Santa Clara Valley Water District

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Item No.: 5.1.

BOARD AGENDA MEMORANDUM

SUBJECT:
Update on Implementation of the 2012 Water Supply and Infrastructure Master Plan and Development of the 2017 Water Supply Master Plan.

RECOMMENDATION:

A. Receive an update on implementation of the 2012 Water Supply and Infrastructure Master Plan;
B. Provide input on staff's approach to updating the Water Master Plan; and
C. Confirm the draft planning objectives are consistent with Board policy.

SUMMARY:

This item summarizes the District's 2012 Water Supply and Infrastructure Master Plan (2012 Water Master Plan) and its implementation status, and seeks Board input on the planned approach to developing the 2017 Water Supply Master Plan (2017 Water Master Plan). The Water Master Plan presents the District's strategy for providing a reliable and sustainable future water supply for Santa Clara County and ensuring new water supply investments are effective and efficient. The Water Master Plan supports Board Policy E-2.1, which states, "Current and future water supply for municipalities, industries, agriculture, and the environment is reliable" and Board Policy EL-4.2, which states, "[A BAO shall] spend in ways that are cost-efficient."

Summary of the 2012 Water Master Plan and Its Implementation Status

The District Act states that one of the purposes of the District is "to do any and every lawful act necessary to be done that sufficient water may be available for any present or future beneficial use or uses of the lands or inhabitants within the District." To this end, the Board adopted the Water Master Plan in October 2012. The analysis for the 2012 Water Master Plan found that the county's water supplies were insufficient to meet future water needs, primarily during extended droughts. Reserves would be depleted and short-term water use reductions of up to 30 percent would be needed to avoid groundwater conditions that could lead to land subsidence. The 2012 Water Master Plan provides a strategy for investments in new water supply projects and programs to meet future demands through 2035 while avoiding making investments that are unnecessary or premature.

The Strategy in the 2012 Water Master Plan 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 baseline water supply system is the most critical element of the water supply strategy, because baseline supplies and infrastructure encompass most of the future water supply and is the foundation of future water supply investments. The baseline is comprised of the existing and already planned water supplies and conservation programs and infrastructure and includes:

- maintaining existing natural groundwater recharge (about 60,000 acre-feet per year or AFY), local surface water supplies (about 100,000 AFY), and imported water supplies (about 170,000 AFY);
- securing 6,000 AFY of dry year options/transfers by 2020;
- increasing non-potable reuse to 30,000 AFY by 2035;
- increasing water conservation savings to 99,000 AFY by 2035;
- completing dam seismic retrofits and other improvements to remove operating restrictions and restore about 46,000 AF of storage capacity;
- improving Rinconada Water Treatment Plant, including its treatment processes; and
- completing Main and Madrone Pipeline repairs to increase recharge in the Main Avenue Ponds and Madrone Channel by approximately 2,000 AFY.

Element 1 is expected to increase water supplies by more than 20,000 AFY by 2035 by increasing non-potable reuse, increasing recharge, and restoring operating capacity in the reservoirs. Over the same period, through conservation, this element will reduce water demands by an additional 35,000 AFY by 2035 relative to 2015 levels of conservation.

Element 2 - Optimize the Use of Existing Supplies and Infrastructure: Optimizing the use of existing supplies and infrastructure leverages those 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. This element includes additional groundwater recharge ponds, a new pipeline connecting Lexington Reservoir to the raw water system at Vasona Pumping Plant, and imported water reoperations. Imported water reoperations involves selling or exchanging imported water supplies when our storage in Semitropic Groundwater Bank is near capacity and District water supply needs are otherwise met. Element 2 is expected to increase supplies by about 5,000 AFY by 2025.

Element 3 - Increase Recycling and Conservation: This element is expected to increase supplies by up to 20,000 AFY by developing potable reuse projects and implementing gray water system rebates. The schedule in the 2012 Water Master Plan showed 20,000 AFY of potable reuse on-line in the 2030 timeline. Based on Board direction on March 12, 2015, staff is accelerating potable reuse development with initial projects coming on-line as early as 2021.

The 2012 Water Master Plan incorporates phased implementation to promote timely, appropriate investment decisions. The first phase of implementation (Phase A: 2012 - 2016) focused on securing

existing supplies and infrastructure and setting the stage to expand water recycling and water conservation. Most activities in the Strategy are on target for implementation. As a result of 2013 - 2015 drought conditions, the District is accelerating the schedule for potable reuse development.

