Santa Clara Valley Water District
Water Supply and Demand Management Committee Meeting

Headquarters Building Boardroom
5700 Almaden Expressway, San Jose, CA 95118

Join Zoom Meeting:
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REGULAR MEETING
AGENDA

Monday, June 24, 2024
11:00 AM

District Mission: Provide Silicon Valley safe, clean water for a healthy life, environment and economy.

Water Supply and Demand Management Committee

Dir. Richard P. Santos, Chairperson (District 3)
Dir. Barbara F. Keegan, Vice Chairperson (District 2)
Director Nai Hsueh, Member (District 5)

All public records relating to an item on this agenda, which are not exempt from disclosure pursuant to the California Public Records Act, that are distributed to a majority of the legislative body will be available for public inspection at the Office of the Clerk of the Board at the Santa Clara Valley Water District Headquarters Building, 5700 Almaden Expressway, San Jose, CA 95118, at the same time that the public records are distributed or made available to the legislative body. Santa Clara Valley Water District will make reasonable efforts to accommodate persons with disabilities wishing to attend Board of Directors' meeting. Please advise the Clerk of the Board Office of any special needs by calling (408) 265-2600.

Vincent Gin,
Ryan McCarter,
Kirsten Struve
(Staff Liaisons)

Stephanie Simunic
Assistant Deputy Clerk II
Office/Clerk of the Board
(408) 630 -2408
ssimunic@valleywater.org

Note: The finalized Board Agenda, exception items and supplemental items will be posted prior to the meeting in accordance with the Brown Act.

Santa Clara Valley Water District
Water Supply and Demand Management Committee

REGULAR MEETING
AGENDA

Monday, June 24, 2024 | **11:00 AM** | **HQ Boardroom**

IMPORTANT NOTICES AND PARTICIPATION INSTRUCTIONS

Santa Clara Valley Water District (Valley Water) Board of Directors/Board Committee meetings are held as a "hybrid" meetings, conducted in-person as well as by telecommunication, and is compliant with the provisions of the Ralph M. Brown Act.

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In accordance with the requirements of Gov. Code Section 54954.3(a), members of the public wishing to address the Board/Committee during public comment or on any item listed on the agenda, may do so by filling out a Speaker Card and submitting it to the Clerk or using the "Raise Hand" tool located in the Zoom meeting application to identify yourself in order to speak, at the time the item is called. Speakers will be acknowledged by the Board/Committee Chair in the order requests are received and granted speaking access to address the Board.

- Members of the Public may test their connection to Zoom Meetings at: https://zoom.us/test
- Members of the Public are encouraged to review our overview on joining Valley Water Board Meetings at: https://www.youtube.com/watch?v=TojJpYCxXm0

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1. CALL TO ORDER:

1.1. Roll Call.

2. TIME OPEN FOR PUBLIC COMMENT ON ANY ITEM NOT ON THE AGENDA.
Notice to the public: Members of the public who wish to address the Board/Committee on any item not listed on the agenda may do so by filling out a Speaker Card and submitting it to the Clerk or using the "Raise Hand" tool located in the Zoom meeting application to identify yourself to speak. Speakers will be acknowledged by the Board/Committee Chair in the order requests are received and granted speaking access to address the Board/Committee. Speakers' comments should be limited to three minutes or as set by the Chair. The law does not permit Board/Committee action on, or extended discussion of, any item not on the agenda except under special circumstances. If Board/Committee action is requested, the matter may be placed on a future agenda. All comments that require a response will be referred to staff for a reply in writing. The Board/Committee may take action on any item of business appearing on the posted agenda.

3. APPROVAL OF MINUTES:

3.1. Approval of May 17, 2024 Water Supply and Demand Management Committee (WSDMC) Minutes. 24-0549

Recommendation: Approve the minutes.

Manager: Candice Kwok-Smith, 408-630-3193

Attachments: Attachment 1: 051724 WSDMC Draft Minutes

Est. Staff Time: 5 Minutes

4. REGULAR AGENDA:

4.1. Receive an Update on Los Vaqueros Reservoir Expansion Project; Recommend to the Board to Provide Policy Direction for Continued Negotiation of Project Agreements; Recommend to the Board to Authorize Staff to Reduce Valley Water's Storage Participation Request From 50,000 Acre-Feet to 20,000 Acre-Feet to Address Oversubscription. 24-0550

Recommendation:

A. Receive and discuss information on the Los Vaqueros Reservoir Expansion Project.
B. Recommend to the Board to provide policy direction to Staff for continued negotiation of Project agreements.
C. Recommend to the Board to authorize staff to reduce Valley Water's storage participation request from 50,000 acre-feet to 20,000 acre-feet to address storage oversubscription in the Project.

Manager: Vincent Gin, 408-630-2633

Attachments: Attachment 1: List Project Agreements
Attachment 2: June 11, 2024, CCWD Letter
Attachment 3: Project Schedule
Attachment 4: PowerPoint

Est. Staff Time: 15 Minutes

4.2. Receive Information on the Sites Reservoir Project. 24-0551

Recommendation: Receive and discuss information on the Sites Reservoir Project.

Manager: Vincent Gin, 408-630-2633

Attachments: Attachment 1: PowerPoint

Est. Staff Time: 15 Minutes

4.3. Receive Information on the B.F. Sisk Dam Raise and Reservoir Expansion Project. 24-0552

Recommendation: Receive and discuss information on the B.F. Sisk Dam Raise and Reservoir Expansion Project.

Manager: Vincent Gin, 408-630-2633

Est. Staff Time: 10 Minutes

4.4. Receive Information on the Draft Drought Response Plan Framework. 24-0537

Recommendation: Receive and discuss the Draft Drought Response Plan Framework Update and provide feedback to staff on the Drought Response Framework.

Manager: Kirsten Struve, 408-630-3138

Attachments: Attachment 1: DRAFT Drought Response Framework
Attachment 2: PowerPoint

Est. Staff Time: 15 Minutes

4.5. Receive Information on the Water Supply Master Plan 2040 Conservation and Stormwater Capture Project Update - "No Regrets" Package Implementation. 24-0530

Recommendation: Receive information on the Water Supply Master Plan 2040 Conservation and Stormwater Capture Project Update - "No Regrets" package implementation.

Manager: Kirsten Struve, 408-630-3138

Attachments: Attachment 1: PowerPoint
Attachment 2: 2017 No Regrets Package
Attachment 3: Water Conservation Flyer

Est. Staff Time: 15 Minutes

4.6. Receive and Discuss Information on Stormwater Capture Opportunities. 24-0528

Recommendation: Receive and discuss information on stormwater capture opportunities.

Manager: Kirsten Struve, 408-630-3138

Attachments: Attachment 1: PowerPoint

Est. Staff Time: 15 Minutes

4.7. Review and Discuss the Water Supply and Demand Management Committee (WSDMC) Work Plan and Approve 2024 Regular Meeting Schedule. 24-0578

Recommendation: Review and discuss the WSDMC Work Plan and approve 2024 regular meeting schedule.

Manager: Candice Kwok-Smith, 408-630-3193.

Attachments: Attachment 1: 2024 WSDMC Workplan
Attachment 2: WSDM 2024 Schedule

Est. Staff Time: 5 Minutes

5. CLERK REVIEW AND CLARIFICATION OF COMMITTEE REQUESTS.

This is an opportunity for the Clerk to review and obtain clarification on any formally moved, seconded, and approved requests and recommendations made by the Committee during the meeting.

6. ADJOURN:

6.1. Adjourn to Regular Meeting at 11:00 a.m. on Monday July 22, 2024.

Santa Clara Valley Water District

File No.: 24-0549

Agenda Date: 6/24/2024
Item No.: 3.1.

COMMITTEE AGENDA MEMORANDUM
Water Supply and Demand Management Committee

Government Code § 84308 Applies: Yes ☐ No ☒
(If "YES" Complete Attachment A - Gov. Code § 84308)

SUBJECT:
Approval of May 17, 2024 Water Supply and Demand Management Committee (WSDMC) Minutes.

RECOMMENDATION:
Approve the minutes.

SUMMARY:
A summary of Committee discussions, and details of all actions taken by the Committee, during all open and public Committee meetings, is transcribed and submitted for review and approval.

Upon Committee approval, minutes transcripts are finalized and entered into the District's historical records archives and serve as historical records of the Committee's meetings.

ENVIRONMENTAL JUSTICE AND EQUITY IMPACT:
The approval of minutes is not subject to environmental justice analysis.

ATTACHMENTS:
Attachment 1: 051724 WSDMC Draft Minutes.

UNCLASSIFIED MANAGER:
Candice Kwok-Smith, 408-630-3193

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https://www.valleywater.org/how-we-operate/committees/board-committees

WATER SUPPLY AND DEMAND
MANAGEMENT COMMITTEE MEETING

DRAFT MINUTES

SPECIAL MEETING
FRIDAY, May 17, 2024
11:00 AM

(Paragraph numbers coincide with agenda item numbers)

1. CALL TO ORDER:

A special meeting of the Santa Clara Valley Water District (Valley Water) Water Supply and Demand Management Committee (Committee) was called to order in the Valley Water Headquarters Building Boardroom at 5700 Almaden Expressway, San Jose, California, and by Zoom teleconference, at 11:03 a.m.

1.1. Roll Call.

Committee members in attendance were District 2 Vice Chairperson Barbara Keegan, District 3 Chairperson Richard Santos, and District 5 Director Nai Hsueh, constituting a quorum of the Committee.

Staff members in attendance were:
Gina Adriano, Joseph Aranda, Aaron Baker, Roseryn Bhudsabourg, Justin Burks, Rick Callender, Rita Chan, Isela Chaparro, Vanessa De La Piedra, Phil Dolan, Andrew Garcia, Samantha Green, Andy Gschwind, Jason Gurdak, Chris Hakes, Linh Hoang, Cindy Kao, Candice Kwok-Smith, Dave Leon, Ryan McCarter, Nicole Merritt, Carmen Narayan, Julianne O'Brien, Carlos Orellana, Steve Peters, Sarah Piramoon, Metra Richert, Ashley Shannon, Stephanie Simunic, Kirsten Struve, Charlene Sun, Darin Taylor, Sana Wazit, Jing Wu, Becky Zisser.

Public in attendance were:
Katja Irvin and Molly Culton (Sierra Club), Jack Kiefer (Hazen), Arthur Keller, and Luke Wang.

2. TIME OPEN FOR PUBLIC COMMENT ON ANY ITEM NOT ON THE AGENDA:

Chairperson Santos declared time open for public comment on any item not on the agenda. There was no one who wished to speak.

3. APPROVAL OF MINUTES:

3.1 Approval of April 22, 2024 Water Supply and Demand Management Committee (WSDMC) Minutes.

Recommendation: Approve the minutes.

The Committee considered the minutes of the April 22, 2024 Water Supply and Demand Management Committee (WSDMC) meeting.

Public Comments: None.

It was moved by Vice Chairperson Keegan, seconded by Chairperson Santos, and unanimously carried, to approve the April 22, 2024 Water Supply and Demand Management Committee (WSDMC) minutes.

4. REGULAR AGENDA:

4.1 Review Potential Water Conservation Targets for Inclusion in the 2050 Water Supply Master Plan; and Recommend to the Santa Clara Valley Water District Board the 126,000 Acre Feet per Year (AFY) (Option B) Water Conservation Goal by 2050 for Inclusion in the Water Supply Master Plan 2050.

Recommendation: Recommend to Santa Clara Valley Water District Board the 126,000 Acre Feet per Year (Option B) water conservation goal by 2050 for inclusion in the Water Supply Master Plan 2050.

Metra Richert reviewed the information on this item, per the attached Committee Agenda Memo and per the information contained in Attachment 1 and was available to answer questions.

Public Comments: Steve White asked staff several questions relating to projected water savings noted in the attachments.

It was moved by Director Hsueh, seconded by Vice Chairperson Keegan, and unanimously carried, to recommend to the Santa Clara Valley Water District Board the 126,000 Acre Feet per Year (Option B) water conservation goal by 2050 for inclusion in the Water Supply Master Plan 2050.

4.2 Receive Information on the Creation of a Demonstration Garden Featuring Santa Clara Valley Water District's Landscape Rebate Program.

Recommendation: Receive information and provide input to staff about the creation of a Demonstration Garden featuring Santa Clara Valley Water District's Landscape Rebate Program.

Ashley Shannon reviewed the information on this item, per the attached Committee Agenda Memo and per the information contained in Attachment 1 and was available to answer questions.

Public Comments: Steve White inquired is there is a way to provide the information to the community at large at any time. Ashely Shannon replied that Valley Water plans to have educational components be a part of the garden, such as interpretive signage, as well as information online.

The Committee received the information, provided positive feedback, and took no formal action.

4.3. Receive Information on the Water Use Projections, Water Demand Elasticity and Customer Affordability Study and Provide Feedback and Direction to Staff as Necessary.

Recommendation: Receive information on the Water Use Projections, Water Demand Elasticity and Customer Affordability Study (Study) and:

A. Review the Study scope and objectives as identified, and;

B. Provide feedback and recommendations to staff as necessary.

Darin Taylor introduced Kevin Kostiuk, Project Manager, Raftelis, who reviewed the information on this item, per the attached Committee Agenda Memo and per the information contained in Attachment 1 and was available to answer questions. Joe Crea (Technical Reviewer) and Elaine Conti (Project Director) of Raftelis were also available to answer questions.

Public Comments: Katja Irvin made comments on using the most recent demand forecast, total utility costs as a measure for the cost burden, and the schedule of the study. Jim Kuhl made comments on the importance of water consumption and water bills. Steve White made comments on household income and predicting affordability.

The Committee received the information and took no formal action, and noted the following:

- This study, one complete, could possibly be presented at an Association of California Water Agencies Conference.
- Forwarding this report as a non-agenda informative memo to the Board.

4.4. Receive update and discuss the water conservation program savings number for Fiscal Year (FY) 2023.

Recommendation: Receive update and discuss the water conservation program savings number for Fiscal Year (FY) 2023.

Justin Burks reviewed the information on this item, per the attached Committee Agenda Memo and per the information contained in Attachment 1 and was available to answer questions.

Vice Chairperson Keegan left her seat briefly during this item.

Public Comments: Steve White made comments relating to the models regarding greywater systems and the landscape rebate program's inclusion of trees.

The Committee received the information and took no formal action.

4.5. Receive an Informational Update on Costs Associated with the Pacheco Reservoir Expansion Project.

Recommendation: Receive an informational update on costs associated with the Pacheco Reservoir Expansion Project.

Ryan McCarter reviewed the information on this item, per the attached Committee Agenda Memo and per the information contained in Attachment 1 and was available to answer questions.

Director Hsueh left her seat briefly during this item.

Public Comments: Katja Irvin thanked the Directors for addressing the letter from the Sierra Club, and thanked Jim Kuhl for his submitted analysis and asked the Committee to consider it. Jim Kuhl commented on an economic analysis comparing the Pacheco Reservoir Expansion Project to the Orange County Wastewater Recycling Facility. Steve White commented on the current plan for the Pacheco Reservoir Expansion Project and moving towards water reuse. Arthur Keller asked if Pacheco Reservoir Expansion Project uses new water or existing water.

The Committee received the information and took no formal action, and noted the following:

- The Committee requested staff address questions in Handout 4.5-B from the Sierra Club before it goes to the Santa Clara Valley Water District Board.

4.6 Review and Discuss the Water Supply and Demand Management Committee (WSDMC) Work Plan, Upcoming Discussion Items, and the Committee's Next Meeting Date/Schedule.

Recommendation: Review and provide feedback on the WSDMC Work Plan, upcoming discussion items, and the Committee's next meeting date/schedule.

The Committee took no formal action and noted a need for regular monthly meetings.

Public Comments: None

5. CLERK REVIEW AND CLARIFICATION OF COMMITTEE REQUESTS:
This is an opportunity for the Clerk to review and obtain clarification on any formally moved, seconded, and approved requests and recommendations made by the Committee during the meeting.

There was no clerk review and clarification of committee requests.

6. Adjourn:

6.1. Adjourn to Regular Meeting/Special Meeting at TBD per Committee.

Chairperson Santos adjourned the meeting at 1:10 p.m., to a subsequently scheduled regular meeting in June 2024, through the Board Scheduler.

Date Approved:

Stephanie Simunic
Assistant Deputy Clerk II

Santa Clara Valley Water District

File No.: 24-0550

Agenda Date: 6/24/2024
Item No.: 4.1.

COMMITTEE AGENDA MEMORANDUM
Water Supply and Demand Management Committee

Government Code § 84308 Applies: Yes ☐ No ☒
(If "YES" Complete Attachment A - Gov. Code § 84308)

SUBJECT:
Receive an Update on Los Vaqueros Reservoir Expansion Project; Recommend to the Board to Provide Policy Direction for Continued Negotiation of Project Agreements; Recommend to the Board to Authorize Staff to Reduce Valley Water's Storage Participation Request From 50,000 Acre-Feet to 20,000 Acre-Feet to Address Oversubscription.

RECOMMENDATION:

A. Receive and discuss information on the Los Vaqueros Reservoir Expansion Project.
B. Recommend to the Board to provide policy direction to Staff for continued negotiation of Project agreements.
C. Recommend to the Board to authorize staff to reduce Valley Water's storage participation request from 50,000 acre-feet to 20,000 acre-feet to address storage oversubscription in the Project.

SUMMARY:

Los Vaqueros reservoir (LVR) is a 160,000 acre-foot reservoir located in Contra Costa County and is owned and operated by the Contra Costa Water District (CCWD) to provide water supply reliability for their customers. The Los Vaqueros Reservoir Expansion Project (Project) is a regional partnership of water agencies to expand LVR to provide an additional 115,000 acre-feet (AF) of storage and build the necessary associated conveyance infrastructure to move participants' water into and out of LVR. Valley Water's Water Supply Master Plan 2050 (WSMP) has identified the Project as a potential option to diversify its existing storage programs.

Over the past year, the Project Joint Powers Authority (JPA) has been working with CCWD and the participants to develop agreements needed to determine the flow of costs, benefits, rights and responsibilities. A list of Project agreements being developed is included as Attachment 1. Negotiations on Project agreements have been slow as JPA members have different views on several key topics, including the allocation of control and risk amongst members, member access to CCWD facilities, the CCWD facility usage fees, and the benefits received by CCWD from the Project. CCWD has taken a firm position on these topics. Key participation terms proposed in the current draft

agreements include the following:

- CCWD would own all project facilities except for the Transfer-Bethany Pipeline (TBP).
- The JPA would have a capacity interest in the expanded portion of LVR (115,000 AF).
- CCWD would retain control over all decisions affecting design and construction on CCWD-owned facilities, including selecting consultants, awarding construction contracts, setting contingency amounts and use of contingencies, and executing change orders.
- Participants would pay for design and construction costs for new facilities and modifications to existing facilities.
- CCWD is currently negotiating with EBMUD to access their facilities to maintain CCWD's water supply reliability while LVR is drained for construction. Participants would pay for CCWD's use of EBMUD facilities as well as any supplemental supplies that CCWD determines are needed to maintain their water supply and water quality reliability.
- Access to CCWD intakes and conveyance facilities is not guaranteed. CCWD would maintain priority usage of CCWD facilities and participants would have access to excess conveyance capacity in CCWD facilities after CCWD usage.
- When the Sacramento-San Joaquin Delta (Delta) is in excess conditions, Grasslands Water District would have priority access to 85% of available diversion and conveyance capacity to deliver refuge water, after CCWD's usage.
- Participants would pay a fixed annual fee to reimburse CCWD for costs associated with past construction and land purchases for the existing LVR. Participants would pay conveyance facility usage fees on existing CCWD facilities.
- CCWD would maintain full control over all decisions regarding operations, maintenance, repair, and replacement of CCWD-owned facilities.

