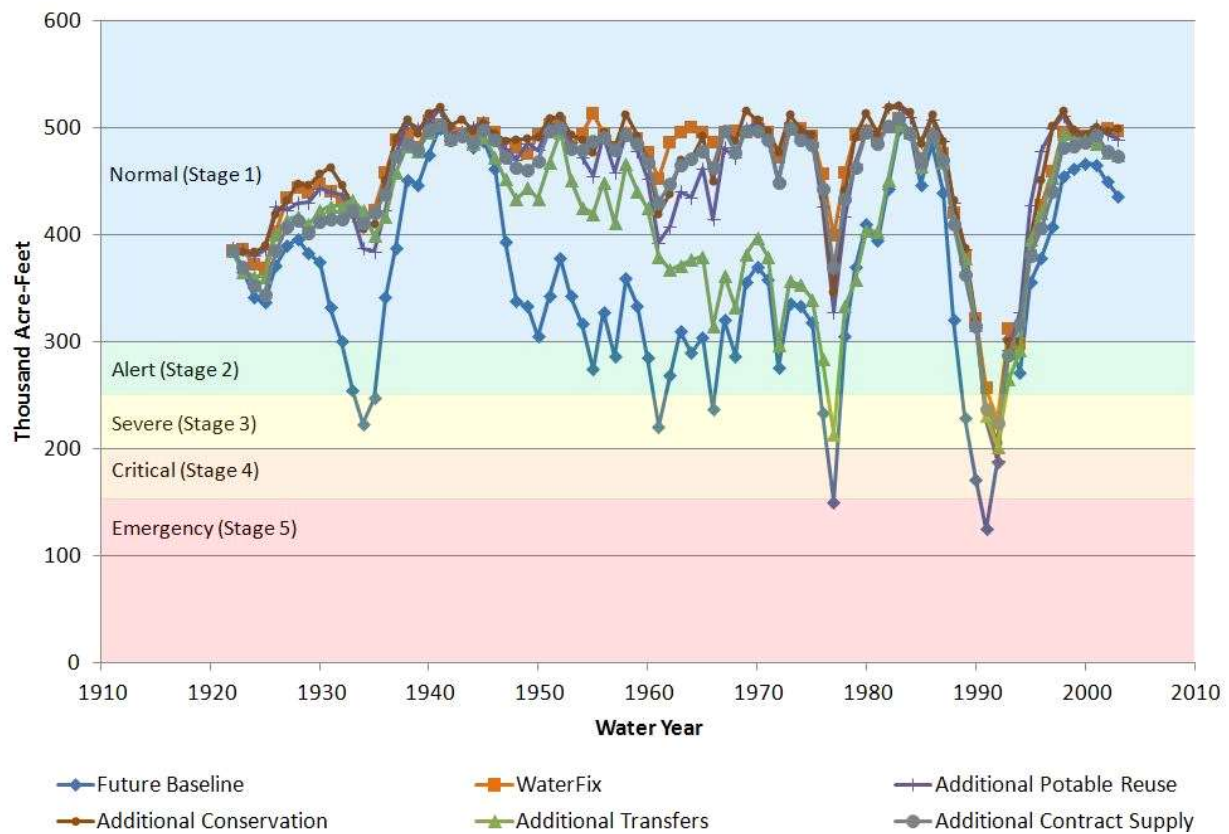


Figure 4. Semitropic storage under High Outflow Scenario.