The recently completed 2015 Urban Water Management Plan (UWMP) assumed the implementation of all the programs and projects discussed in the three elements above. These projects will be considered part of the baseline supplies available to the District in the 2017 Water Master Plan.

2017 Water Master Plan Update

The District's Water Master Plan is intended to be updated every five years to adjust to changing conditions. Based on recent analyses, the county could experience shortages of up to 30 percent during extended droughts as demands increase, even with full implementation of the 2012 Water Master Plan. This is as a result of revised imported water assumptions, the addition of Fisheries and Aquatic Habitat Collaborative Effort (FAHCE) reservoir release requirements, and updated natural groundwater recharge calculations. Staff plans to prepare the 2017 Water Master Plan to provide an updated strategy for providing a reliable water supply through year 2040. The proposed scope of work for preparing the update is provided in Attachment 1. Staff is seeking Board input on the planned approach to updating the 2017 Water Master Plan, especially with regard to the following:

- Level of service goal
- Objectives of the 2017 Water Master Plan
- Types of projects and programs to investigate
- Stakeholder engagement

The 2017 Water Master Plan will be developed through a process that is similar to the process used to develop the last plan. This includes developing planning objectives based on Board policies; assessing the current water supply system; identifying future water supply needs; developing a preferred mix of water supply sources and associated infrastructure to meet those needs; and preparing an implementation plan. Staff will consider risks and opportunities when updating the 2017 Water Master Plan. For example, in developing projects and programs, staff will explore partnership opportunities that could help manage risks and reduce costs, including working with cities to obtain development fees for specific projects. One addition to the process for developing the 2017 Water Master Plan is the addition of an expert review panel. The panel is currently being convened and will include water resource experts that will review the 2017 Water Master Plan approach, assumptions, and analytical methods. The panel will also review the same factors in staff's California WaterFix analysis.

The 2017 Water Master Plan will represent the main strategy for achieving the Board's water supply reliability policies. It will describe current and future water supply needs, present a recommended portfolio of projects for addressing those needs, and a schedule and budget for implementing the recommended portfolio. Development of the 2017 Water Master Plan is being coordinated with development of other District plans, such as the One Water Plan. Projects that primarily address the District's water supply responsibilities will be included in the 2017 Water Master Plan. Projects that are designed to address other components of the District's mission will be addressed in the One

Water Plan and/or related watershed plans. 2017 Water Master Plan development is also being coordinated with regional planning efforts, such as the Bay Area Regional Reliability (BARR) Project. The BARR Project is described in Attachment 2. Page 5 in Attachment 4 shows many of the various plans and programs that will provide input to the 2017 Water Master Plan. On an annual basis, staff will review the Water Master Plan and validate any projects or programs scheduled for implementation or any new projects that were developed during the prior year. Further, validated Water Master Plan projects will be prioritized against other water utility projects through the Capital Improvement Plan process.

Level of Service Goal

The purpose of the District's Water Master Plan is to present the District's strategy for ensuring a reliable, clean water supply to meet future demands, consistent with Board Policy E-2 - "there is a reliable, clean water supply for current and future generations." One of the District's strategies for achieving this goal is to develop 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. At its July 12, 2016 meeting, the Board expressed an interest in revisiting this level of service goal.

The District's level of service goal for water supply reliability planning has varied over time. The District's 1997 Integrated Water Resources Plan (IWRP) included a level of service goal of meeting 100 percent of demands during an extended drought. The 2003 IWRP included a level of service goal of meeting 95 percent of demands during an extended drought. When work began on the 2012 Water Master Plan, staff initially proposed planning to meet 80 percent of countywide demands during an extended drought. However, based on input from stakeholders, staff proposed and the Board approved the current strategy of developing supplies to meet 90 percent of demands during an extended drought.

Other agencies have different level of service goals. The San Francisco Public Utilities Commission (SFPUC) currently has a goal to avoid systemwide rationing greater than 20 percent and is considering whether they should have a goal of avoiding any rationing or rationing above 10 percent. East Bay Municipal Utilities District's target is to avoid rationing greater than 15 percent. Metropolitan Water District of Southern California's plan is to avoid the need to allocate (ration) supplies by 2040.