Based on draft participation terms and Project schedule, staff identified several potential risks and areas of uncertainty which should be considered when evaluating Valley Water's participation level in the Project. Key risks and areas of uncertainty include:

- **Schedule:** Los Vaqueros Dam and TBP construction is scheduled to begin five (5) years after the final participation decision, increasing uncertainty on construction costs due to inflation risk and potential schedule delays.
- **Costs:** CCWD maintains sole discretion over the Project design, construction, and ongoing operations and maintenance which could have material cost implications over the life of the Project to be funded by participants. Additional cost uncertainties include, but are not limited to:
    - Potential costs to purchase supplemental water supplies and backstop CCWD's water supply during construction are unknown.
    - Land acquisitions for the TBP will not be completed until several years after participant's final participation decision. The TBP alignment crosses land currently

under conservation easements, increasing uncertainty on the Project's ability to acquire the land, mitigation requirements, land acquisition costs, and the TBP project construction schedule.

- **Operations:** Participants' ability to put or take water in Los Vaqueros Reservoir is uncertain due to CCWD operational priorities and refuge supply priorities. Additional operational uncertainties include:
    - Future factors such as climate change, regulatory changes, or increases in CCWD demand above projected levels may reduce the amount of conveyance capacity available to participants at CCWD facilities in the future.
    - Participants' ability to store Central Valley Project (CVP) water in Los Vaqueros Reservoir is uncertain as discussions with U.S. Bureau of Reclamation are ongoing.

On June 11,2024, CCWD sent a letter to Project participants asking for clarity on participants policy positions on the unresolved issues identified above. The CCWD letter is included as Attachment 2. Staff are seeking policy direction from the Board regarding the share of costs, risks, control over decisions, and certainty of receiving anticipated Project benefits that the Board needs to continue participation in the Project. Staff are recommending that the Water Supply and Demand Management Committee make a recommendation to the Board to discuss and provide policy direction to staff for Valley Water's continued participation in Project negotiations. Staff have developed the following potential options for policy positions for the Committee's consideration:

1. **Beneficiary Pays**: The flow of costs, risks, and decision-making ability amongst JPA members should reflect the flow of benefits to JPA members.
2. **Governance**: The JPA voting rights should recognize participant's level of investment in the Project.
3. **Sharing of Risk and Control**: Participants should have shared control over decisions affecting their investment, including project costs and realization of Project benefits.
4. **Assurance of Project Benefits**: Participants should have reasonable assurance that they will receive the expected Project benefits over the life of the Project.
5. **Facility Usage Fees**: CCWD facility usage fees should reflect participant's level of access to CCWD facilities.

Project Benefits

Valley Water's participation in the Project could provide water supply benefits for Valley Water including:

- Storage of Valley Water's existing SWP and CVP supplies in Los Vaqueros to improve water supply reliability and dry year supply.
- Potential diversion of Delta surplus supplies, though CCWD and refuge priority access to diversion capacity during Delta excess conditions may limit Valley Water's access to Delta surplus supplies.
- An alternate diversion option for SWP and CVP supplies in the event of an unplanned shut down of Banks Pumping Plant or Jones Pumping Plant.

- If the Refinery Recycled Water Exchange Project moves forward, that project would benefit from use of the TBP for conveyance and Los Vaqueros Reservoir storage for wet year supplies.

The Project modeling performed to date indicate that there is sufficient excess capacity in CCWD intakes and conveyance facilities to store and release water from Los Vaqueros Reservoir for Valley Water when requested. However, the Project modeling is based on 2035 hydrology, which is shortly after Project construction is completed. The effects of climate change and salinity intrusion in the Delta after 2035, which could limit the Project's diversion window and participant's ability to divert water, have not been modeled.

As part of the development of the Water Supply Master Plan (WSMP) 2050, Valley Water has identified a need to diversify our storage to support dry year water supply reliability. The WSMP has developed project portfolios which evaluate how well different combinations of projects would meet Valley Water's water supply needs in the future. Several portfolios which include the Project at 30,000 TAF storage capacity were found to meet Valley Water's future water supply reliability goals. However, while the Project does provide the desired storage diversification, many of the storage benefits provided by the Project can also be met through other storage options, such as groundwater banking, the B.F. Sisk Dam Raise Project, or the Pacheco Reservoir Project.

Project Participation Levels

Participation level in the Project is determined by both storage participation level and the participation level in the TBP. Capacity requests for TBP have not been submitted by any of the participating agencies except for EBMUD who does not intend to use TBP. There are currently eight agencies that have submitted storage requests totaling 145,000 AF of storage. To address the storage oversubscription, participants will need to reduce the total requested storage by 30,000 AF. The JPA has asked members to review their business case for the Project and consider reducing storage requests to help address the current storage oversubscription.

Staff recommend that the Water Supply and Demand Management Committee make a recommendation to the Board to reduce Valley Water's storage request from 50,000 AF to 20,000 AF to help the Project resolve the current storage oversubscription. Continued participation in the Project at a lower storage level would support Valley Water's storage diversification goal while reducing Valley Water's exposure to the potential Project risks identified above. Resolution of the storage oversubscription would also provide the certainty needed for staff to develop a capacity request for the TBP.

The current participation requests from member agencies are shown in Table 1. In May 2024, SFPUC reduced their storage request from 40,000 AF to 20,000 AF.

Table 1. Member Capacity Request for Los Vaqueros Storage and Transfer-Bethany Pipeline Conveyance.

Members	Storage Requests (TAF)	Transfer-Bethany Pipeline (TBP) Capacity Requests (%)

Alameda County Water District	10	TBD
Zone 7 Water Agency	10	TBD
Valley Water	50	TBD
East Bay Municipal Utility District	30	0%
San Francisco Public Utilities Commission	20	TBD
Grasslands Water District	10	TBD
SLDMWA (*represents agencies below*)	15	TBD
Byron-Bethany Water District	*10*	*TBD*
City of Tracy	*5*	*TBD*
Del Puerto Water District	*-*	*TBD*
Panoche Water District	*-*	*TBD*
Westlands Water District	*-*	*TBD*
Total Requests	**145**	**-**
Available Capacity	**115**	**300 cfs**

Project Costs

The current capital cost estimate for the Project is $1.56 billion in 2023 dollars. Valley Water's share of capital costs will depend on its final participation level in the Project. A range of storage levels and corresponding costs are shown in Table 2. All capital cost estimates in Table 2 assume a 7% participation level in the TBP. Valley Water's participation level in TBP is currently being analyzed and will depend on Valley Water's ultimate storage level and estimated use of Transfer-Bethany for direct delivery of supplies. The estimated costs in Table 2 are based on the CCWD's most recent facility usage fee proposal, however participants have not agreed to this proposal and negotiations on the facility usage fees are ongoing.

Table 2. Estimated Project Costs by Storage Level. Costs are in 2023 dollars.

	Storage capacity in Los Vaqueros Reservoir				
	10 TAF	**20 TAF**	**30 TAF**	**40 TAF**	**50 TAF**
Capital Costs ($ Million)	$126	$195	$264	$333	$402
Estimated Average Annual Variable Costs ($ Million/year)	$1.0	$1.9	$3.2	$3.7	$4.6

Project Schedule & Multi-Party Agreement Amendment #6 Update

In May 2024, the JPA released an updated project schedule which extends the timeline for development of the project agreements (Attachment 3). The updated schedule pushes out the final participation decision for local

water agencies until the first part of 2025 to allow additional time for the development of Project agreements. The JPA execution of the project agreements would follow in late Spring 2025 and the JPA California Water Commission (CWC) funding would then be expected to occur in Fall 2025.

As a result of this extended schedule, the JPA has requested that members execute a sixth amendment to the Multi-Party Agreement (MPA) which currently provides funds to cover the planning, design, and permitting costs for the Project. The MPA is set to expire on June 30, 2024. The sixth amendment to the MPA will be a no-cost amendment to extend the use of existing Project funds through June 30, 2025. As this amendment is a no-cost time extension to an existing agreement, it falls within the signature authority delegated to the CEO by the Board. Valley Water intends to execute this amendment to ensure no disruption to Project activities.

In addition to the MPA amendment, the Project has developed a capital preservation strategy to ensure that the existing funds cover the extended period through June 2025. As part of the capital preservation strategy the JPA is prioritizing items which are critical to reaching the final participation decision for the project and pausing work on items which can be delayed without affecting the near-term project schedule. Despite this capital preservation strategy, the JPA is currently anticipating that there will be an unfunded period for several months in 2025 after the expiration of MPA's sixth amendment in June 2025 and prior to the CWC funding in Fall 2025. The JPA is currently evaluating whether an additional interim funding call will be needed to cover this period.

Next Steps

Staff will continue to participate in the development of Project agreements and evaluate benefits and costs of the Project as part of the development of the WSMP. Staff anticipates bringing this Project to the Board for a final participation decision in the first part of 2025.

ENVIRONMENTAL JUSTICE AND EQUITY IMPACT:
There are no environmental justice and equity impacts associated with this item.

ATTACHMENTS:
Attachment 1: List of Project Agreements
Attachment 2: June 11, 2024, CCWD Letter
Attachment 3: Project Schedule
Attachment 4: PowerPoint

UNCLASSIFIED MANAGER:
Vincent Gin, 408-630-2633

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List of Key Project Agreements for the Los Vaqueros Reservoir Expansion Project

The following agreement have been identified as key project agreement:

- Service Agreement – This agreement specifies the participant's level of participation in the project and financial obligations.
- CCWD Design and Construction Agreement – This agreement specifies the decision-making authority and cost allocation for design and construction on Project facilities.
- CCWD Facility Usage Agreement – This agreement governs the terms of participants use of CCWD facilities, including facility access and usage fees.
- CCWD O&M Agreement – This agreement will outline the operations and maintenance cost allocation for the participants use of existing CCWD facilities. This agreement has not yet been drafted.
- EBMUD Facility Usage Agreement – This agreement specifies the terms of participants use of EMBUD's facilities, including facility access and usage fees.
- Operations Agreement – Operations agreement between CCWD, DWR, and Reclamation to coordinate operation of diversion facilities in the Delta.
- Partnership Agreement – This is a funding agreement between Reclamation and the JPA for federal refuge benefits.
- Refuge Water Supply Contract – This is an agreement between Reclamation and the JPA specifying the administration of federal refuge water supply benefits.
- Operations Agreement
- Contracts for Administration of Public Benefits – These are agreements with the State specifying the administration of public benefits, including refuge water supply benefits and emergency storage benefits.
- California Water Commission Funding Agreement - This is a funding agreement between the State and JPA for the State-funded public benefits.

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CONTRA COSTA WATER DISTRICT

June 11, 2024

LV JPA Member Agency General Managers

Dear General Managers and Member Agency Representatives:

At the June 5, 2024, Contra Costa Water District (CCWD) Board Meeting, the CCWD's Board of Directors took action to authorize the execution of Amendment No. 6 to Multi-Party Cost Share Agreement for the Phase 2 Los Vaqueros Reservoir Expansion Project (Project). The revised motion approved by the CCWD Board included a directive for me to work with the Los Vaqueros (LV) Joint Powers Authority (JPA) Member Agency General Managers to gain clarity about each agency's level of commitment to the Project based on the updated Project costs, estimated benefits, and agreement terms as currently defined, and to bring back a report to the CCWD Board in September on the member agency commitments.

CCWD, the LV JPA, and all member agencies have been working on several agreements needed to move forward with the Project. While progress has been made, there are significant unresolved issues. The significant disagreement on key agreement terms does not appear to be resolved, which understandably impacts the ability of each member agency to make firm commitments to the Project.

At the same time, the LV JPA is continuing negotiations of Project benefits with state and federal agencies; however, the lack of alignment among member agencies on these agreements could translate into a potentially disjointed strategy for negotiating these Project benefits. We are at a pivotal stage in the Project, and it is imperative that we engage on those policy decisions that are needed to determine each agency's willingness to enter into these long-term Project agreements.

To that end, attached is a summary of issues and policy questions I have discussed with this group. I appreciate your willingness to consider these specific policy questions, which will allow each member agency to assess whether alignment on key issues exists ahead of additional negotiations. I look forward to working with each of the General Managers on these critical discussions and stand ready to provide additional needed information or assistance to facilitate these discussions.

Sincerely,

Rachel Murphy
General Manager

Attachment

cc: LVR-JPA Executive Director Taryn Ravazzini
CCWD Vice President Antonio Martinez

CONTRA COSTA WATER DISTRICT

Los Vaqueros Reservoir Phase 2 Expansion Agreements - Outstanding Issues

BACKGROUND:

Contra Costa Water District (CCWD) constructed the Los Vaqueros Reservoir (Reservoir) in the 1990s to provide emergency water supply and water quality benefits for its customers. After initial construction was completed, CCWD began working with regional, state and federal agencies on plans to expand Reservoir capacity to provide regional benefits. After the Draft EIR/S was published in 2009, a two-phased approach was adopted for implementation:

- Phase 1 expanded the Reservoir from 100 thousand acre-feet (TAF) to 160 TAF to provide water supply reliability for CCWD during droughts, while enhancing the water quality and emergency storage benefits of the original Los Vaqueros Reservoir. Phase 1 construction costs were borne wholly by CCWD, as no willing partners were identified at that time.
- Phase 2 was developed to make use of *excess* capacity in CCWD's facilities that could be utilized together with modified/new facilities, including further expansion of the Reservoir to 275 TAF and additional conveyance facilities, during periods when water supply conditions are favorable to provide water supply, drought resiliency and ecosystem benefits at a regional scale for other water agencies. In 2021, a Joint Powers Authority (JPA) of eight local agencies was formed to provide governance, financing, and administration of the project.

STATUS OF AGREEMENTS / OUTSTANDING ISSUES:

CCWD, the Los Vaqueros Reservoir JPA and its member agencies have been working on several agreements needed to move forward with the Phase 2 Expansion Project (Project).

The JPA is continuing negotiations on Project benefits with state and federal agencies. It is noteworthy that the Project benefits are not yet defined. It is also noteworthy that there is a lack of alignment among member agencies on these agreements. It is imperative for leadership at each member agency to engage on the policy decisions that are needed to determine each agency's willingness to enter into these long-term agreements.

The following is a summary of significant unresolved issues with these various agreements and policy decisions that need to be addressed.

1. **Design and Construction Agreement**

   ISSUE: Parties have not yet agreed on a methodology for allocating risk and responsibility for the total cost of construction, including potential cost overruns.

   SUMMARY: CCWD is unwilling to bear construction risks because CCWD does not receive benefits from the resulting facilities, specifically the dam enlargement and Transfer Bethany Pipeline. Assuming construction risk for Project elements – from which an agency does not derive benefits – is inconsistent with the "Beneficiaries Pay" principle embedded into all of the project planning to date. Understandably, other JPA members have expressed their own concerns about assuming risk for facilities that do not benefit their customers and concerns

about assuming risk for unknown potential costs. These concerns are especially pronounced given that the total project benefits are not yet known and are less than originally assumed. A final unresolved issue is the fact that CCWD will be taking on substantial risk associated with the decommissioning of its primary Reservoir during the construction period. (See Backstop Agreement below)

POLICY QUESTIONS: Are member agencies committed to the Beneficiaries Pay principle? Do member agencies concur that CCWD is not a beneficiary of the dam enlargement and Transfer Bethany Pipeline and shall not be financially responsible for related construction costs and risk?

2. Facilities Usage Agreement

ISSUE: Parties have not agreed on how the various facilities would be utilized, including CCWD's Reservoir and conveyance facilities, and East Bay Municipal Utility District's conveyance facilities. Additionally, the parties have not agreed on the usage fees associated with use of CCWD's existing facilities as part of the Project.

SUMMARY: Several proposals made during negotiations would put CCWD customer water quality and water supply at risk, which conflicts with the fundamental principles of using only excess capacity and not creating negative impacts to CCWD customers. Similarly, CCWD must protect its customers significant past investments in the Reservoir and conveyance facilities. Examples of terms proposed by the JPA include:

- Narrowly defining the Reservoir capacity needed to meet CCWD demands and not recognizing capacity needed for refilling or other operational needs
- Requiring a guaranteed amount for water deliveries, which counters the "excess capacity" principle and could impact the ability for CCWD to meet its needs
- Requiring a role for the JPA in determining what CCWD's demands and needs are through an annual meet and confer process.
- Proposing a discount in usage fees in future years if JPA needs are not met in a particular year
- Establishing a permanent dedicated capacity right for the JPA in CCWD's Pumping Plant #1

Guaranteeing deliveries to member agencies would either result in a negative impact to CCWD customers or a violation of permit conditions.

CCWD initially released preliminary usage fees in 2018, which have undergone a series of reviews and updates since that time. A non-binding Letter of Intent concerning development of the usage fees for CCWD facilities was executed in March 2021, ahead of JPA formation. Negotiations continued following JPA formation and were paused in early 2023 to allow for development of the Facilities Usage Agreement term sheet and draft agreement.

POLICY QUESTIONS: Delivery of Project benefits is reliant on the availability of excess capacity in CCWD infrastructure and favorable water supply conditions. Are member agencies willing to sign agreements that do not include a guaranteed delivery of water? There has been a significant reduction in usage fees in comparison to the preliminary usage fees released in October 2018. Are member agencies willing to consider their commitments to the Project with the usage fees as currently calculated? Commitments to guaranteed deliveries and future discount of usage fees will put CCWD customers at risk and will not be negotiated.

3. Backstop Agreement

ISSUE: A backstop plan and agreement for CCWD are needed to ensure adequate assurance that water supply and water quality for CCWD customers will be maintained at acceptable levels during dam demolition, reconstruction, and refilling.

SUMMARY: An analysis by East Bay Municipal Utility District found that it could supply CCWD with backstop water at certain times, but not others due to its own needs and planned facilities projects. To fill gaps in meeting water supply and quality needs during this period, CCWD is analyzing a suite of temporary measures, including modified and additional processes at CCWD water treatment plants and emergency backup generators at its intake pumps. These measures would deal with a portion, but not all, of the anticipated impacts. In addition, these modifications do not address CCWD's emergency supply concerns. New supply agreements and assurances regarding CCWD's existing CVP supplies are still needed to replace water supplies that would otherwise have been available from Los Vaqueros Reservoir storage for CCWD use during emergencies, both drought and non-drought.

POLICY QUESTION: While a policy question remains for CCWD to determine what level of risk, if any, to its customers' water supply is acceptable during dam construction, do member agencies agree that any costs related to a backstop plan and agreement should be paid for by member agencies, not CCWD, as these are necessary costs to facilitate constructing the larger dam?

4. LV JPA Agreement

ISSUE: CCWD has worked to incorporate protection of its customers and their significant past investments into the terms for various Project agreements and permits, consistent with foundational Project documents, agreements, and environmental approvals.

SUMMARY: CCWD has proposed modifications to several terms of the LV JPA Agreement to ensure that the JPA operates, and is governed, consistent with foundational Project criteria to protect the interests and significant prior investments of CCWD ratepayers. CCWD's proposed modifications have been reviewed by legal counsel for the JPA and members. Further action was deferred to focus on the Design and Construction and Facilities Usage Agreements.

POLICY QUESTION: Are member agencies willing to revisit terms of the JPA Agreement to clarify and amend the JPA Agreement to reflect foundational Project criteria?