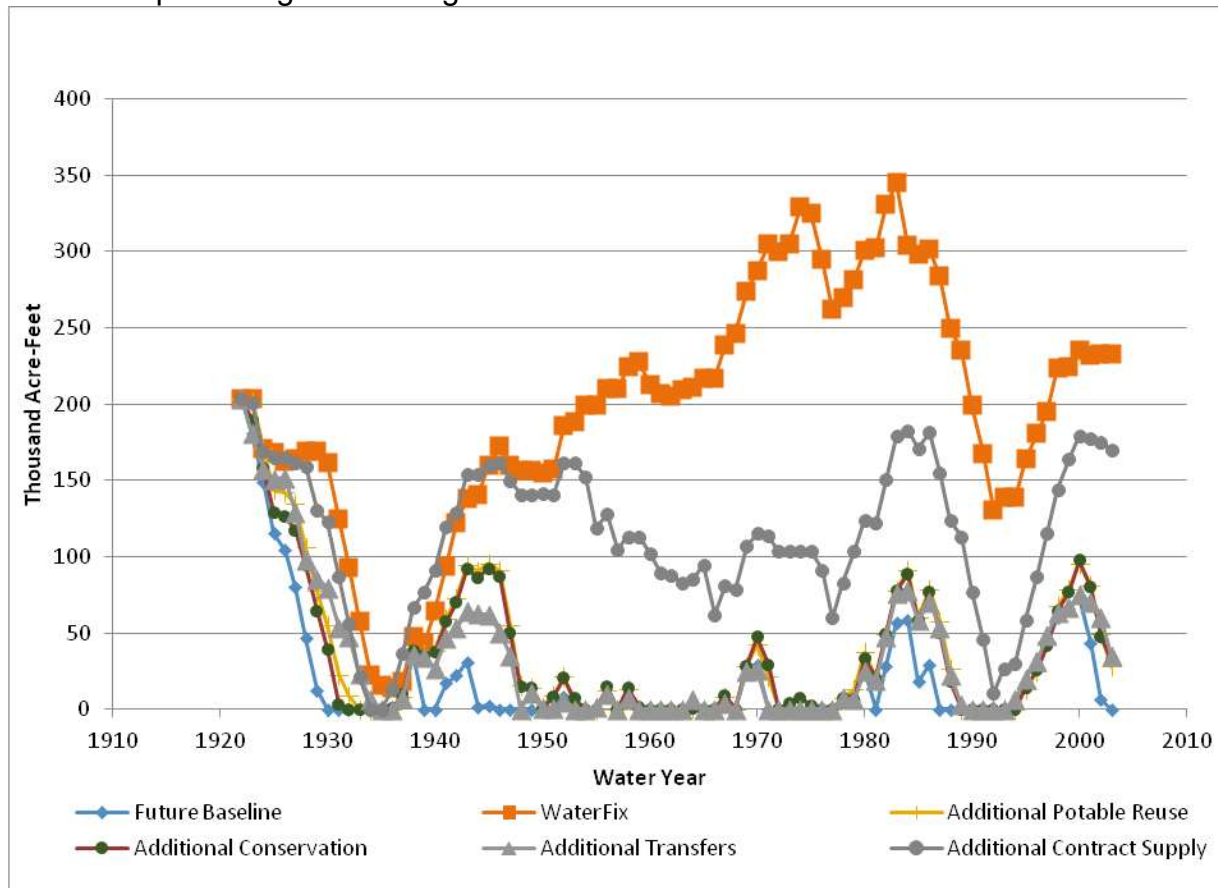


Figure 5. WaterFix Scenarios compared to 45,000 AF of potable reuse: Drought conditions (1987-1992), High Outflow Scenario