Staff estimated the level of shortage (or demand reduction) and frequency of shortage that could occur in various demand years based on: 1) projected demands developed by the water retailers for their 2015 UWMPs; 2) current local and imported water supplies; and 3) the additional projects and programs identified in the 2012 Water Master Plan. Table 1 shows the level of shortage estimated over a simulated 94-year time period. According to staff's analysis, in most years, the District can meet demands with existing and planned supplies. Extended droughts however, continue to be the greatest challenge to water supply reliability.

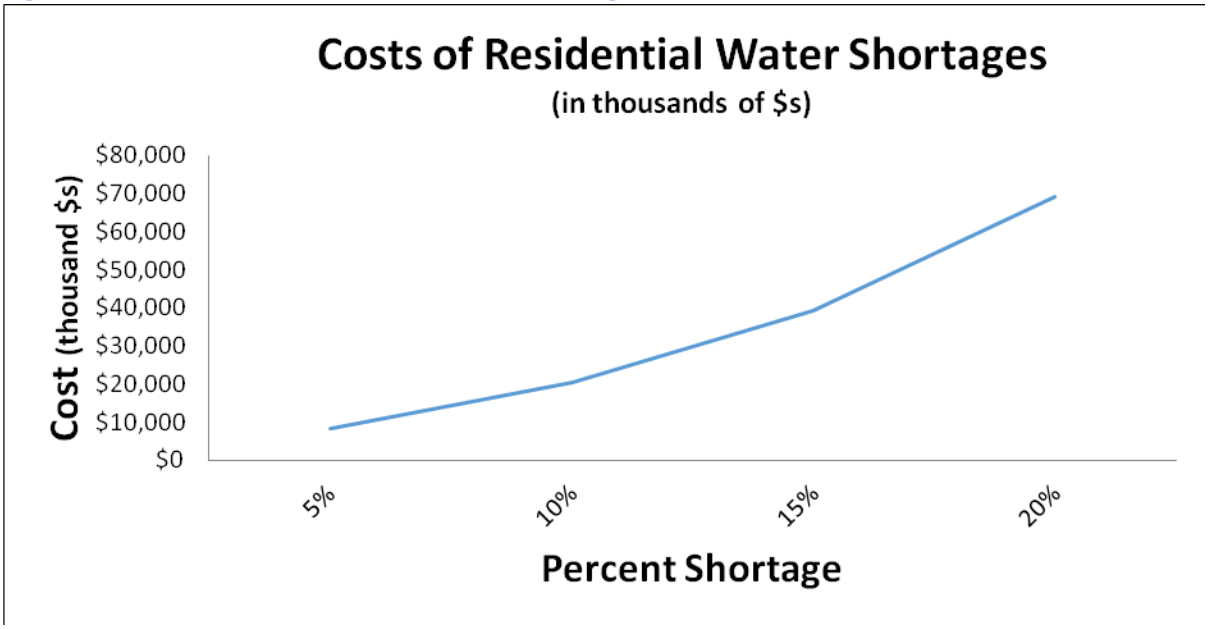
Table 1. Magnitude and Frequency of Shortages with Existing and Planned Supplies

Demand Year	2020	2025	2030	2035	2040
Maximum Shortage	30%	10%	15%	30%	30%

Number of Years (out of 94) with Shortages	8	5	7	9	15
Number of Years (out of 94) with Shortages Greater than 10 Percent	4	0	3	5	6

A level of service goal needs to consider that a reliable water supply is vital to the social, economic, and environmental well-being of the county. Figure 1 shows the estimated costs of shortage that were developed for the 2012 Water Master Plan for residential shortages of up to 20 percent. The costs increase at a rate greater than the increase in shortage. In other words, the change in costs from a 5 percent shortage to a 10 percent shortage is smaller than the change in costs from a 10 percent shortage to a 15 percent shortage. This is because people will select the least costly method of water use reductions (e.g., shorter showers) before they select the higher valued uses of water (e.g., less frequent bathing). The costs for shortages (or demand reductions) in the residential sector of 30 percent would be on the order of about $200 million per year. Typically, shortages are borne by the residential sector. Shortages that affect commercial and industrial sectors would have even greater losses, with a 2010 Berkeley Economic Consulting analysis estimating between $900 million and $10 billion in losses for shortages between 10 percent and 30 percent in Santa Clara County.

Figure 1. Costs of Residential Sector Water Shortages (2012)



As stated above, the benefits of increased reliability need to be balanced with the costs of providing that reliability. Water shortages of up to 20 percent are typically manageable through voluntary behavioral changes, based on community responses to District calls for water use reductions over the last decade. Larger shortages will have larger impacts on the community and will be more disruptive to District and retailer finances. Staff is currently seeking input from water retailers regarding the level of service goal. Input received during development of 2012 Water Master Plan indicated a strong preference for planning toward meeting a 90 percent of demands during droughts rather than planning for meeting 80 percent of demands during droughts.