5. Status of Member Agency Business Case

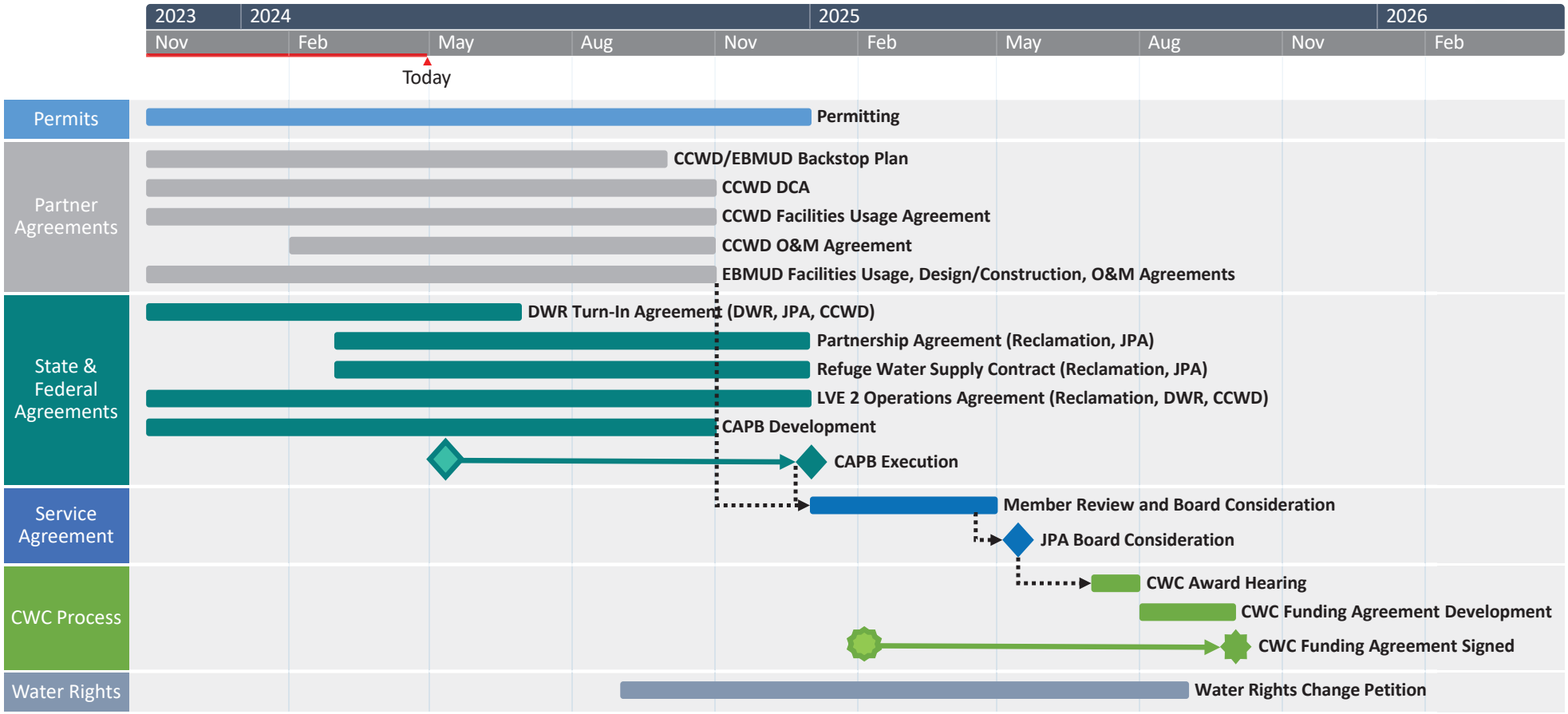
ISSUE: Member Agencies have stated that additional work is needed to develop their business case for Project participation.

SUMMARY: CCWD has provided extensive information about costs, benefits, agreement terms and operations of the Project to the JPA and member agencies. Discussions at the GM meetings and LV JPA Board meetings have touched on the topic of where member agencies are at with their business case development, but there has been little defined progress. With the JPA meeting with state and federal agencies to negotiate Project benefits, commitments from members agencies in the near term is necessary to establish agreed upon terms of negotiation.

POLICY QUESTION: Is your agency on track to complete the remaining analysis needed to finalize your business case and determine Project participation by September 2024?

LVR JPA Summary Schedule

May 2024



Attachment 3
Page 1 of 1

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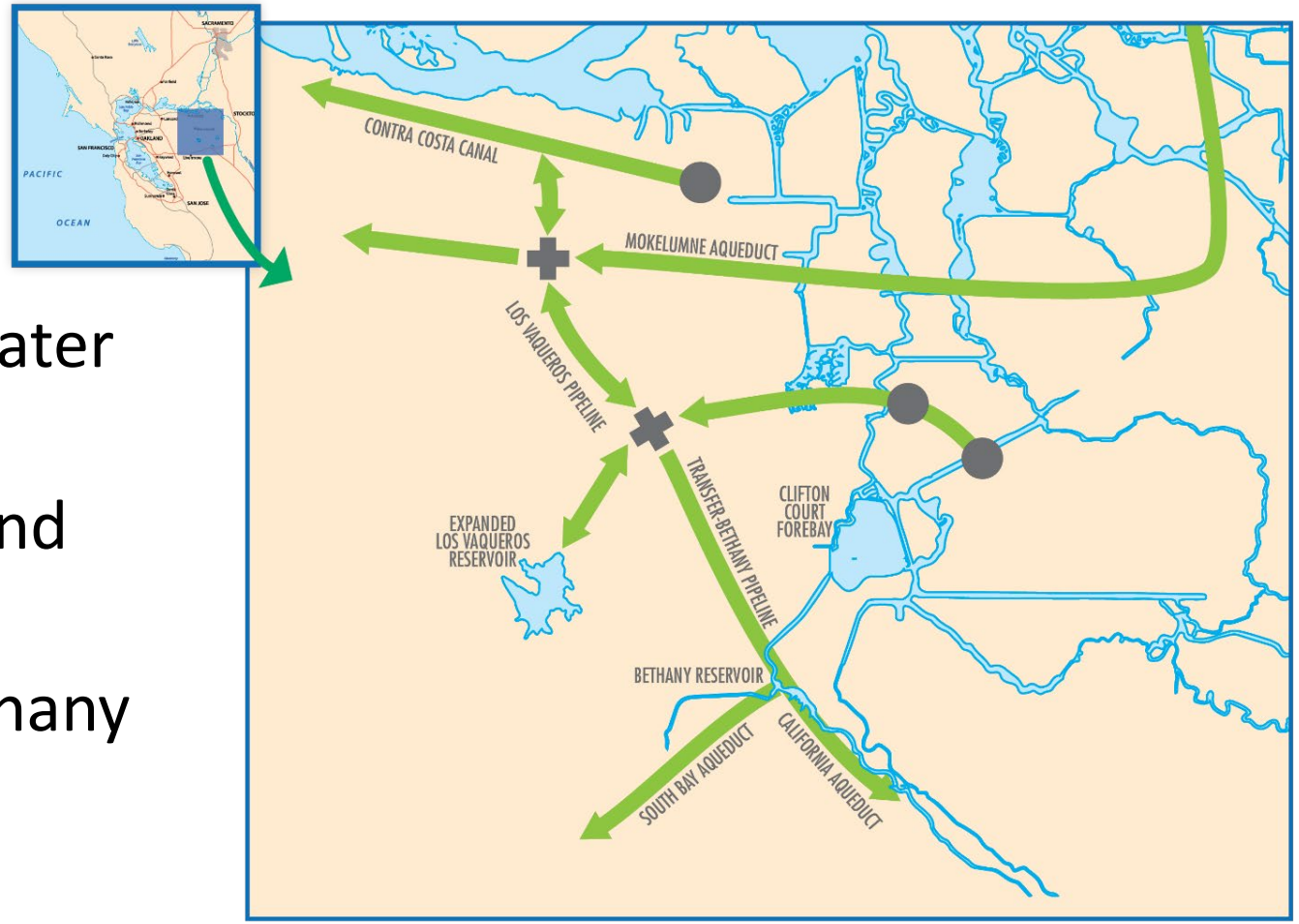
Los Vaqueros Reservoir Expansion Project Update

Water Supply and Demand Management Committee, June 24, 2024

Project Overview

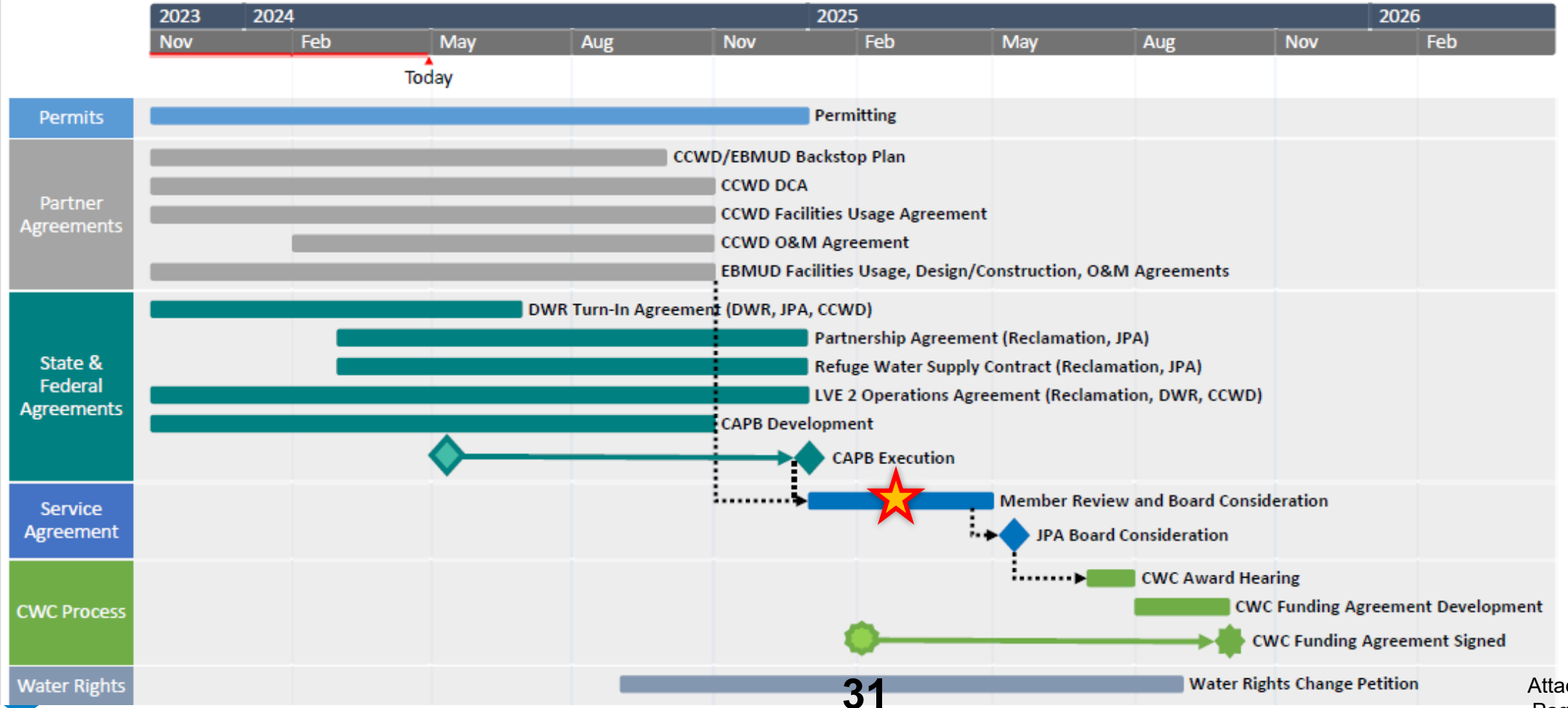
- 115 TAF new storage
- Estimated Cost: $1.56 Billion
- Regional project for Bay Area water supply reliability
- Uses CCWD facilities to divert and store water from the Delta
- Deliveries through Transfer-Bethany pipeline



Project Schedule

LVR JPA Summary Schedule

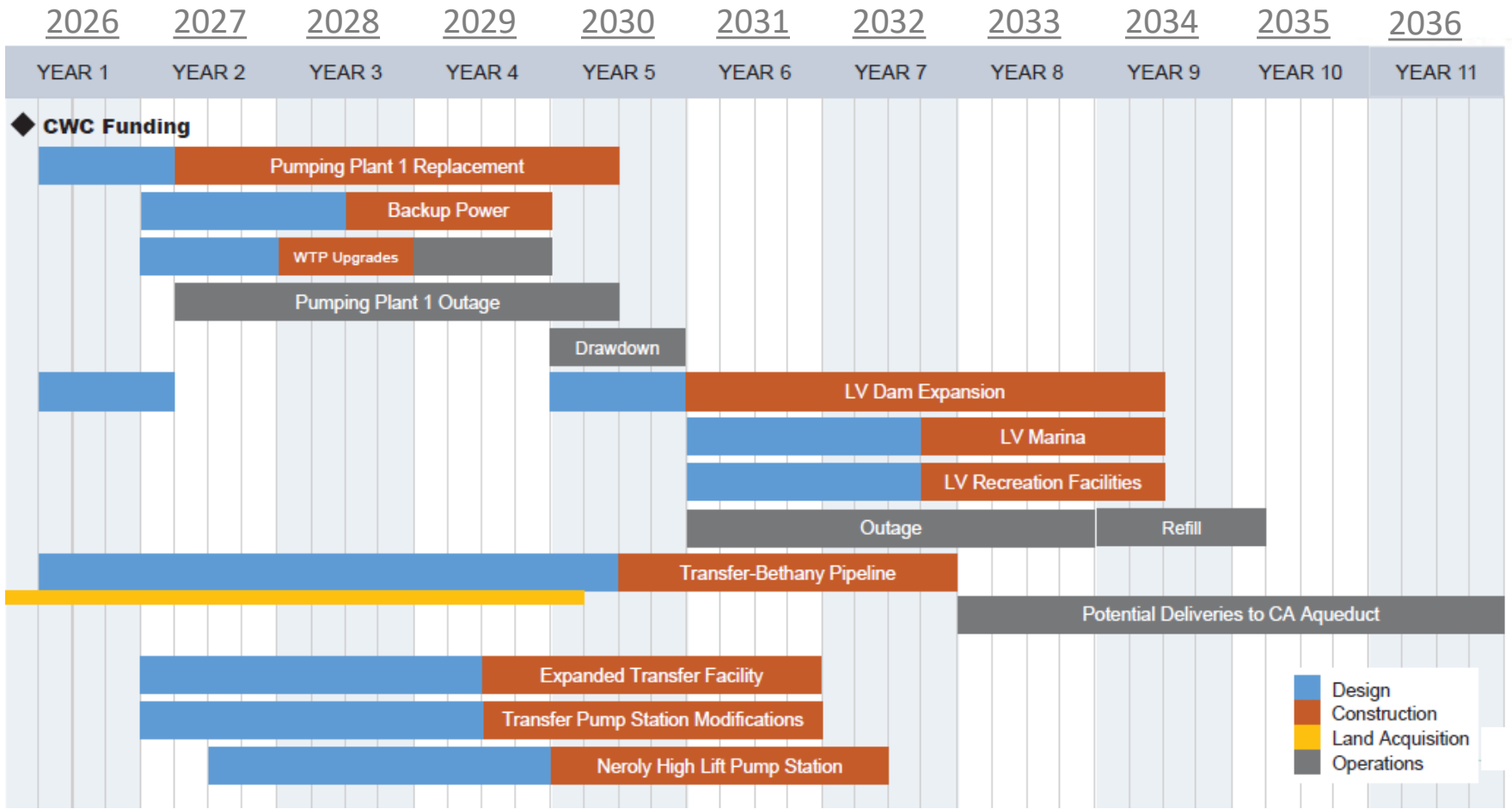
May 2024



Project Schedule and Near-Term Funding

- Existing planning funding through Multi-Party Agreement
  - MPA Amendment #5 expires June 2024
  - Planning funding intended to cover through June 2024
- Multi-Party Agreement Amendment #6
  - No-Cost Time extension through June 2025
- Capital Preservation Strategy
  - Extend use of existing funds through June 2025
  - Prioritizes critical path design and planning tasks
- Potential unfunded period from July 2025 through CWC funding

Project Schedule



Est. Start of Construction

- Pumping Plant 1: ~2027
- Transfer Facility: ~2029
- Neroly Pump Station: ~2030
- Transfer-Bethany Pipeline: ~2030
- LV Dam: ~2031

Project Operations Timeline

- Direct deliveries start ~2033
- Reservoir refill starts ~2034

Draft Project Agreement Terms

- CCWD would own all project facilities except for the Transfer-Bethany Pipeline and the Expanded Transfer Facility
- The JPA would have a capacity interest in the expanded portion of the Los Vaqueros Reservoir (up to 115TAF)
- CCWD would retain control over decisions affecting design and construction on CCWD-owned facilities, including selecting contractors, awarding bids, setting contingency amounts and use of contingencies, and executing change orders
- Participants would pay for design, construction and ongoing operations costs for new facilities and modifications to existing facilities, as well as usage costs for CCWD-owned existing facilities
- Participants would pay for supplemental water supplies to ensure CCWD's water supply reliability during construction

Draft Project Agreement Terms

- Level of access to conveyance facilities is not guaranteed, participants would have access to excess conveyance capacity after CCWD usage
- During Delta excess conditions, refuge deliveries would have priority access to 85% of available diversion and conveyance capacity after CCWD's usage
- Participants would pay a fixed annual fee to reimburse CCWD for construction of the existing reservoir
- Participants would pay a facility usage fee for existing CCWD conveyance facilities
- CCWD would maintain full control over decisions regarding operations, maintenance, repair, and replacement of CCWD-owned facilities

Project Risks & Uncertainties

- **Schedule**: Construction on the Los Vaqueros Dam and the Transfer-Bethany Pipeline is scheduled to begin 5 years after final project participation decision
- **Cost**: Separation of control and financial risk during construction may increase financial risk for participants
  - Potential costs to purchase supplemental supplies and backstop CCWD's water supply during construction are unknown
  - Uncertainty around costs and ability to acquire land for the Transfer-Bethany Pipeline
- **Operations**: Valley Water may not be able to put water in Los Vaqueros Reservoir when needed
  - Future availability of excess conveyance capacity is uncertain
  - Ability to store CVP water is uncertain

Project Benefits

- South of Delta Storage for Valley Water's existing SWP and CVP supplies
- Potential diversion of Delta surplus supplies
- Alternate diversion option in the South Delta
- Possible tie-in to Refinery Recycled Water Project

Staff Recommendation

- CCWD sent a letter asking for participants to consider their policy positions on unresolved issues
  - Allocation of control and risk
  - Assurance of benefits
  - Project costs and usage fees
  - Benefits received by CCWD from the Project

➢ **Recommend to the Board to provide policy direction to staff for continued negotiation of Project agreements.**

Options for Board Policy Points

1. **Beneficiary Pays** : The flow of costs, risks, and decision-making ability amongst JPA members should reflect the flow of benefits to JPA members.
2. **Governance**: The JPA voting rights should recognize participant's level of investment in the Project.
3. **Sharing of Risk and Control**: Participants should have shared control over decisions affecting their investment, including project costs and realization of Project benefits.
4. **Assurance of Project Benefits**: Participants should have reasonable assurance that they will receive the expected Project benefits over the life of the Project.
5. **Facility Usage Fees** : CCWD facility usage fees should reflect participant's level of access to CCWD facilities.

Project Participation Levels

- Storage space is oversubscribed
- August 2022 Valley Water Board Direction: 50 TAF Storage
- Transfer-Bethany Pipeline shares still to be determined
- Refuge would have priority to 85% of available conveyance capacity during Delta excess conditions

Members	Storage Requests (TAF)	Transfer-Bethany Pipeline Capacity Requests (%)
ACWD	10	TBD
Zone 7	10	TBD
Valley Water	50	TBD
EBMUD	30	0%
SFPUC	20	TBD
Grasslands	10	TBD
SLDMWA	15	TBD
BBID	*10*	*TBD*
City of Tracy	*5*	*TBD*
DPWD	-	*TBD*
PWD	-	*TBD*
WWD	-	*TBD*
Total Requests	**145**	**-**
Available Capacity	**115**	**300 cfs**

Project Costs

- Project Cost Estimate: $1.56 Billion (2023 Dollars)

- Valley Water Estimated Cost Share:

LVE Storage Level:	10 TAF	20 TAF	30 TAF	40 TAF	50 TAF
Capital Costs ($M)	$126	$195	$264	$333	$402
Estimated Average Annual Variable Costs ($M/Year)	$1.0	$1.9	$3.2	$3.7	$4.6

Staff Recommendation

- Recommend to the Board to provide policy direction to Staff for continued negotiations of Project agreements.

- Recommend to the Board to reduce Valley Water's storage participation request from 50,000 acre-feet to 20,000 acre-feet to address storage oversubscription in the Project.

Valley Water

Clean Water • Healthy Environment • Flood Protection

Valley Water PPT Template
Version Release v.2.02

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Santa Clara Valley Water District

File No.: 24-0551

Agenda Date: 6/24/2024
Item No.: 4.2.

COMMITTEE AGENDA MEMORANDUM
Water Supply and Demand Management Committee

Government Code § 84308 Applies: Yes ☐ No ☒
(If "YES" Complete Attachment A - Gov. Code § 84308)

SUBJECT:
Receive Information on the Sites Reservoir Project.

RECOMMENDATION:
Receive and discuss information on the Sites Reservoir Project.