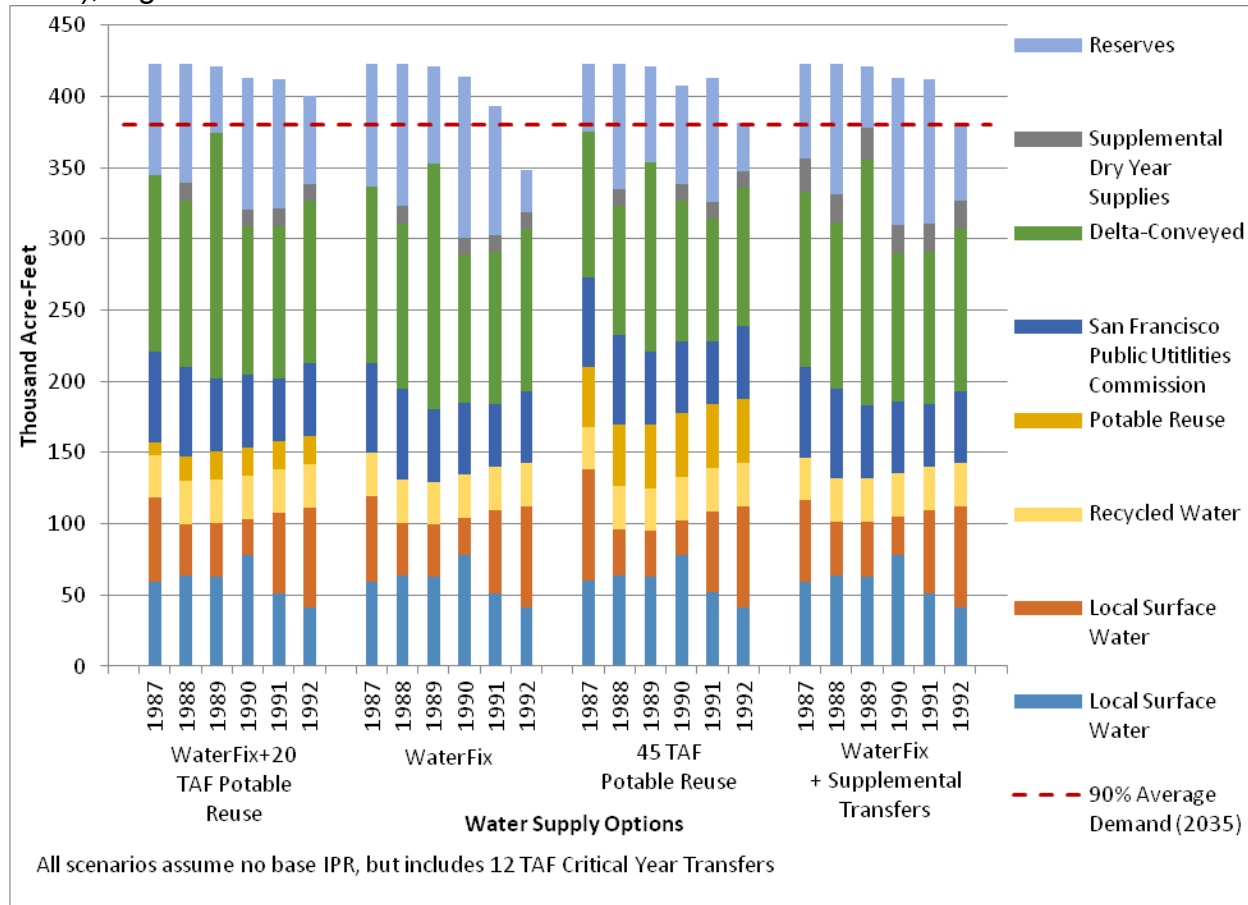
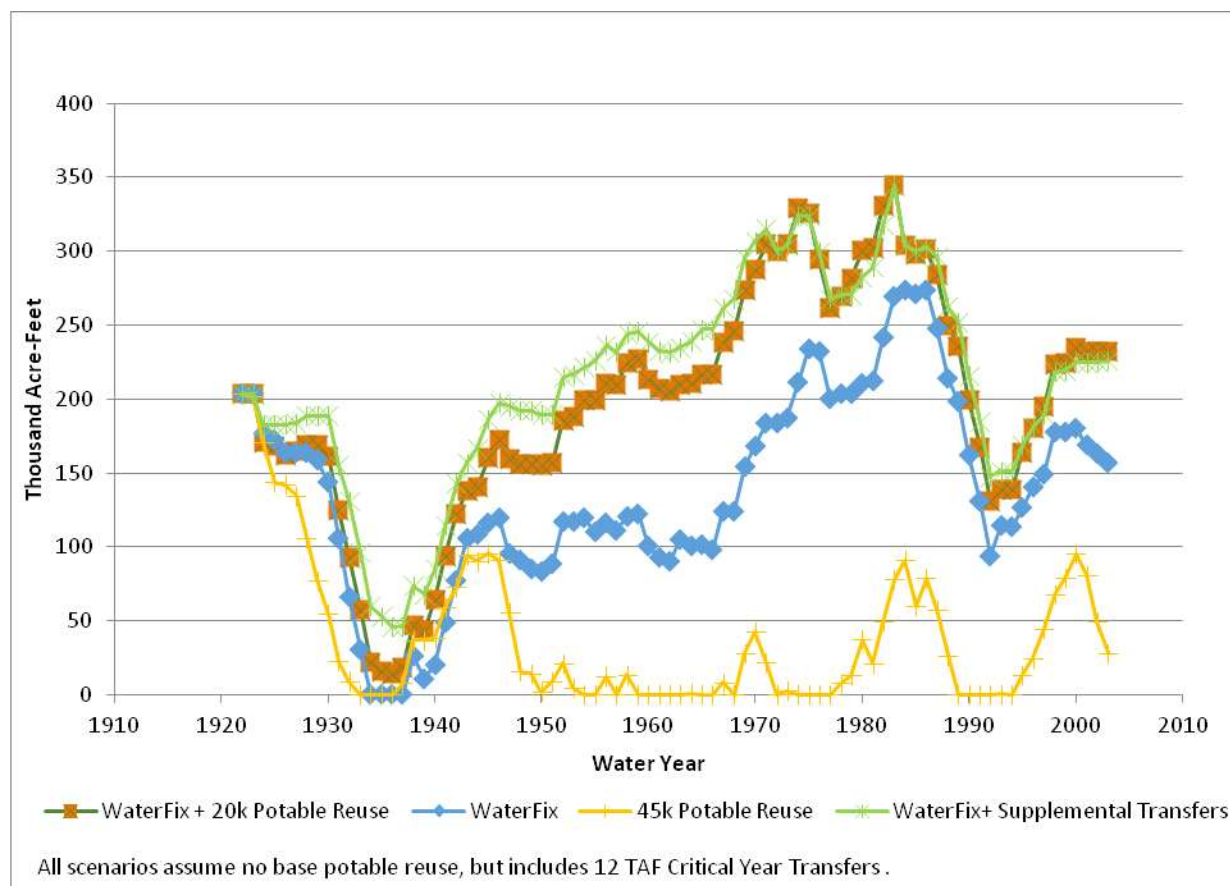


Figure 6. WaterFix Scenarios compared to 45,000 AF of potable reuse: Semitropic Storage under High Outflow Scenario

**FINANCIAL IMPACT:**

None. Information only.

**CEQA:**

The recommended action does not constitute a project under CEQA because it does not have a potential for resulting in direct or reasonably foreseeable indirect physical change in the environment.

**ATTACHMENTS:**

- Attachment 1: 062216 BDCP Ad Hoc Committee Agenda Memo
- Attachment 2: Criteria for Evaluating Alternatives
- Attachment 3: Summary of Alternatives Analysis
- Attachment 4: Conservation Program Activities
- Attachment 5: Draft Policy Statement
- Attachment 6: PowerPoint

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**File No.:** 16-0393

**Agenda Date:** 7/12/2016  
**Item No.:** 5.1.

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**UNCLASSIFIED MANAGER:**  
Garth Hall, 408-630-2750