The cost of shortage analysis is currently being updated as part of the Expedited Purified Water Program. Staff will use the updated analysis as part of the comparison of the Board's preferred water supply portfolios in early 2017. The analysis will look at the costs of different levels of shortage on the community. Those costs will be compared to the costs of providing higher levels of reliability with the Water Master Plan. Staff plans to return to the Board with more information on costs related to different levels of service in early 2017. This information will help inform the Board's water supply investment decisions.

2017 Water Master Plan Objectives

Staff has developed the draft planning objectives in Attachment 3, which include providing a reliable water supply for the county, ensuring drinking water quality, minimizing costs, maximizing flexibility in the water supply system, protecting the natural environment, and ensuring community benefits. The draft objectives are based on District and State policies and include evaluation criteria designed to be quantitatively or qualitatively measurable, non-redundant, and understandable. The draft objectives will be used to assess how different water supply strategies compare to each other.

Water Supply Options Considered for the 2017 Water Master Plan

The water supply options that have been identified to be considered in updating the 2017 Water Master Plan incorporate prior Board input, and include:

- Storage, including Sites, Temperance Flat, Shasta, San Luis, Del Valle, Los Vaqueros, North-of-Delta and South-of-Delta groundwater banking, Anderson, Uvas, Pacheco, and Calero;
- Additional groundwater recharge facilities;
- Potable reuse, both indirect and direct;
- Recycled water;
- Conservation and demand management;
- Graywater programs;
- Agricultural land fallowing;
- Agricultural land flooding;
- Stormwater reuse;
- Desalination;
- Transfers/dry year options;
- Additional water rights;
- Partnerships with SFPUC on deliveries in Santa Clara County;
- California WaterFix;
- Shallow groundwater reuse; and
- Pipelines to optimize the use of local surface water.

Stakeholder Engagement

Staff plans to rely on existing forums to obtain input on development of the 2017 Water Master Plan.

These forums include Board meetings, Board Committee meetings, and water retailer meetings. Additional meetings may be held with individual stakeholders or groups of stakeholders, such as individual cities and the Sierra Club. In addition, staff may use other existing stakeholder committees, such as the One Water Plan Stakeholder Work Group, to obtain input.

External Expert Panel

Staff has initiated efforts to secure the services of an expert panel to review and advise on the 2017 Water Master Plan approach, assumptions, and recommendations. Staff plans to report on the status of the panel formation during the presentation associated with this agenda item.

Next Steps

The purpose of the District's Water Master Plan is to guide water supply investments to provide for water reliability and ensure investments are effective and efficient. Therefore, it is critical that the planning effort be coordinated with other efforts and major decisions scheduled in the next year. Specifically, the development of the 2017 Water Master Plan can help inform the Board's decisions on the timing and scope of potable reuse development and whether to invest in California WaterFix. Staff plans to provide an initial evaluation of water supply alternatives, including storage alternatives, in December 2016 and a more refined analysis in early 2017. In addition, the development of the 2017 Water Master Plan is being coordinated with development of the One Water Plan.

FINANCIAL IMPACT:
There is no financial impact associated with this item. The costs to implement the 2012 Water Master Plan and prepare the 2017 Water Master Plan are reflected in the FY 17 budget, with the exception of costs required for the expert panelFunds to meet the expert panel costs, which will be relatively small, will be reallocated within the approved budget of the Water Utility Enterprise. It is important to note that selection of a level of service goal will have a large impact on future District investments, expenditures, and commitments to provide reliability water supplies over the next 20 years. Estimates for these significant costs will be provided during subsequent reports on the development of the 2017 Water Master Plan.

CEQA:
The recommended actions do not constitute a project under CEQA because they do not have a potential for resulting in direct or reasonably foreseeable indirect physical change in the environment. Any activities in the Water Master Plan that have the potential for a direct or reasonably foreseeable indirect physical change in the environment will undergo a separate project-based CEQA analysis.

ATTACHMENTS:
Attachment 1: Scope of Work
Attachment 2: Project Summary
Attachment 3: Planning Objectives

Attachment 4: PowerPoint

UNCLASSIFIED MANAGER:
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