SUMMARY:
The Sites Reservoir Project (Project) is a proposed 1.41 million acre-foot, off-stream reservoir that would be located north of the Delta approximately 10 miles west of the town of Maxwell in Colusa County. The Project is designed to divert excess flows on the Sacramento River during storms and store it in Sites Reservoir, which can then be released to provide water supply during dry years. In addition to providing water supply for Project participants, the Project will provide public benefits including environmental water supply, recreation facilities, and regional flood benefits. Santa Clara Valley Water District's (Valley Water) Water Supply Master Plan has identified the Project as a potential alternative to help ensure water supply reliability. Current members of the Sites Project Authority and Reservoir Committee (Participants) include both Central Valley Project (CVP) water agencies north of the Delta and State Water Project (SWP) water agencies south of the Delta. There is also state and federal participation in the project through the California Department of Water Resources (DWR) and U.S. Bureau of Reclamation (Reclamation).

The Project is currently fully subscribed and has a waitlist of new agencies interested in joining the Project and existing Participants interested in increasing their participation level. In addition, Reclamation has requested to increase its participation level from 9% to 16%. Valley Water currently has a 0.2% participation level in the Project. In June 2022, Valley Water requested to be placed on the waiting list to have the opportunity to consider increasing participation up to a maximum of 2.7% participation level. If space becomes available and Valley Water is offered the opportunity to increase participation, staff will bring this opportunity to the Board.

Project Schedule & Milestones

The Project has achieved several key milestones in design and permitting since the last update to the Water Storage Exploratory Committee in May 2023. In November 2023, the Sites Project Authority certified the Final EIR/EIS for the Project.
The project has completed 30% design and is currently developing an updated cost estimate which will be released later this year. The Project has also submitted an application for a new water right to the State Water Resources Control Board (State Board) to divert and store water in Sites Reservoir. The State Board water right hearing is currently scheduled to begin in August 2024 and run through April 2025 with the State Board expected to issue its final decision sometime in mid-2025. The final participation decision for the Project is expected to occur in mid- to late-2025 after the State Board issues its decision on the Sites water right.

Sites Benefits and Obligations Contract Update

The Sites Reservoir Benefits and Obligations Contract (Contract) will define the benefits, costs, risks, and financing obligations for Project participants. Negotiations for the Contract are currently underway, and key participation terms proposed in the current draft include the following:

- Participants will own a capacity interest in the project.
- Participants will decide how their storage space is operated and have control over when to fill or release water from their storage space.
- A participant's share of capacity in conveyance facilities is based on their storage capacity in Sites Reservoir.
- The contract term is indefinite, and participants will own their storage and conveyance capacity in perpetuity.
- Participants can sell Sites water to other Participants or to non-Participants.
- Participants can sell or lease their storage space (and corresponding conveyance capacity interest) to another Participant or to a non-Participant; however other participants will have first right of refusal for leasing or purchasing storage space.
- If an agency decides to lease or sell their storage space and more than one participant is interested in leasing or purchasing the storage space, then that space would be allocated pro rata based on the participants' existing participation levels.
- The Sites Authority Board and Reservoir Committee can terminate the project prior to completing construction if the project is no longer deemed viable. Participants would be required to pay for any costs incurred to that point.
- In the event of a Participant default, the Authority will ask first whether any Participants wish to voluntarily take over defaulted Participant's capacity interest before looking for non-Participants to fill the gap. If a buyer can't be found, the defaulted Participant's share will be apportioned pro rata to the remaining participants.

Project Governance Structure

The Sites Project Authority is Joint Powers Authority (JPA) made up of nine Sacramento Valley agencies. Each of the local agencies holds a seat on the Sites Project Board of Directors; DWR and Reclamation also participate as non-voting members of the Sites Authority Board of Directors (Authority Board). The Project governance structure includes a Reservoir Committee comprised of the 22 agencies that are participating in and funding the Project. As part of the development of the Sites Benefits and Obligations Contract, the Project is proposing revisions to the Sites Joint Powers Authority Agreement and the Project Bylaws to ensure that Project Participants have input into decisions which affect the project operations and benefits. The revisions to the Sites Bylaws would delegate decision making from the Authority Board to the Reservoir Committee for any decisions involving the Project costs, benefits, and operations. This includes decisions affecting management of design and construction including budget and activities, contractor selection, change orders, and disputes. It would also delegate decisions affecting project operations and the development of a Project operations plan to the Reservoir Committee.

Under the revised Sites Bylaws, material changes to the Project would require a 75% joint approval from both the Reservoir Committee and the Authority Board. Items which would involve joint approval from both the Reservoir Committee and the Authority Board include:

- Changes to the Sites Water Right
- Land purchases and sales by the Sites Project Authority
- Changes to environmental permits and approvals
- Changes in local capacity interest representation
- Termination of the project
- Decisions concerning litigation
- Amendments to the Sites Bylaws

These revisions are intended to ensure that the Project Participants have a durable decision-making authority over aspects of the Project which would affect the project costs and benefits. The revisions to the JPA Agreement and Sites Bylaws would be adopted concurrent with the Sites Benefits and Obligations Agreement. Once the revised Bylaws are adopted, this joint approval process and delegation of authority to the Reservoir Committee can’t be revoked without a 75% vote from both the Authority Board and the Reservoir Committee.

Valley Water Costs and Benefits

The latest capital cost estimate for the Project is $3.9 billion in 2021 dollars, not including financing costs. This estimate includes anticipated costs for environmental mitigation and other non-construction costs including permitting, real estate, and engineering. An updated cost estimate for capital costs and O&M costs is expected later this year.

The Project has applied for a $2.2 billion Water Infrastructure Finance and Innovation Act (WIFIA)

loan which would cover up to 49% of the Project costs and provide low interest financing for participating water agencies. In addition, the Project has secured $875 Million of State funding through the Proposition 1 Water Storage Investment Program (WSIP) and $440 Million of federal funding.

If Valley Water participates in the Project, its share of costs and water supply benefits would depend on its participation level. The anticipated costs and water supply provided by Valley Water's current participation level and maximum waitlisted level are shown in Table 1 below.

Table 1. *Anticipated Project Yield, Storage, and Costs by Participation Level*

	Existing Participation Level (0.2% Participation)	**Maximum Waitlisted Participation Level (2.7% Participation)**
ESTIMATED WATER SUPPLY BENEFITS FOR VALLEY WATER		
Storage Allocation (AF)	3,117	37,400
Average Delivered Yield (AF) [1]	380	4,590
Average Dry/Critical Year Delivered Yield (AF) [1]	770	9,250
ESTIMATED COSTS FOR VALLEY WATER		
Share of Total Capital Cost (2023 Dollars) [2]	$10.4 Million	$141.7 Million
Estimated Annual O&M Costs (2023 Dollars) [3]	$48,000	$641,000

[1] Delivered yield values are based on Sites Project modeling and may be updated as the project progresses. Delivered yields values assume a 25% carriage water loss. [2] Share of total project capital costs, not including financing, published by the Sites Project. Valley Water has adjusted for inflation to 2023 dollars to be consistent with Valley Water's Water Supply Master Plan. [3] Annual O&M costs can vary widely based on hydrology and operations.

Next Steps

Staff will continue participating in discussions involving the development of the Sites Benefits and Obligations contract and revisions to the JPA Agreement and Sites Bylaws. The Project is aiming to have substantially finalized these documents by the end of 2024 to support Project financing activities ahead of the final participation decision. Staff will provide another project update to the Water Supply and Demand Management Committee when the updated cost estimate is released.

The Project is being evaluated as one of several investment options in the Water Supply Master Plan Planning process. Staff anticipates bringing this Project to the Board for a final participation decision in mid to late 2025.

ENVIRONMENTAL JUSTICE AND EQUITY IMPACT:

There are no environmental justice and equity impacts associated with this agenda item.

ATTACHMENTS:
Attachment: Presentation (PowerPoint)

UNCLASSIFIED MANAGER:
Vincent Gin, 408-630-2633

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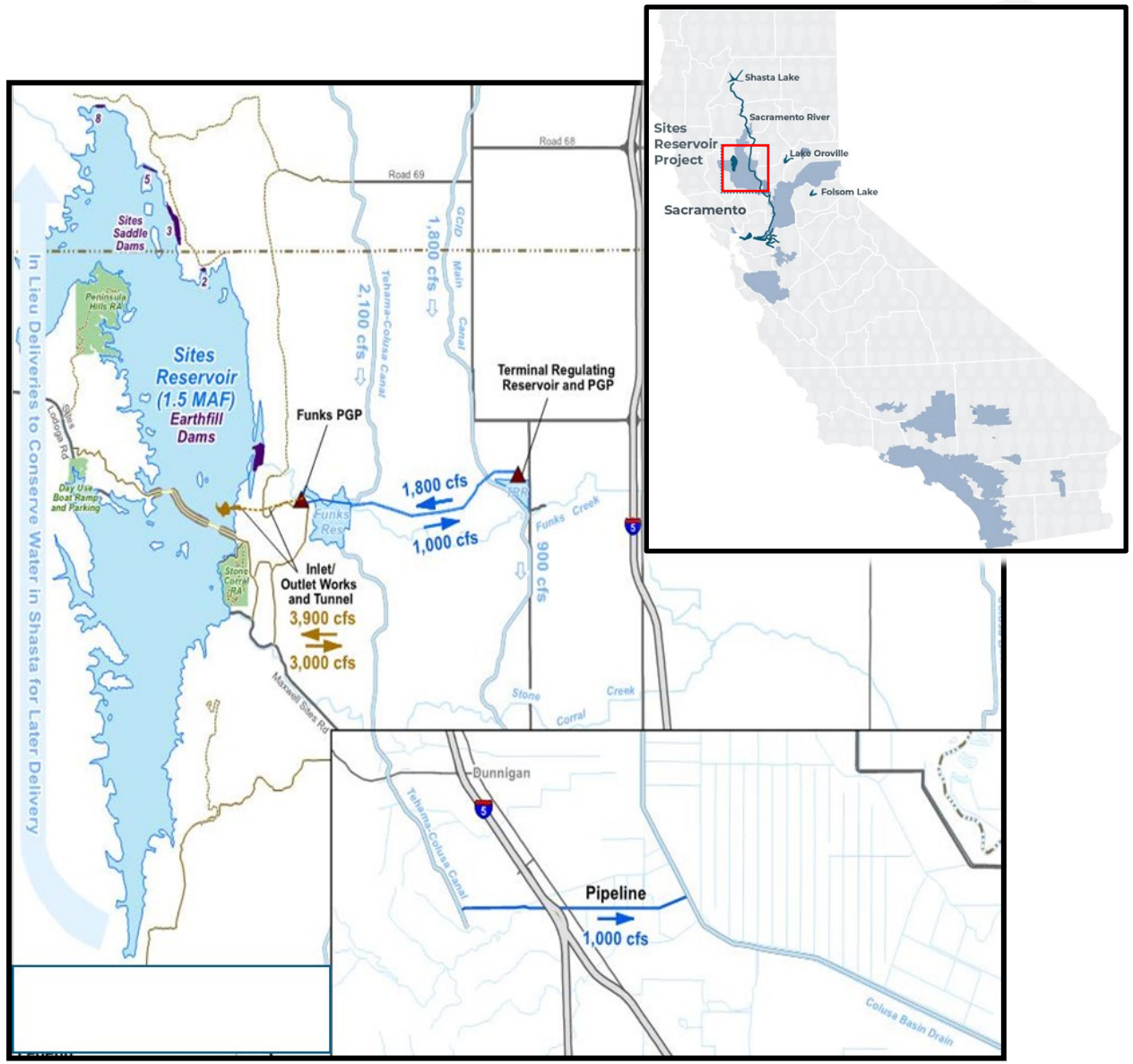
Sites Reservoir Project Update

Water Supply and Demand Management Committee, June 24, 2024

Project Overview

- 1.41 MAF Off-Stream Reservoir
- Estimated Costs: $3.9 Billion (2021 Dollars)
- Diverts and stores excess flows from winter storms
- Project is fully subscribed
  - State and Federal participation
  - 22 Local Agencies
- Waiting List to Join Project



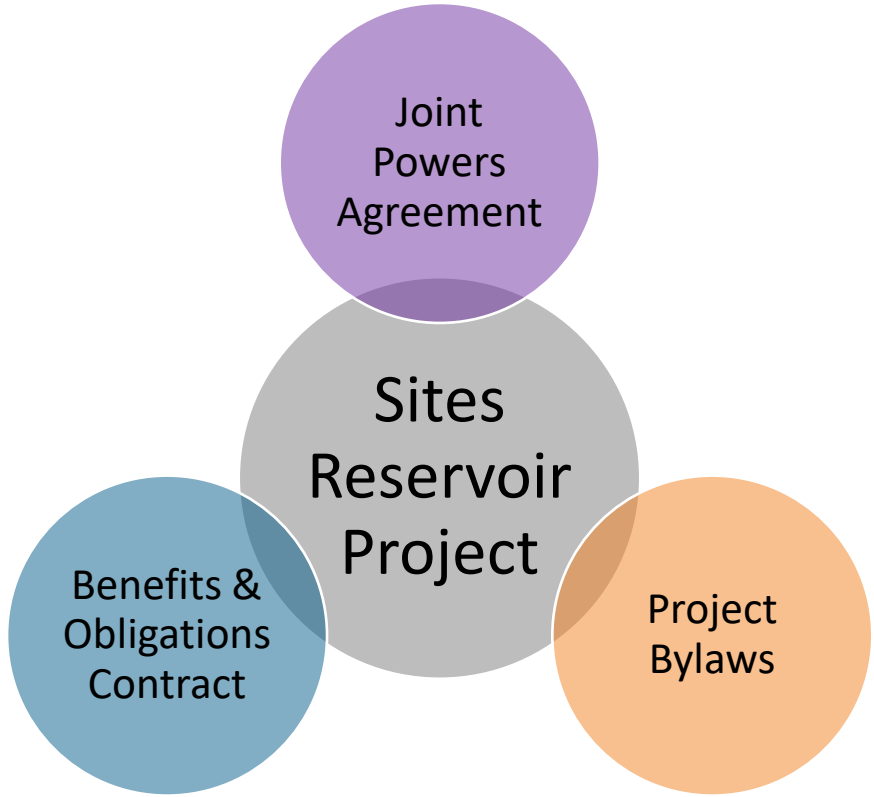
Project Milestones

- Benefits & Obligations Contract discussions began in Summer 2023
- Final EIR/EIS certified November 2023
- Completed 30% Design in spring 2024
- Updated cost estimate anticipated in 2024
- Benefits & Obligations Contract substantially finalized in Fall 2024
- Water Rights Permit anticipated mid-2025
- Final participation decision anticipated mid/late 2025

Terms of Participation

Project Governance

- Joint Powers Agreement creates the Authority Board and Reservoir Committee
- All participants have a seat on Reservoir Committee
- Project Bylaws specifies delegation of authority to the Reservoir Committee
- Benefits & Obligations Agreement specifies assets, rights, benefits, and obligations of participants



Key Participation Terms

Benefits & Obligations Contract

- Follows principle of beneficiary pays.
- Participants will own a capacity interest in the project in perpetuity.
- Participants will decide how their capacity share is operated.
- All participants have equal priority for fill and release capacity.
- Participants can sell Sites water, and lease or sell their storage space.
- Other participants will have first right of refusal for leasing or purchasing storage space.
- If more than one participant wants to lease or purchase storage space from another agency, then that space is allocated pro rata based on participants existing participation level.

Key Participation Terms

Benefits & Obligations Contract

- Project can be terminated the project prior to completing construction if no longer deemed viable, but participants would be required to pay for any costs incurred to that point.
- In the event of a Participant default, the Authority will look for Participants and non-Participants to voluntarily take over defaulted Participant's capacity interest. If a buyer can't be found, the defaulted Participants share will be apportioned pro rata to the remaining participants.

Key Participation Terms

Sites Bylaws

Authority Board

Retained Authorities

Legal Compliance
- Mitigation, water right, and permits

Project Finance
- Debt obligations and payments
- Participant payments
- Auditing and accounting

Local Community Relations

Delegate

Reservoir Committee

Delegated Responsibilities

Managing design and construction
- Budget and activities
- Contractor selection
- Change orders and disputes

Managing commitments in Federal and State Agreements

Developing operations plans

Shared Decisions & Material Changes

- Changes to the Sites Water Right
- Land purchases and sales by the Sites Project Authority
- Changes to environmental permits and approvals
- Changes in local capacity interest representation
- Termination of the project
- Decisions concerning litigation
- Amendments to the Sites Bylaws

Key Participation Terms

Durability of Delegation

- JPA Agreement cannot be amended to divest the Reservoir Committee of any authority they have under the Bylaws.
- Changes to Sites Bylaws require a 75% vote of both Authority Board and Reservoir Committee.
- Material changes and shared decision items require 75% vote of both the Authority Board and Reservoir Committee.

Project Costs

- Total Estimated Project Costs: $3.9 Billion (2021 Dollars)
  - WSIP Funding: $875 Million
  - Federal Funding: $440 Million
  - Submitted Application for $2.2 Billion WIFIA Loan

- Anticipate an updated cost estimate later this year

Valley Water Benefits & Costs

- Valley Water current participation level: 0.2%
- On waiting list to potentially increase up to a maximum of 2.7%

	0.2% Participation (Existing Level)	2.7% Participation (Maximum Waitlisted Level)
Storage Allocation (AF)	3,114	37,400
Dry Year Annual Yield (AF)	770	9,250
Capital Costs ($2023)	$10.4 Million	$141.7 Million
Estimated Annual O&M Costs ($2023)	$48,000	$641,000

Next Steps

- Continue staff participation in contract negotiations
- Updated project costs later this year
- Valley Water participation decision in mid to late 2025

QUESTIONS

Santa Clara Valley Water District

File No.: 24-0552

Agenda Date: 6/24/2024
Item No.: 4.3.

COMMITTEE AGENDA MEMORANDUM
Water Supply and Demand Management Committee

Government Code § 84308 Applies: Yes ☐ No ☒
(If "YES" Complete Attachment A - Gov. Code § 84308)

SUBJECT:
Receive Information on the B.F. Sisk Dam Raise and Reservoir Expansion Project.

RECOMMENDATION:
Receive and discuss information on the B.F. Sisk Dam Raise and Reservoir Expansion Project.

SUMMARY:
The U.S. Bureau of Reclamation (Reclamation) and the San Luis and Delta-Mendota Water Authority (SLDMWA) are jointly developing the B.F. Sisk Dam Raise and Reservoir Expansion Project (Project). This Project will raise the existing B.F. Sisk Dam by 10 feet and increase the storage capacity of San Luis Reservoir, the Nation's largest off-stream reservoir, by 130,000 acre-feet (AF). This Project is separate and distinct from the B.F. Sisk Safety of Dams Modification Project, which is being undertaken by Reclamation and the Department of Water Resources (DWR) to address seismic risks of the existing dam and will not increase the storage capacity. However, in order for this expansion Project to move forward at a desirable cost and timeline, it will need to be constructed concurrently with the seismic retrofit project.

SLDMWA and Project participants are now in the process of negotiating an operations and cost share agreement with Reclamation, which is expected to be complete by August 2024. The agreement will describe how the costs and benefits of the Project will be shared and will provide Project participants with the commitments needed to justify further financial contributions. Santa Clara Valley Water District (Valley Water) will not be a party to this agreement and will continue its participation in the Project through the Activity Agreement with SLDMWA. However, staff anticipates that approval from the Valley Water Board will be required prior to SLDMWA executing major Project agreements.

Current Participation Levels

On June 27, 2023, Valley Water's Board approved a participation level up to 60,000 AF, which is equivalent to 46 percent of the total Project, or 66 percent of the participant share of the Project. The Project was undersubscribed by 6,253 AF at this time. However, Westlands Water District has since

agreed to assume the total remaining capacity and the Project is now fully subscribed. The current participation levels are listed in Table 1 below. Valley Water's Water Supply Master Plan has identified the Project as a potential option to diversify its existing storage programs.

Table 1: Current investor participation levels

Participating Agency	Investor Requested Storage Capacity (AF)	Participation Level*
Santa Clara Valley Water District	60,000	65.9%
Westlands Water District	11,253	12.4%
City of Tracy	5,000	5.5%
San Benito County Water District	5,000	5.5%
San Luis Water District	4,497	4.9%
Del Puerto Water District	3,650	4.0%
Byron Bethany Irrigation District	1,000	1.1%
Pacheco Water District	600	0.7%
Total	91,000	100.0%

*Reflects each Investor's share of the 70% non-federal portion of the Project, while the federal share constitutes the remaining 30%.

Project Funding

Valley Water has made a total financial contribution of approximately $1.8 million towards the planning phase of the Project. The next request for additional planning funding is anticipated to occur in late 2024 or early 2025, while construction funding is expected in early 2028.

On May 30, 2024, Reclamation announced an additional $75 million in Water Infrastructure Improvements for the Nation Act (WIIN Act) funding to the Project, bringing the total federal commitment to $170 million. The WIIN act funding will count towards the federal investment in the Project and will not offset costs for Project participants.

Next Steps

Reclamation is currently developing the schedule and milestones for the Project, but some uncertainty remains. After completion of the operations and cost share agreement, Reclamation will move into the design phase of the project. It will also begin negotiating a series of agreements with SLDMWA and DWR that are needed to implement the Project. The Project is being evaluated as one of several storage projects in the Water Supply Master Plan Planning process.

ENVIRONMENTAL JUSTICE AND EQUITY IMPACT:

The B.F. Sisk Dam and Reservoir Expansion Project addresses water supply equity by ensuring a cost-effective, high-quality supply is available for all of Santa Clara County, including disadvantaged

communities.

ATTACHMENTS:
None

UNCLASSIFIED MANAGER:
Vincent Gin, 408-630-2633

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File No.: 24-0537

Agenda Date: 6/24/2024
Item No.: 4.4.

COMMITTEE AGENDA MEMORANDUM
Water Supply and Demand Management Committee

Government Code § 84308 Applies: Yes ☐ No ☒
(If "YES" Complete Attachment A - Gov. Code § 84308)

SUBJECT:
Receive Information on the Draft Drought Response Plan Framework.

RECOMMENDATION:
Receive and discuss the Draft Drought Response Plan Framework Update and provide feedback to staff on the Drought Response Framework.

SUMMARY:
Valley Water is developing a Drought Response Plan (DRP) to expand and refine drought response actions and to establish a more robust approach for determining when to implement those actions. Refining drought actions, especially for the early phases of a drought, will improve the effectiveness of Valley Water's overall drought response. These updates are informed by lessons learned from the two multi-year droughts in the past decade. To support this effort, the United States Bureau of Reclamation (USBR) awarded Valley Water a $200,000 grant in 2020. The final DRP will be used to update Valley Water's Water Shortage Contingency Plan (WSCP), which is a state mandated plan for water agencies to define how and when they respond to water shortage.

The DRP has four main components: a benchmark study, a vulnerability assessment, drought triggers and actions, and the overall drought response framework. Valley Water presented the benchmark study, which gathered information and data from other agencies on their approach to drought response, to the Water Conservation and Demand Management Committee (WCDMC) in February 2022. The Vulnerability Assessment, which examined Valley Water's susceptibility to drought, was presented in August 2022 to the WCDMC. Proposed new drought triggers and actions were brought to the WCDMC committee in June 2023. The Drought Response Framework that is being presented today combines these elements into a final draft report (Attachment 1).

To develop the DRP, Valley Water convened an internal stakeholder group composed of experts from across Valley Water and established a Task Force of Valley Water's retailers, municipalities, agricultural and environmental stakeholders, and other interested parties to provide feedback on the plan as it was developed. Valley Water also hired an expert consultant to support plan development.

Valley Water will bring the draft Framework to the Task Force in the coming months.

Drought Stages and Triggers

To be consistent with State guidance, the draft DRP proposes to expand the number of drought stages from four to six. In addition to the six drought stages, periods outside of drought (normal operations) are included as a new Stage 0. Normal operations include permanent “water wise” actions that were approved by Board Resolution 23-52 and enforcement of water waste restrictions in Board Ordinance 23-02.

Valley Water’s current WSCP looks at projected end-of-year county-wide groundwater storage which incorporates estimated demand, scenarios of local and imported surface water availability, other non-Valley Water supplies, and regulatory constraints. Worsening stages of drought are triggered as the projected end-of-year groundwater storage decreases. Through the DRP, Valley Water is looking to expand triggers to better consider surface water supplies, incorporate risk of surface water outages (such as Anderson Dam), and consider proactive indices that have been shown to capture the early onset of drought.

Proposed new triggers to supplement end-of-year groundwater storage include the Drought Severity and Coverage Index (DSCI) and a new Valley Water-specific surface water availability index. The DSCI is a product of the Drought Monitor that converts drought levels to a single value for specific geographical areas. DSCI ranges from 0 to 500 with higher values associated with more intensive drought. Valley Water would track the DSCI for the watersheds around the major reservoirs in the imported water system and Santa Clara County.

The surface water availability index is comprised of usable storage in both local and out-of-county facilities, imported water allocations, and other imported water transfer and exchange supplies. Analysis has found that this surface water availability index will support a more rapid drought response because it provides an earlier warning than projected groundwater storage.

The proposed Stage 1 would be a new level that would be triggered by a DSCI level of 150 or greater and/or surface water availability of less than 250 thousand acre-feet (TAF). Stage 1 could involve a voluntary call for water conservation and will allow Valley Water to ramp up drought response ahead of mandatory calls for water conservation.

The proposed stages 2 through 5 represent a deepening drought with more intensive drought response action associated with each level, such as increasing mandatory water use reduction calls. Stage 2 could be triggered when surface water availability falls below 150 TAF or by projected end-of-year groundwater storage falling below 300 TAF. Further stages are triggered by falling groundwater storage levels. Level 6 is an emergency stage involving low groundwater availability and/or infrastructure outages.

Drought Response Actions

The drought response actions include categories for operational and supply augmentation actions that would be led by Valley Water, and demand management and outreach actions that would require a coordinated effort between Valley Water, retailers, groundwater users, municipalities, and the public. The table is a menu of actions that are possible within a given drought stage depending on the specific circumstances; it is not required that all actions be implemented in each stage. Chosen actions will be based on drought conditions and coordination with stakeholders, including bringing recommendations for drought actions to the Board of Directors. The new proposed actions provide:

1. more detailed stage definitions and guidance on when to implement demand management actions,
2. improved specificity of outdoor irrigation restrictions,
3. resource planning and communications strategies associated with water restrictions enforcement,
4. greater specificity on when and which stakeholders to coordinate drought response with,
5. guidance on when to evaluate supply augmentation actions,
6. guidance on conditions in which Sustainable Groundwater Management Act (SGMA) authorities may be implemented.

Next Steps

Comments received from the Committee and the Task Force will be incorporated into a final draft which will be submitted to USBR for their review per the requirements of the grant. After the USBR review, the Draft and Final DRP will be presented to the Board for comments and approval, respectively. Once the DRP is approved by the Board, Valley Water will update its WSCP.

ENVIRONMENTAL JUSTICE AND EQUITY IMPACT:

There are no environmental justice and equity impacts associated with the DRP as it is unlikely to result in disproportionate impacts on environmental justice communities and is not associated with an equity opportunity. The DRP addresses water supply equity by establishing a framework to reduce water use during droughts in all communities, including disadvantaged communities**.**

ATTACHMENTS:

Attachment 1: DRAFT Drought Response Framework
Attachment 2: PowerPoint

UNCLASSIFIED MANAGER:

Kirsten Struve, 408-630-3138

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May 31, 2024

To: Samantha Greene, Valley Water
From: Luke Wang, Hazen and Sawyer
Phoebe Aron, Hazen and Sawyer
Leah Bensching, Hazen and Sawyer
Kirsten Plonka, Hazen and Sawyer
David Mitchell, M.Cubed

cc: Michael Martin, Valley Water

QC: Devon Becker, Hazen and Sawyer

Drought Response Framework

DRAFT Report

Executive Summary

Santa Clara Valley Water District (Valley Water) has developed a Drought Response Plan (DRP) to improve water supply reliability during future droughts. The DRP will help Valley Water prepare for and respond to droughts by identifying early indicators of drought, refining drought response triggers and actions, and enhancing coordinated response actions in Santa Clara County. The DRP was developed through collaboration with a wide range of stakeholder groups, both internal and external to Valley Water and was informed by lessons learned from the responses to recent droughts.

Updated Drought Stages and Triggers

Within the DRP, updates to drought stages and triggers were proposed. Drought stages were updated to align with the California Department of Water Resources' (DWR) six standard water shortage stages (Table ES-1).

Table ES-1: DWR Six Standard Water Shortage Stages

Stage	Short-term Water Use Reduction
0	None
1	0-10%
2	10-20%
3	20-30%
4	30-40%
5	40-50%
6	> 50%

Drought triggers are a quantitative means for determining the water shortage stage and associated response actions. Valley Water's current triggers consist of projected end-of-year groundwater storage. While the existing triggers implicitly incorporate estimates of local supplies and imported water availability, drought triggers were updated under this DRP to consider a more explicit accounting of Valley Water's different water supply sources.

The new triggers still consider projected end-of-year groundwater storage, but also include explicit measures of surface water availability as well as "long lead" triggers for early drought detection and "exit" triggers for ramping down drought response. The U.S. Drought Monitor and Drought Severity and Coverage Index (DSCI) were selected as the basis of the long-lead index based on statistical analysis of prior drought events. The proposed surface water availability index was developed based on an aggregation of the availability of Valley Water's imported and local surface water supplies based on historical and modeled data. New exit triggers facilitate the gradual reduction of drought response actions and water usage as the drought conditions begin to abate. The proposed drought response triggers for each water shortage stage are shown in Figure ES-1 and exit triggers are shown in Figure ES-2.

Figure ES-1: Proposed Stages and Triggers to Initiate Drought Response Actions

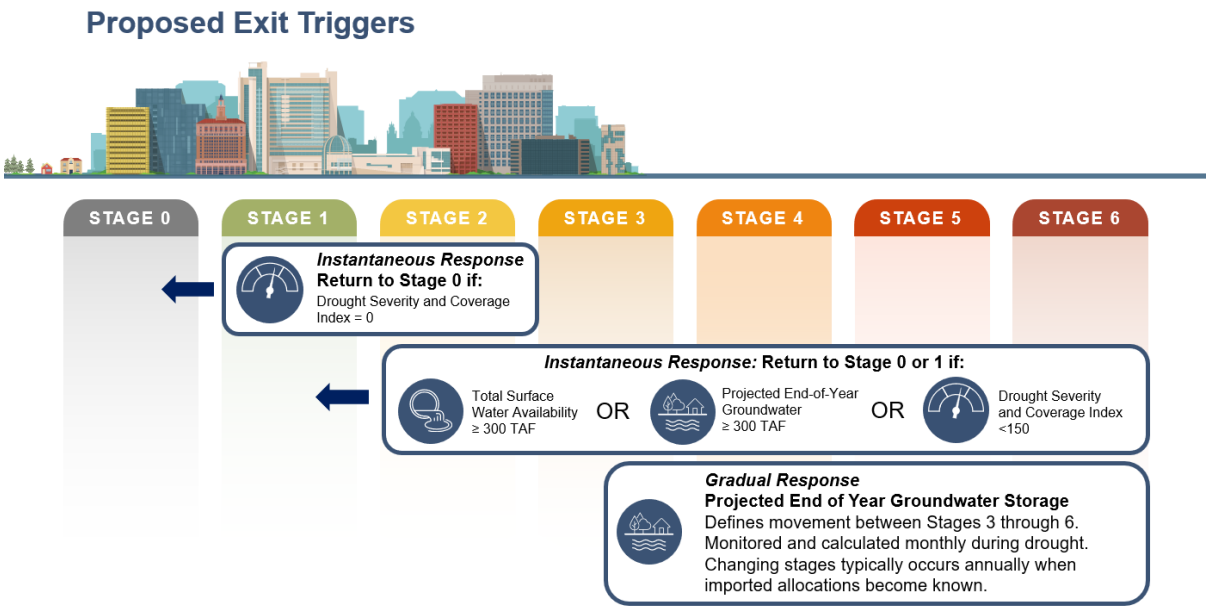


Figure ES-2: Proposed Stages and Triggers to Reduce Drought Response Actions

Regional Vulnerabilities

A vulnerability assessment was conducted to evaluate the risk and impacts of drought in Santa Clara County in support of this DRP, consistent with Bureau of Reclamation guidelines. The assessment focused on key factors that increase Valley Water's vulnerability to drought, which include climate

change, existing and potential regulations, infrastructure conditions and constraints, and future water quality conditions. Key findings of the assessment include:

- Climate change is expected to reduce the availability of both imported and local supplies, increase the frequency and severity of drought, and decrease the ability to effectively capture and store storm events.
- The Bay-Delta Water Quality Control Plan (inclusive of Voluntary Agreements) is expected to resolve conflicts over outflow requirements but will result in reduced exports and fewer access to transfer supplies. The amount of reduction depends on whether the Voluntary Agreements are adopted.
- Current storage restrictions to Valley Water's local reservoir system, retail agency distribution system limitations, and challenges with retrieving regionally banked groundwater in critically dry years are key infrastructure constraints that exacerbate drought impacts.
- Water quality impacts, such as algal blooms, water temperature concerns, and regulatory-driven treatment requirements may result in additional system constraints that worsen drought risk.

Mitigation Actions

Valley Water's Water Supply Master Plan (WSMP) is the primary planning effort for mitigating the key vulnerabilities outlined in the DRP. Key projects and programs originating in the WSMP were reviewed as potential mitigation actions with stakeholders to the DRP. Selected mitigation actions were grouped into two general categories, including (1) investment in new infrastructure projects and programs and (2) implementation of management actions. Specific projects and programs were evaluated based on recent water supply systems modeling performed in support of the WSMP. Modeling output of several future project portfolios are shown in Figure ES- 6 as an overview of frequency and severity of shortages.

The evaluation informed a conceptual prioritization of mitigation actions with the following findings:

- Meeting Valley Water's conservation goals should continue to be prioritized as they are a critical component in reducing water demand and mitigating drought risk.
- Near-term investment in additional transfer agreements should continue to be prioritized as they are important in securing imported water availability during drought. However, they are not considered a long-term solution given climate change and future regulatory impacts in the Delta.
- Modeling indicated that recycled water and potable reuse projects will be highly important in meeting Level of Service goals in the future given they are less impacted by climate change, drought, and the environmental flow regulations. Given their ability to offset the declining availability of existing supply sources, these projects should be prioritized.
- Implementation of projects and programs that enhance beneficial use of local supplies, such as the Lexington Pipeline project should continue to be prioritized and explored.

- Additional regional groundwater banking or surface water storage could increase operational flexibility, enhance storage for dry periods, and potentially allow for greater capture of the shorter, high flow events that are expected to become more common with climate change.

The WSMP evaluated portfolios of projects to determine which projects or combination of projects would reach Valley Water's level of service (LOS) goals, as shown in Figure ES-3.

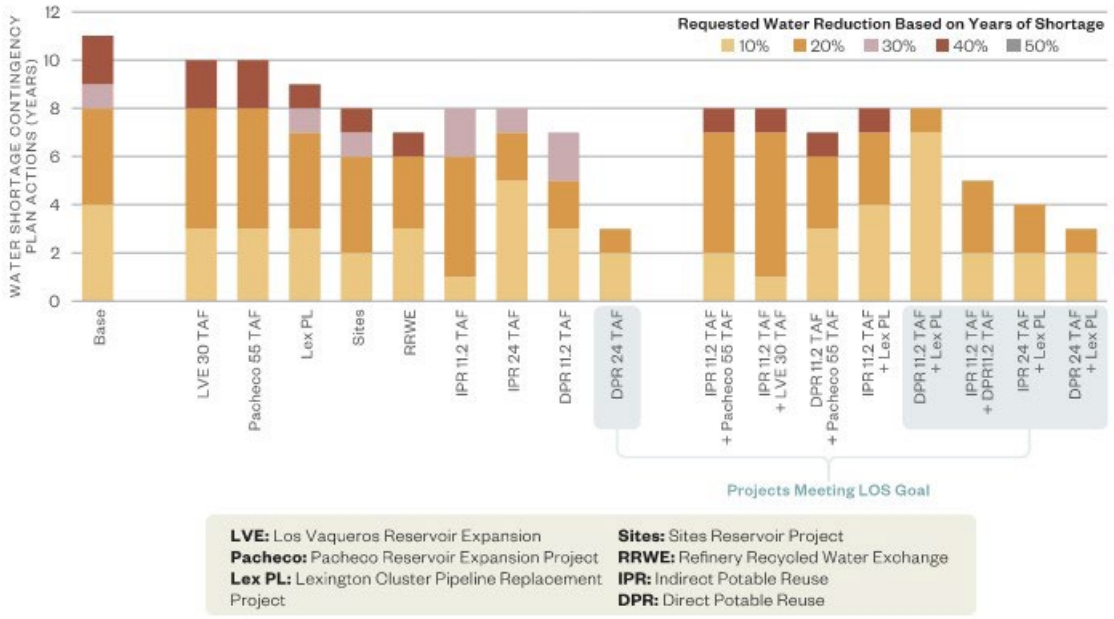


Figure ES-3: Modeled Frequency and Severity of Expected Shortages Assuming 2045 Demand under the Median Climate Change Scenario (Valley Water, 2021c)

In addition to these findings, Valley Water should continue to consider more explicit modeling and/or sensitivity testing of certain vulnerabilities to better quantify potential risks and mitigation action performance. These vulnerabilities include expected reductions in imported water deliveries resulting from the Bay-Delta Water Quality Control Plan, local/regional water quality impacts, and short-term outages concurrent with drought.

Drought Response Actions

Valley Water's drought response actions were also updated under the DRP. Through collaboration with DRP stakeholders, existing drought response actions were recategorized and new drought response actions were developed. The drought response actions can be categorized into the following categories: demand management, operational, supply augmentation, and others.

Many of the drought response actions and stages were prioritized to allow for progressive implementation, while maintaining flexibility within each drought stage for when to implement each drought response action. Figure ES-4 depicts the overall strategy developed to prioritize implementation of drought response actions. Appendix E provides a detailed overview of the specific drought response

actions organized by stage, trigger, and drought response action category.

Figure ES-4: Overall Drought Response Action Strategy

Financial response and implications of droughts were also considered, as they can be significant. During a drought, revenues generally decrease as retailers and their consumers reduce water consumption, and expenses tend to increase due to increased coordination, outreach and staffing as well as the increased cost of water, particularly supplemental imported supplies. To mitigate financial risks, Valley Water has implemented several key measures, including the following:

- Building & utilizing reserves.
- Tracking and applying for grant funding related to drought response and relief.
- Leveraging existing conservation programs and funding (e.g., conservation-related cost sharing agreements with retail agencies and cities).
- Implementing drought-specific financial tracking to improve budgeting and planning future drought responses.

Operational & Administrative Framework

The DRP concludes with an articulation of an operational and administrative framework. The operational and administrative framework has been designed to outline the roles and responsibilities and associated procedures for the effective implementation of the DRP. This includes:

- Roles and responsibilities for Valley Water, Retail Agencies, and the Drought Task Force.
- Coordination and communication goals and strategies, both internal and external to Valley Water.
- Procedures for continual evaluation and periodic update of the DRP.

Table ES-2 provides a concise summary of the task and procedures integral to the operation and administration of the DRP.

Table ES-2: Operational and Administrative Framework Summary

DRP Element	Task	Procedure
Conduct Drought Monitoring	Develop annual supply and demand projections	Estimate demands and available supplies for the upcoming year.
	Identify infrastructure constraints	Identify any known Valley Water infrastructure issues that may pertain to near-term water supply reliability.
	Conduct supply assessment	Compare supplies and demands and discuss any infrastructure constraints that may impact supply delivery, assess which shortage stage is recommended.
	Initiate Drought Task Force	Initiate Drought Task Force based on identified triggers in Section 3.
Coordinate Response Actions	Identify response actions	Based on the water shortage response stage identified, determine which response actions are recommended.
	Evaluate county-wide conditions	Identify county-wide drought issues and discuss the need for a regional response with Drought Task Force.
	Plan for response actions	Develop scope, schedule, and budget for implementation of recommendations.
	Approval and implementation of response actions	Approval by Valley Water Board as needed.
	Communicate response actions	Inform retailers, municipalities, and the public about the necessary requirements and provide guidance on how to attain the desired outcomes.
Implement Mitigation Actions	Ongoing evaluation and prioritization of mitigation actions	Continue assessment of mitigation actions by Valley Water staff.
	Identify funding opportunities	Pursue funding opportunities.
	Implementation of mitigation actions	Initiate design, environmental documentation, permitting, and construction as necessary.
Drought Recovery	Monitor for exit triggers	Track exit triggers and step down drought stage and severity of response actions as appropriate.
Update DRP	DRP evaluation	Conduct a post-drought evaluation.
	DRP update(s)	Thoroughly examine the DRP and make updates to the framework as necessary.

Table of Contents

1. Introduction

Santa Clara Valley Water District (Valley Water) was formed in 1929, and provides wholesale water supply, groundwater management, flood protection, and stream stewardship to all of Santa Clara County (County), home to approximately two million residents and covering 1,300 square miles. Valley Water provides wholesale water to the region within its service area, including 13 retail agencies: California Water Service Company, City of Gilroy, Great Oaks Water Company, City of Milpitas, City of Morgan Hill, City of Mountain View, City of Palo Alto, Purissima Hills Water District, San José Municipal Water System, San Jose Water Company, City of Santa Clara, Stanford University, and City of Sunnyvale.

Valley Water manages a diverse water supply portfolio and has made significant investments to enhance water supply reliability and conservation in the County. These investments currently enable Valley Water to cope with the natural variability in supply and meet the County's water supply needs in all but multi-year droughts.[1] However, climate change, regulatory uncertainty surrounding imported and local supplies, and continued growth in the County have the potential to constrain water supply reliability and increase the County's risk from drought. Additionally, recent droughts have identified several challenges and lessons learned that justify reexamination of Valley Water's existing drought response.

In response to these concerns, Valley Water has developed a Drought Response Plan (DRP) to improve water supply reliability in Santa Clara County during times of drought. The DRP will help Valley Water prepare for and respond to droughts by identifying early indicators of drought, refining drought response triggers/actions, and enhancing coordination of drought response throughout the County. The DRP includes a drought response framework and an evaluation of new approaches to determine when to request water use reductions from the public and what those requests might entail. The elements of the DRP are listed in Section 1.1.

The 2012-2016 and the 2021-2023 droughts have shown that establishing a coordinated response that ensures reliable delivery of safe, clean water is a challenge to plan and implement. The DRP was informed by lessons learned from Valley Water's and other water agencies' previous drought responses.

As an integral part of the project, Valley Water actively engaged in outreach and collaboration with diverse stakeholder groups, as outlined in Section 1.2. A crucial aspect of this endeavor involved the establishment of a Drought Task Force, as detailed in Section 1.3. Comprising community leaders and water agency staff with a range of expertise in water needs and planning, the Task Force played a vital role in shaping the development of the DRP. Working in close collaboration with the Task Force, Valley Water formulated a comprehensive set of overarching goals and guiding principles to inform the DRP's creation. The DRP itself was carefully crafted through a series of workshops and information requests conducted between 2021 and 2023, with valuable input from the Drought Task Force. The goals, principles, and intricacies associated with the DRP's development process are summarized in Sections 1.4 and 1.5. Valley Water's DRP was formally adopted by Valley Water on January XX, 202X, with further

[1] Valley Water's Drought Risk Assessment, in its 2020 Urban Water Management Plan, projected sufficient supply availability to meet 2020-2045 demand during a single year and multi-year drought scenarios while acknowledging that future uncertainty in hydrology and regulations could affect these projections. These factors and other risks are evaluated in the memorandum documenting a Vulnerability Assessment of Valley Water's system to drought.

information regarding the adoption process and the final submission to the Bureau of Reclamation (Reclamation) presented in Section 1.6.

1.1 DRP Elements

The DRP is organized into the following seven chapters in alignment with Reclamation's Drought Response Program Framework:

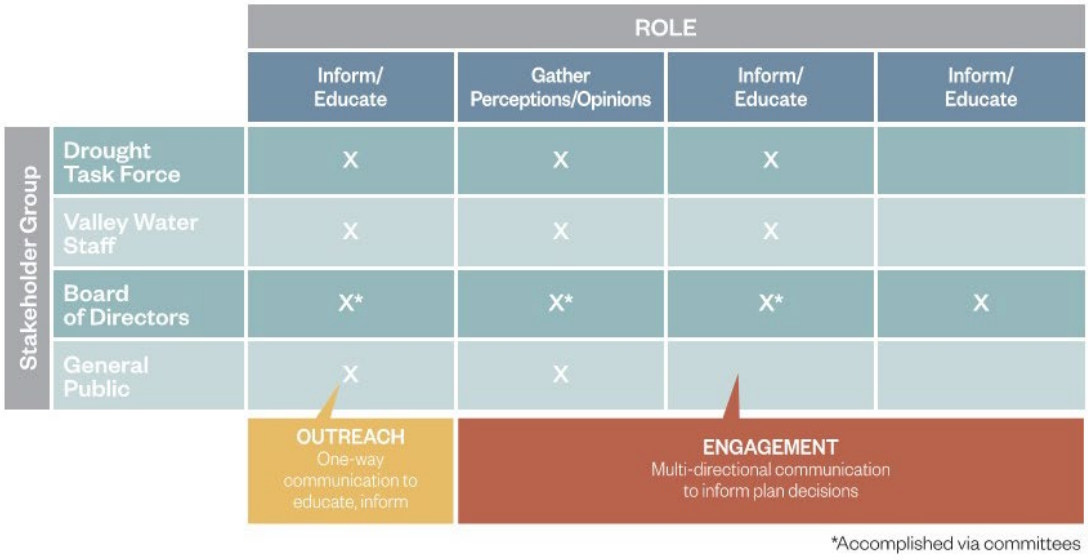
- Chapter 1: Introduction – This chapter provides an overview of the DRP, including details about the outreach and engagement efforts undertaken during its development. We also present the regional drought goals and guiding principles that were instrumental in shaping the DRP. Additionally, this chapter outlines the DRP development process and provides information related to plan adoption and submittal.
- Chapter 2: Background – This chapter offers a brief description of the regional water suppliers, highlighting key water resource supplies and regional water demand. These essential details establish a solid foundation for understanding the DRP.
- Chapter 3: Regional Drought Monitoring Framework – The Regional Drought Monitoring Framework sets forth a systematic approach to monitor both near-term and long-term water availability. It also establishes a framework for predicting the likelihood of future droughts or confirming the presence of an ongoing drought.
- Chapter 4: Vulnerability Assessment – The Vulnerability Assessment focuses on enhancing our understanding of the impacts of climate change on future water demand within Valley Water's wholesale service area. It also delves into an examination of the sources of Valley Water's water supplies during normal periods and drought conditions.
- Chapter 5: Mitigation Actions – This chapter outlines various projects or programs that can be implemented preemptively to reduce the potential impact of drought. These mitigation actions are designed to alleviate the consequences of future drought events.
- Chapter 6: Drought Response Actions – In this section, we detail the near-term actions aimed at addressing the demand side of the water balance during periods when water supply falls short of meeting demand. These response actions are crucial for managing water resources during drought scenarios.
- Chapter 7: Operational and Administrative Framework – The Operational and Administrative Framework identifies the parties responsible for implementing each element of the DRP. It also establishes the process and schedule for monitoring, evaluating, and updating the DRP to ensure its ongoing effectiveness and fiscal sustainability.

1.2 Outreach and Engagement

Valley Water proactively collaborated with a wide range of stakeholder groups throughout the development of the Drought Response Plan. Table 1-1 provides a summary of the different stakeholder groups involved and their respective roles in relation to the DRP. Detailed descriptions of each

stakeholder group and the specific methods employed for outreach and engagement are presented in the subsequent sections.

Table 1-1: **Stakeholder Groups & Roles**



1.3 Drought Task Force

As part of this endeavor, Valley Water undertook the recruitment, assembly, and active engagement of a Drought Task Force consisting of all 13 water retailers and 15 municipalities within its service area as well as other stakeholders. This task force was carefully composed of community leaders with extensive knowledge and expertise, allowing them to provide diverse and well-informed perspectives to facilitate effective drought contingency planning. Table 1-2 presents the members of the Drought Task Force.

Table 1-2: Drought Task Force Members

Name	Organization
Chelsea Haines	ACWA
Danielle McPherson Tom Francis Kyle Ramey	BAWSCA
Adrian Covert	Bay Area Council
Elaheh Esfahanian Michael Hurley Scott Wagner Michael Bolzowski Anthony Meyer Margaret Golden Tammie Myers	California Water Service
Peri Newby Todd Caurso	City of Campbell
Deborah Feng Jimmy Tan Andre Duurvoort	City of Cupertino
Daryl Jordan Heidi Bazan Jimmy Forbis	City of Gilroy
Samantha Vergara Harris Siddiqui Sophia Wendt Linda Grand	City of Milpitas
Steve Leonardis	City of Monte Sereno
Tanya Carothers	City of Morgan Hill
Elizabeth Flegel Emily Yarsinske	City of Mountain View
Karla Dailey Kevin Carley	City of Palo Alto
Diane Asuncion Diane Foronda	City of Santa Clara
M. Leah Cabute	City of Saratoga
Mansour Nasser Winola Cheong	City of Sunnyvale
Alice Kaufman Kit Gordon	Committee for Green Foothills
Helena Roberts Michelle Thom Joseph Deviney Drew Raymond Mike Will Naresh Duggal Jeff Camp Chris Curry Jasneet Sharma Jason Ebling Darius Haghighi	County of Santa Clara
Ashley Overhouse	Friends of the River
John Roeder Timothy Guster	Great Oaks

Name	Organization
Stephanie Moreno	Guadalupe-Coyote Resource Conservation District
Kara Gross	Joint Venture Silicon Valley
Victoria Zhang Meg Giverson	League of Woman Voters
Peter Van Dyke Dina Iden	Loma Prieta Resource Conservation District
Ana Maria Ruiz	Midpeninsula Open Space District
Jethroe Moore	NAACP San José
Abby Ramsden	Nature Conservancy
Heather Cooley	Pacific Institute
Patrick Walters	Purissima Hills
Alvina Narayan Darwin Lasat Derek Hentschke Nicole Harvie Sandra Freitas	San José Municipal Water System
Bill Tuttle Curtis Rayer	San Jose Water Company
Jess Brown Erin Gil	Santa Clara County Farm Bureau
Shani Klaus Guilianna Pendleton Annie Yang	Santa Clara Valley Audubon
Michelle Huttenhoff	San Francisco Bay Area Planning and Urban Research Association (SPUR)
Katja Ivin Dave Poeschel	Sierra Club Loma Prieta
Eddie Truong Derrick Seaver	Silicon Valley Organization
Julia Nussbaum Erika Kudyba	Stanford University
Manisha Kothari Matt Moses Fan Lau	SFPUC
Dennis Murphy	Sustainable Silicon Valley
Matt Morley Marina Chislett	Town of Los Gatos
Emiko Ancheta Carl Cahill	Town of Los Altos Hills
Ken Podgoresk	United Neighborhoods Santa Clara County
Derecka Mehrens	Working Partnership
Michael Martin Kirsten Struve Neeta Bijoor Samantha Greene Jing Wu	Valley Water
Luke Wang Kinsey Hoffman Phoebe Aron Sarah Dominick Kirsten Plonka	Hazen

1.3.1 Valley Water Staff (Internal Stakeholders)

Internal stakeholders consisting of staff representing key offices, divisions, and units of Valley Water's organization were consulted during DRP development. Valley Water staff provided input to the DRP through data requests, workshops, interviews, and review of technical memoranda.

Table 1-3: Valley Water Internal Stakeholders Consulted for the DRP

Organizational Group	Division	Unit/Office
Water Utility	Water Supply	• Water Supply Planning and Conservation • Imported Water • Recycled and Purified Water
	Raw Water	• Raw Water Operations • Groundwater Management
	Treated Water	• Water Quality • North Water Treatment Operation • South Water Treatment Operation
Integrated Water Management	Asset Management	
External Affairs	Office of Communications	
Financial Planning & Management	Financial Planning & Revenue Collection	

1.3.2 Valley Water Board of Directors

The formal decision-making authority responsible for adopting the DRP is Valley Water's Board of Directors (Board). Throughout the development process of the DRP, Valley Water staff diligently provided regular updates to the Board during public committee meetings (Environmental and Water Resources Committee and Water Supply and Conservation Committee), ensuring that they remained well-informed about the progress and developments of the plan. This process provided both the Board and the general public the opportunity to review and provide comment on the draft DRP.

To reach all customers within Valley Water's service area, Valley Water included DRP informational items in their regularly scheduled Board Committee Meetings. This provided an opportunity for interested individuals to learn about the DRP planning efforts, view the Drought Task Force participants and workshop schedules, and review and comment on the plan.

1.3.3 Other Stakeholder Outreach

Valley Water coordinated with each of the retail water agencies in their service area through a Retailer Working Group consisting of representatives from each of Valley Water's 13 retail agencies. The Retailer Working Group provided feedback on the implementation of their Water Shortage Contingency Plans (WSCPs), challenges in implementing/participating in regional drought response, and suggestions on how regional drought response could be better communicated/coordinated.

1.4 Regional Drought Management Goals

During the initial stages of the planning process, specific regional drought management goals were established for the DRP. These goals serve as fundamental objectives that inform and shape the DRP. The regional drought goals identified for the DRP are as follows:

- Allow Valley Water to be more proactive in anticipation of upcoming droughts.
- Establish a toolbox to be prepared for drought (before and after).
- Promote consistency in drought messaging between Valley Water retailers and municipalities.
- Determine early indicators of drought.
- Refine drought response triggers.
- Update Water Shortage Contingency Plan.

Prior to the initial workshop, stakeholders were asked to fill out a brief survey. The common themes of the survey were:

- "Conservation As a Way of Life" (methods, programs, education).
- Improved coordination and collaboration among all stakeholders and proactive drought guidance (toolboxes, other resources and services).
- Aligning drought response consistency in actions and messaging.

One of the main objectives of the second workshop was to further engage stakeholders with additional interactive surveys. The following Figure 1-1, Figure 1-2, Figure 1-3, and Table 1-4 summarize the results of the surveys.

Figure 1-1 shows that the stakeholders were split almost evenly (12 to 11) between supply action and demand actions being more important to a drought management plan.

Figure 1-2 shows that there is a wide range of focus areas that are most important to stakeholders. Of the provided focus areas, the most popular at 31% is environmental sustainability. Tied for second with 19% each are drinking water quality and resilience and emergency response. Community impacts, sustainable agriculture, and equity and affordability had 8%, 4%, and 4% respectively.

Figure 1-3 shows where retailers think the drought response plan can add the most value. The most popular answer at 35% was to coordinate Countywide drought response actions. This aligns with goals expressed both by external and internal stakeholders in prior meetings. Other areas where the plan can add value include identifying synergies with long-term conservation efforts, refining drought response triggers, and establishing a toolbox of supply action for drought.

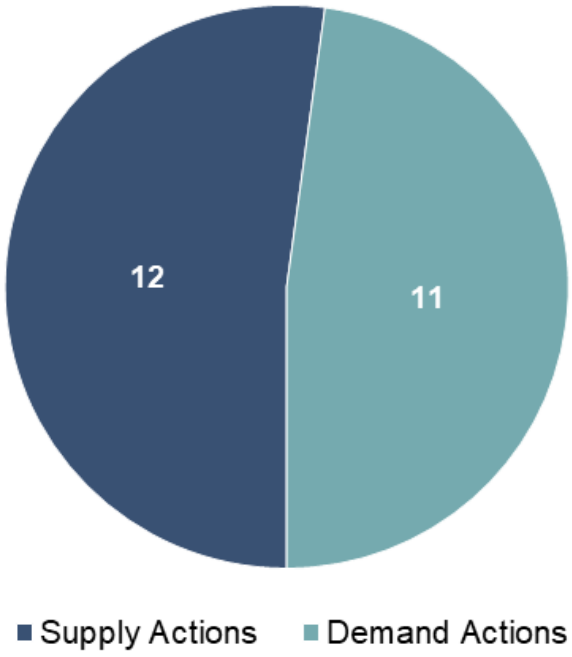


Figure 1-1: Which is more important to your stakeholders in a drought management plan?

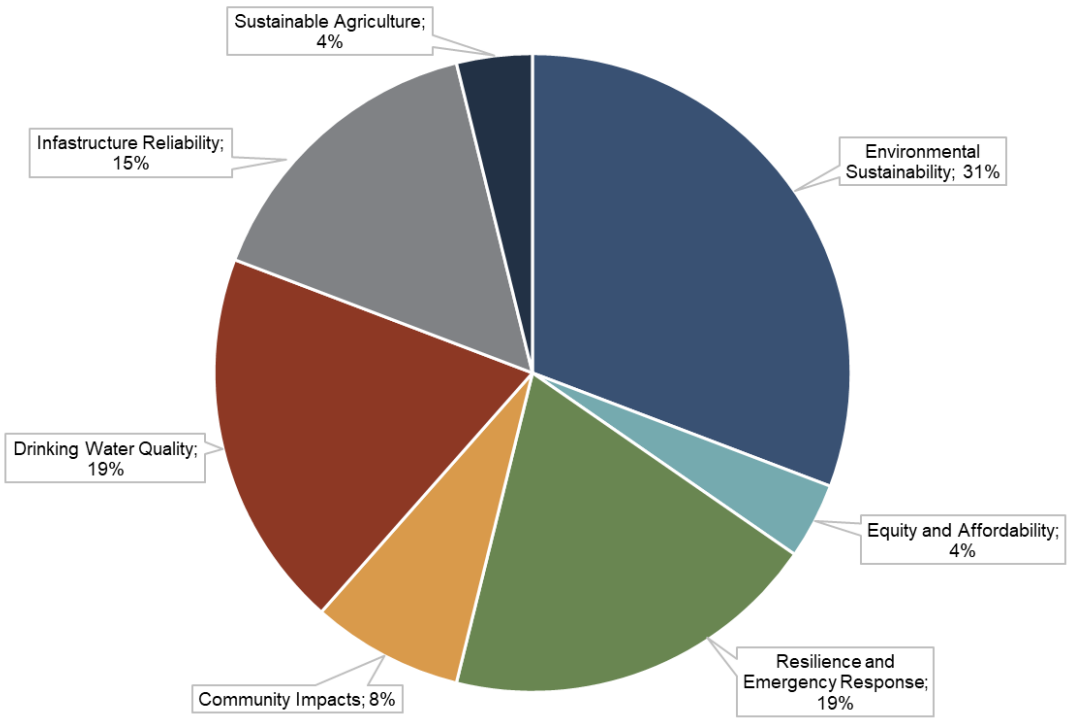


Figure 1-2: Which focus area is most important to your stakeholders?

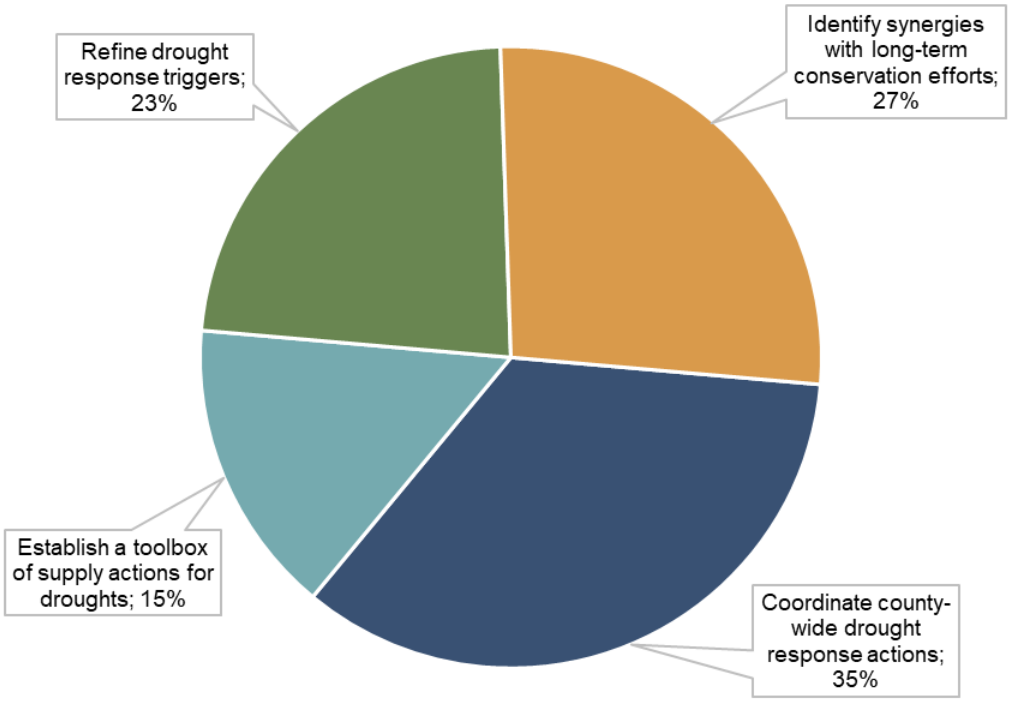


Figure 1-3: Where do you think the Drought Response Plan can add the most value?

The Taskforce was also asked to identify "what keeps them up at night" regarding drought. Responses varied, but several common themes emerged including risks to water supply availability, loss of biodiversity, water quality impacts, and impacts to water rates. A summary of responses is presented in Table 1-4 below.

Table 1-4: Key Drought Concerns

Response Summary
Water supply sustainability, resiliency, and certainty
Balance of supply and conservation
Over-drafting of groundwater supplies
Water quality
Environmental impacts (loss of biodiversity, native plants, birds, fish, urban trees)
Climate change impacts
Seismic events and repercussions on water supply (i.e., massive Delta levee damage and imported water outage)
Higher risk of catastrophic fire
Challenges regarding agencies (i.e., BAWSCA agencies) reaching drought-time water reduction goals
Community outreach and education including: • Setting expectations with residents about living within a sustainable water supply • Transitioning lawn owners to new paradigm • Identification of methods to promote water conservation
Balance of infrastructure investments and water rates
Water supply affordability
Effect of drought on advancing equity
Effect on future generations (water rationing for extended periods, etc.)
Impact to new housing construction
History of extreme drought in the west and poor planning for that history

These diverse set of responses were used to develop six guiding principles for the development and implementation of the DRP, which include:

- Explore the possibility of equitable, region-wide water policies.
- Employ drought and shortage triggers that empower a coordinated, flexible, regional response.
- Diversify regional supply and encourage Conservation as a Way of Life to support climate resilience.
- Foster continuous, coordinated, and accessible stakeholder education to empower efficient water use.
- Prioritize water investments that sustainably support environmental health, quality of life, and regulatory compliance.
- Foster regional water planning collaboration, knowledge-sharing, and alignment.

1.5 DRP Development Process

The development of the DRP involved a collaborative process to ensure effective water management during drought conditions. DRP development was organized into eight key steps consistent with Bureau of Reclamation guidance. A summary of the eight steps is provided in Table 1-5 below.

Table 1-5: DRP Development

DRP Development Step	Summary of Development Actions
Step 1: Initiation and Planning	• Identified the need for a DRP, considering factors such as historical drought events, water supply vulnerabilities, and climate projections. • Conducted a benchmark study (see Appendix A) to compare peer agencies' drought response strategies and review responses to the 2012-2016 drought to inform areas to explore in the next phases of the DRP. • Formed a dedicated Task Force responsible for developing and providing input to the plan. • Defined the scope, objectives, and goals of the DRP.
Step 2: Communication and Education	• Developed a stakeholder outreach plan to inform the public and stakeholders about the DRP through workshops with the Task Force, Retailer Working Group, and public meetings presenting findings of the DRP.
Step 3: Stakeholder Engagement and Outreach	• Conducted stakeholder outreach activities, such as surveys, workshops, and meetings, to gather input and insights from key stakeholders, including the Valley Water retailers, local government agencies, businesses interests, local environmental groups, agricultural entities, and the public.
Step 4: Vulnerability Assessment	• Evaluated the potential impacts of drought on water resources, human health, the economy, natural environment, and recreation. • Assessed the intersection of drought with other vulnerabilities including climate change, regulatory risks, infrastructure reliability, and water quality.
Step 5: Drought Monitoring	• Evaluated existing supply reliability. • Tracked key indicators related to water availability, including groundwater levels, surface water hydrologic indicators, and other relevant factors. • Developed new drought indicators and evaluated their historical performance.
Step 6: Response Triggers and Levels	• Defined specific triggers and levels that indicate the severity of drought conditions and the corresponding response actions. • Categorized response actions based on the severity of the drought, including demand management, operational changes, supply augmentation, and others. • Coordinated with retailers and stakeholders to ensure a cohesive and effective response.
Step 7: Implementation and Adaptive Management	• Developed plan to incorporate into Valley Water's WSCP and to regularly review and update the DRP based on lessons learned from drought events, changing climate conditions, and implementation of the WSMP. • Incorporated feedback from internal stakeholders and the Task Force to improve the plan's effectiveness.
Step 8: Post-Drought Evaluation	• Consistent with prior droughts, Valley Water developed an approach to conduct a thorough evaluation after a drought event to assess the effectiveness of the DRP and identify areas for improvement. • Document successes and challenges to inform future drought response planning efforts.

It is important to note that the DRP development process is dynamic and adaptable to changing conditions and new information. As directed in Step 8, regular review and updates are crucial for the plan to remain relevant and effective over time.

1.6 Plan Adoption and Submittal

The final DRP was formally adopted by Valley Water on [enter date]. A copy of the Adoption Resolution is included in Appendix B. Valley Water made a copy of the final DRP available on its website within 30 days after the adoption.

2. Background

Chapter 2 serves as a foundation for the DRP by outlining the service areas of water suppliers within the region. It provides an overview of regional water supplies, including associated infrastructure, and presents projected regional demands.

2.1 Water Supplier Service Areas

Within Valley Water's service area there are 13 retailer agencies that provide water service directly to the residents and businesses of Santa Clara County, as shown in Figure 2-1 and described below. Valley Water's 13 retail agencies include:

- California Water Service
- City of Gilroy
- City of Milpitas
- City of Morgan Hill
- City of Mountain View
- City of Palo Alto[2]
- City of Santa Clara
- City of Sunnyvale
- Great Oaks Water Company
- Purissima Hills Water District[3]
- San José Municipal Water
- San Jose Water Company
- Stanford University

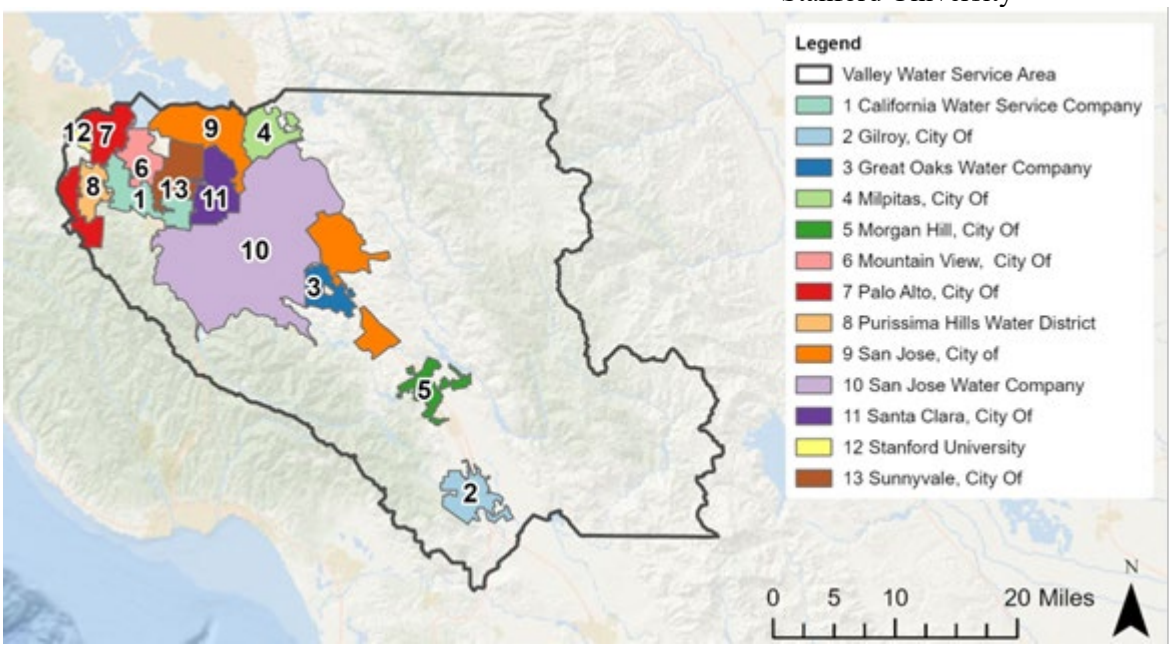


Figure 2-1: Valley Water Service Area and Retail Agency Boundaries

Valley Water provides some limited raw surface water deliveries outside of retailer service areas. Some residents in the foothills and mountains may have non-well sources, such as springs, or surface water

[2] The City of Palo Alto does not purchase water from Valley Water but receives water conservation and groundwater management services.

[3] Purissima Hills Water District does not purchase water from Valley Water; however, by being in Santa Clara County, it receives water conservation services.

rights. Valley Water manages the groundwater basins underlying the valley floor, and as such, Valley Water groundwater basin management does not extend to the mountains where the geology is primarily bedrock and managed aquifer recharge is not effective. Valley Water also does not maintain wells and related facilities for retail agencies and other groundwater producers.

2.1.1 California Water Service Company – Los Altos Suburban District

The California Water Service Company's Los Altos Suburban District is an investor-owned retailer with a service area encompassing approximately 14 square miles located in the northwestern portion of Santa Clara County. The Los Altos Suburban District includes the City of Los Altos, fringe sections of the cities of Cupertino, Los Altos Hills, Mountain View, Sunnyvale, and adjacent unincorporated areas of Santa Clara County. In 2020, the California Water Service Company served a population of approximately 70,161 through over 18,559 municipal connections (California Water Service, 2021)

2.1.2 City of Gilroy

The City of Gilroy's service area, which encompasses approximately 23 square miles, is located in the southwestern portion of Santa Clara County. The service area consists of the area within the City of Gilroy's Urban Growth Boundary (UGB), which is generally consistent with the city limits. In 2020, the City of Gilroy served a population of approximately 56,704 through 15,240 municipal connections (City of Gilroy, 2021).

2.1.3 City of Milpitas

The City of Milpitas' service area, which encompasses approximately 14 square miles, is located in the northeastern portion of Santa Clara County. The service area mirrors the city's jurisdiction boundary. In 2020, the City of Milpitas served a population of approximately 77,961 through 16,360 municipal connections (City of Milpitas, 2021).

2.1.4 City of Morgan Hill

The City of Morgan Hill's service area, which encompasses approximately 28 square miles, is located in the southern portion of Santa Clara County. The service is generally consistent with the City of Morgan Hill's UGB and city limits. In 2020, the City of Morgan Hill served a population of approximately 46,545 through 14,487 municipal connections (City of Morgan Hill, 2021).

2.1.5 City of Mountain View

The City of Mountain View's service area, which encompasses approximately 12 square miles, is located in the northwestern portion of Santa Clara County. The service area is consistent with the city boundary except for several small pockets served by California Water Service. In 2020, the City of Mountain View

served a population of approximately 79,772 through 17,543 municipal connections (City of Mountain View, 2021).

2.1.6 City of Palo Alto

The City of Palo Alto's service area, which encompasses approximately 26 square miles, is located in the northwestern portion of Santa Clara County and is consistent with the city boundary. In 2020, the City of Palo Alto served a population of approximately 68,819 through 20,016 municipal connections (City of Palo Alto, 2021)

2.1.7 City of Santa Clara

The City of Santa Clara's service area, which encompasses approximately 18 square miles, is located in the northwestern portion of Santa Clara County and is consistent with the city boundary. In 2020, the City of Santa Clara served a population of 131,655 through 25,828 municipal connections (City of Santa Clara, 2021)

2.1.8 City of Sunnyvale

The City of Sunnyvale's service area, which encompasses approximately 24 square miles, is located in the northwestern portion of Santa Clara County and is consistent with the city boundary. In 2020, the City of Sunnyvale served a population of 156,503 through 28,343 municipal connections (City of Sunnyvale, 2021).

2.1.9 Great Oaks Water Company

Great Oaks Water Company is an investor-owned retailer with a service area encompasses a portion of the southern end of the City of San José including Edenvale, Blossom Valley, southeast Almaden Valley, and Coyote Valley. In 2020, Great Oaks Water Company served a population of 106,450 through 21,372 municipal connections (Great Oaks Water Company, 2021).

2.1.10 Purissima Hills Water District

Purissima Hills Water District's service area, which encompasses approximately 7 square miles, is located in the northwestern portion of Santa Clara County. The service area consists of portions of the Town of Los Altos Hills and unincorporated County land on the southern boundary. The Purissima Hills Water District serves a population of approximately 6,150 through 2,222 municipal connections (BAWSCA, Purissima Hills Water District).

2.1.11 City of San José Municipal Water System

San Jose Municipal Water System's service area, which encompasses approximately 38 square miles, is located in the central and northwestern portion of Santa Clara County. The system serves four service

areas within the City of San José. In 2020, San Jose Municipal Water System served a population of approximately 132,644 through 26,094 municipal connections (City of San José, 2021).

2.1.12 San Jose Water Company

San Jose Water Company is an investor-owned retailer with a service area covering 145 square miles, including most of the cities of San José and Cupertino, the entire cities of Campbell, Monte Sereno, Saratoga, the Town of Los Gatos, and parts of unincorporated Santa Clara County. In 2020, San Jose Water Company served a population of approximately 997,817 through 230,969 municipal connections (San Jose Water Company, 2021).

2.1.13 Stanford University

Stanford University's service area, which encompasses approximately 3 square miles, is located in the northwestern portion of Santa Clara County. The service area consists of the university's campus area and nearby unincorporated land. Stanford University serves a population of approximately 32,235 (BAWSCA, Stanford University).

2.2 Regional Water Supply

This section summarizes the water supplies available to the region including imported water and a variety of local groundwater, surface water, and recycled water sources. Each source is described in Section 2.2.2.

2.2.1 Regional Supply Summary

Table 2-1 provides a comprehensive overview of the water sources utilized by each agency operating within Valley Water's service area. This summary emphasizes the diverse range of water supply portfolios among the region's water agencies. Consequently, the impact of drought varies for each agency, necessitating flexible and adaptable regional solutions that cater to diverse community needs. Nearly all of Valley Water's retail agencies heavily depend on imported water as a source of supply, either through treated water deliveries from Valley Water or San Francisco Public Utility Commission (SFPUC), or through the conjunctive use of imported water to recharge the groundwater subbasins.

Table 2-1: Regional Supply Summary

Supply Type	Wholesale Treated Water		Groundwater	Non-Valley Water Local Surface Water	Recycled Water
Supply Source	Valley Water (SWP[a], CVP [b], local surface water)	SFPUC (Imported Hetch Hetchy)			
California Water Service	X		X		X
City of Gilroy			X		X
City of Milpitas	X	X	X[c]		X
City of Morgan Hill			X		
City of Mountain View	X	X	X		X
City of Palo Alto		X	X[c]		X
City of Santa Clara	X	X	X		X
City of Sunnyvale	X	X	X		X
Great Oaks Water Company			X		
Purissima Hills Water District		X			
San José Municipal Water District	X	X	X		X
San Jose Water Company	X		X	X	X
Stanford University		X	X	X	

Notes:
[a] State Water Project
[b] Central Valley Project
[c] Available for emergency use but not typically used to meet customer demands under normal conditions,

2.2.2 Sources of Supply and Delivery

Valley Water has access to several supply sources including imported water, local surface water, groundwater, and recycled water. Valley Water's supply sources are highly integrated to provide flexibility in the raw water system for its overall conjunctive use strategy. This integration is illustrated in the overall mix of supply and use in Figure 2-2.

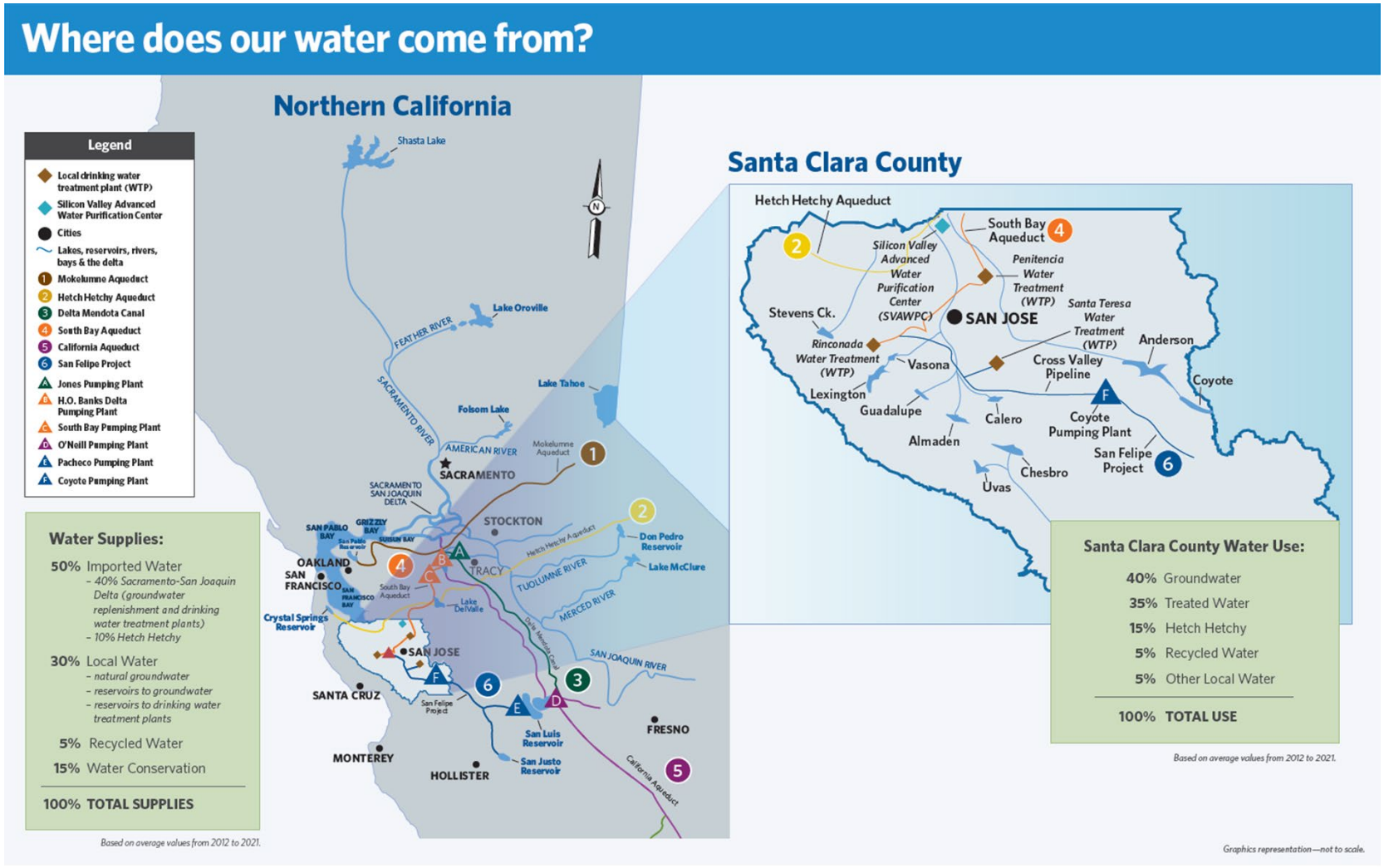


Figure 2-2: Distributions of Average Water Supplies (left) and Use (right) in Santa Clara County between 2012-2021 (Valley Water, n.d.)

2.2.2.1 Imported Water

Much of Valley Water's current water supply comes from imported water sources. Valley Water holds contracts for 100,000 acre-feet per year (AFY) from the State Water Project (SWP) and 152,500 AFY from the Central Valley Project (CVP). The actual amount of water delivered is typically less than these contractual amounts, and depends on hydrology, conveyance limitations, and environmental regulations. Supplemental imported water is acquired through transfers and exchanges as needed and available. The imported supplies are sent to Valley Water's three drinking water treatment plants, used to recharge the local groundwater, or stored in local, State, and Federal reservoirs for use in subsequent years. Valley water also stores some of its imported water in the Semitropic Groundwater Bank in the Central Valley for withdrawal during dry periods, or as otherwise needed.

Table 2-2: Summary of Imported Supply Sources

Supply Project	Source Water	Supervising Agency	Valley Water Contract Volume	Primary Delivery Pathway
SWP	San Francisco Bay and Sacramento-San Joaquin River Delta (Bay-Delta)	California Department of Water Resources (DWR)	100,000 AFY [(a)]	South Bay Aqueduct
CVP	Bay-Delta	US Bureau of Reclamation (Reclamation)	152,500 AFY [(a)]	California Aqueduct and San Luis Reservoir
SFRWS	Tuolumne River	San Francisco Public Utilities Commission (SFPUC)	N/A [(b)]	San Joaquin and Bay Division Pipelines

Notes:
[(a)] SWP and CVP deliveries are typically less than the maximum contract volumes due to insufficient availability of water.
[(b)] Valley Water does not directly purchase water from SFPUC. Eight Valley Water retailer agencies, including the City of Milpitas, City of Mountain View, City of Palo Alto, City of Santa Clara, City of Sunnyvale, Purissima Hills Water District, San José Municipal Water, and Stanford University, buy water directly from SFPUC. Three retail agencies, including City of Palo Alto, Purissima Hills Water District, and Stanford University, have historically purchased all their supplies from SFPUC.

Imported water is well-integrated with Valley Water's other supply sources. SWP and CVP supplies are used to both replenish local groundwater throughout the County as well as meet the treated water demands of retail agencies[4] in the North County.[5] In the North County, imported water typically meets 97% of treated water demand and replenishes 31% of groundwater demands through managed recharge. In the South County, imported water typically replenishes 43% of groundwater demands[6]. When available, excess contract supplies from the SWP and CVP may be stored in regional facilities, including San Luis Reservoir, the Semitropic Groundwater Bank, and/or in local storage.

[4] Retail agencies with treated water connections include City of Sunnyvale, City of Santa Clara, City of Mountain View, California Water Service, San Jose Water Company, San José Municipal, and City of Milpitas

[5] The North County includes all retail agencies except the Cities of Gilroy and Morgan Hill.

[6] Averages for 10-year period from 2014-2023 and account for Anderson Reservoir storage limited to deadpool capacity (see Section 2.2.2.3)

2.2.2.2 Groundwater

Since the 1930s, Valley Water's water supply strategy has been to maximize conjunctive use of surface water and groundwater supplies to enhance water supply reliability and avoid land subsidence. Local groundwater resources make up the foundation of the County's water supply but needs to be augmented by Valley Water's comprehensive water management activities to reliably meet the needs of County residents, businesses, agriculture, and the environment. These activities include managed recharge of imported and local supplies and in-lieu groundwater recharge through the provision of treated surface water and raw water and management of the 10 local reservoirs (Section 2.2.2.3), acquisition of supplemental water supplies, and water conservation and recycling. Valley Water does not directly deliver groundwater to customers but does have some limited emergency groundwater pumping capacity.

Valley Water's service area overlies two primary subbasins: the Santa Clara Subbasin of the Santa Clara Valley Basin (DWR 2-9.02) and the Llagas Subbasin of the Gilroy-Hollister Valley Basin (DWR 3-3.01).[7] Valley Water has two groundwater management areas within the Santa Clara Subbasin: Santa Clara Plain and Coyote Valley, and the Llagas Subbasin is a separate groundwater management area. A map identifying the location of the Santa Clara and Llagas subbasins is provided in Figure 2-3 below.

[7] Limited parts of Valley Water's service area overlie the San Mateo Plain Subbasin of the Santa Clara Valley Basin (DWR 2-009.03) and the North San Benito Subbasin of the Gilroy-Hollister Valley Basin (DWR 3-003.05).

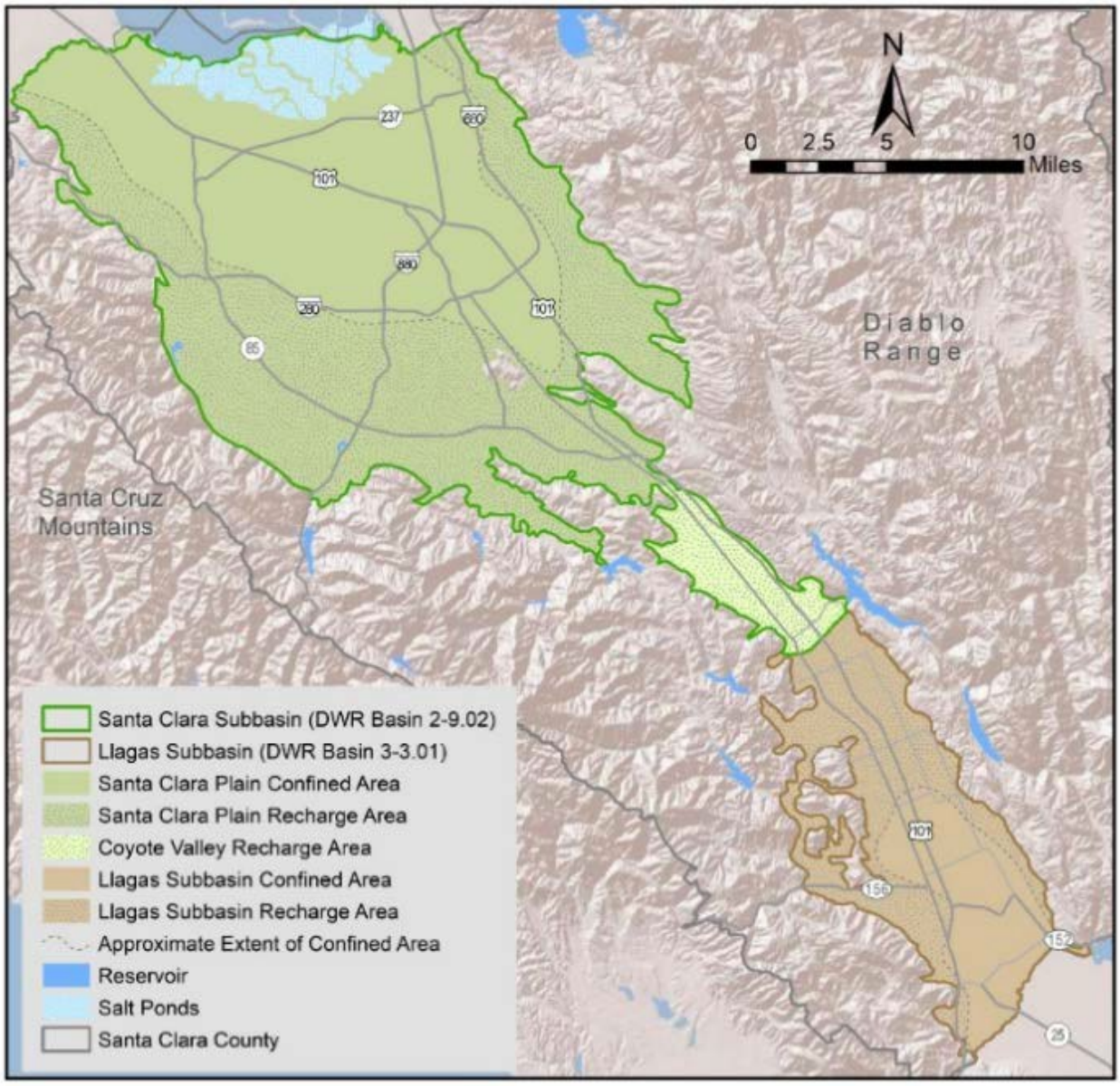


Figure 2-3: Location of Santa Clara and Llagas Subbasins (Valley Water, 2021d)

Valley Water is the designated Groundwater Sustainability Agency (GSA) for the Santa Clara and Llagas subbasins under California's 2014 Sustainable Groundwater Management Act (SGMA) and has a DWR-approved Alternative to a Groundwater Sustainability Plan (GSP) in place for sustainably managing these subbasins. Valley Water is also the GSA for the small portion of the North San Benito Subbasin within Santa Clara County (most of the subbasin is in San Benito County). Valley Water has supported efforts by the San Benito County Water District to develop and implement a GSP for the entire North San Benito Subbasin. The area of the North San Benito Subbasin within Santa Clara County is very small and not addressed further in this report.

2.2.2.3 *Surface Water*

Valley Water currently has 20 appropriative water rights licenses and one filed water right permit with the State Water Resources Control Board totaling over 227,300 AFY (Valley Water, 2021b). Local runoff is captured in Valley Water's 10 reservoirs (summarized in Table 2-3), with a total storage capacity of about 166,000 acre-feet, though several reservoirs are operating at restricted capacity due to seismic stability concerns. The reservoirs are sized for annual operations, storing water in winter for use in summer and fall. However, the Anderson-Coyote reservoir system provides carryover of supplies from year to year. Supplies captured in local reservoirs are sent to drinking water treatment plants or diverted downstream for groundwater recharge and to maintain aquatic habitats.

Of the 10 local reservoirs, four can currently feed Valley Water's surface water treatment plants, which make up a relatively small proportion (3%) of typical treated water deliveries. Local surface water makes up close to a third of all groundwater recharge. Valley Water's reservoirs also provide environmental flow benefits and incidental flood risk reduction to the local watersheds and downstream communities.

Table 2-3: Summary of Local Surface Water Reservoirs

Watershed	Reservoir	Unrestricted Capacity (AF)	Connection to Water Treatment Plants
Stevens Creek	Stevens Creek	3,056	
Guadalupe	Almaden	1,555 [(a)]	✓
	Calero	9,738 [(a)]	✓
	Guadalupe	3,320 [(a)]	
	Lexington	18,534	
	Vasona	463	
Coyote Creek	Coyote	22,541 [(a)]	✓
	Anderson	89,278 [(a)]	✓
Pájaro River	Chesbro	7,967	
	Uvas	9,688	

Notes:
[(a)] Storage capacity in Almaden, Calero, Coyote, and Guadalupe reservoirs is limited due to DWR, Division of Safety of Dams (DSOD) seismic restrictions. Anderson Reservoir is currently drained to deadpool, by an order of the Federal Energy Regulatory Commission (FERC), to undergo a seismic retrofit.

Outside of local surface water directly managed by Valley Water, both San Jose Water Company and Stanford University have their own local surface water supplies which provide close to 11 TAFY on average (Valley Water, 2021a).

2.2.2.4 *Recycled and Purified Water*

A growing source of water supply for Santa Clara County is recycled and purified water. Recycled water is chlorinated treated wastewater. Purified water is recycled water that undergoes additional treatment steps beyond wastewater treatment (such as microfiltration, reverse osmosis, and ultraviolet disinfection) to produce water at the quality fit to supplement or provide supply for potable (drinking) water purposes, as verified through monitoring for its safety and as regulated by the State Water Resources Control Board

Division of Drinking Water. Using recycled and purified water helps augment drinking water and groundwater supplies through in-lieu recharge; provides a reliable, drought-resilient, locally controlled water supply; and reduces reliance on imported water. Over the past decade, Valley Water has advanced water reuse in the County by leading water reuse planning efforts, developing partnerships with recycled water producers and retailers, and constructing new infrastructure. Currently, recycled water is about 5% (17,000 AFY, CY 2020) of the County's water supply that is distributed for non-potable uses such as landscape irrigation, industrial cooling, and dual plumbed facilities. This recycled water is produced at the four wastewater treatment plants in the County: San José -Santa Clara Regional Wastewater Facility, Palo Alto Regional Water Quality Control Plant, City of Sunnyvale Water Pollution Control Plant, and South County Regional Wastewater Authority (SCRWA).

Valley Water constructed the Silicon Valley Advanced Water Purification Center (SVAWPC) in collaboration with the San José-Santa Clara Regional Wastewater Facility to develop purified water. The SVAWPC can produce up to 8 million gallons of purified water per day, which is currently blended with tertiary treated recycled water to improve the quality for non-potable use for use by a wider variety of customers. Since March 2014, the SVAWPC has demonstrated the effectiveness of advanced treatment technologies (microfiltration, reverse osmosis, ultraviolet light, and advanced oxidation) to produce purified water and set the stage for Valley Water to begin a potable reuse program. Valley Water is working with the cities of Palo Alto and Mountain View on additional recycled water options within those cities. In December 2019, Valley Water executed an agreement with the cities of Palo Alto and Mountain View that defined cost-sharing and supply commitments related to future water reuse. A key provision of this agreement is construction of a local Salt Removal Facility in Palo Alto for enhanced non-potable reuse , which is recycled water for non-potable reuse that has been blended with purified water to reduce concentration of salts and other dissolved solids to enable broader application of recycled water for non-potable end uses and to protect groundwater quality. Other key provisions of this agreement include a commitment of approximately 11,000 AFY of wastewater effluent to Valley Water for purified water production at a future regional Advanced Water Purification Facility, and a water supply option for the cities of Palo Alto and Mountain View to request additional supply if needed.

The City of Sunnyvale Water Pollution Control Plant treats wastewater flows from the City of Sunnyvale and portions of Cupertino and San Jose. Valley Water and Sunnyvale partnered beginning in 2013 to expand the Sunnyvale Recycled Water System via the Wolfe Road Pipeline to serve customers south of the San Lucar Pump Station and within Cupertino in the California Water Service service area. Valley Water acts as a recycled water wholesaler to California Water Service (Valley Water, 2021g).

The South County Recycled Water Authority (SCRWA) is a joint powers authority formed to manage the treatment of wastewater flows from the cities of Gilroy and Morgan Hill. The SCRWA's recycled water system distributes tertiary-treated recycled water from the wastewater treatment plant to non-potable reuse end users in Gilroy. Valley Water serves as the wholesaler, SCRWA as the non-potable reuse producer for the system (Valley Water, 2021g).

Valley Water is working with the cities of San José and Santa Clara on a direct potable reuse project.

2.2.2.5 Storm Water

Valley Water's managed recharge program includes capturing local runoff in reservoirs and releasing it to groundwater recharge facilities or drinking water treatment plants. On average, about 50,000 AFY of local runoff is recharged through existing recharge facilities. Additionally, the Landscape Rebate Program promotes stormwater reuse by providing rebates for rainwater capture including rain barrels, cisterns, and rain gardens. Through its water supply master planning, Valley Water plans to increase stormwater capture and reuse capacity as part of its 'ensure sustainability strategy.' This includes consideration of flood-managed aquifer recharge (Flood-MAR), to collect and infiltrate high-magnitude or excess surface water flows on agricultural lands or other working or open landscapes. A preliminary feasibility study was prepared in 2023 (Water Resource Innovation Partnership, 2023) to explore the potential of Flood-MAR implementation within the service area to support the augmentation of water supplies in groundwater recharge zones.

2.2.3 Raw Water and Treated Water Distribution

System demands are met through Valley Water's raw and treated water distribution systems. As identified in Table 2-2, imported water from the SWP typically enters Valley Water's system through the SBA and is treated at Penitencia Water Treatment Plant and/or Rinconada Water Treatment Plant via the Central Pipeline. SWP supplies that are brought into the County can also be diverted to creeks and percolation ponds for managed groundwater recharge.

CVP supplies enter Valley Water's system mainly via the California Aqueduct to the San Luis Reservoir and through Reclamation's San Felipe Division conveyance facilities. Raw CVP water is directed through the Cross Valley, Calero, and Almaden Valley pipelines to Santa Teresa and/or Rinconada water treatment plants and then delivered to retail agencies. Along the way, raw CVP water can also be diverted to creeks and managed recharge ponds or stored locally in Anderson Reservoir (once the retrofit is complete) and Calero Reservoir. Local supplies from Coyote, Anderson, Almaden, and Calero reservoirs can also feed the Santa Teresa and/or Rinconada water treatment plant through these conveyance pathways.

Figure 2-4 presents a diagram outlining the key raw and treated water system components and distribution pathways and key connections to retail agencies and interties.[8]

[8] In addition to delivering treated water directly to the retail agencies summarized in Table 2-1, SFPUC and Valley Water share an intertie allowing for transfers of treated water in emergency situations.

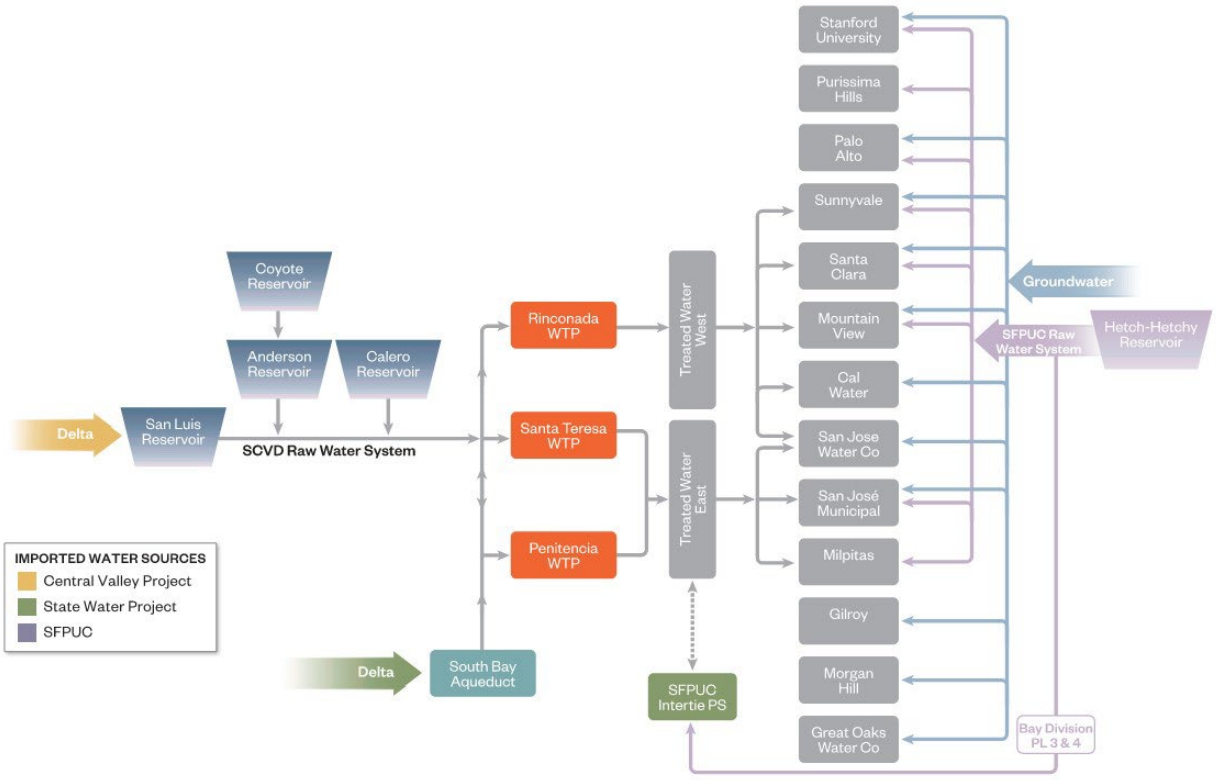


Figure 2-4: Simplified Schematic of Valley Water's Raw Distribution System Identifying Key Connections Between the Raw and Treated Water Systems and Retail Agency Potable Supply Sources (Valley Water, 2016)

2.3 Regional Water Demand

Valley Water completed an updated demand study in 2021 which provided forecasts of water demand for each provider type (i.e., retail agency or non-retail groundwater producer) across several water use sectors out to 2045 (Valley Water, 2021e). Table 2-4 summarizes projected demands from 2025-2045 for the entire County.

Table 2-4: Summary of County-Wide Baseline Water Demand Forecast in Thousand Acre Feet per Year (TAFY) (Valley Water, 2021e)

Provider Type	Sector	2025	2030	2035	2040	2045
Retail agency	Single family	115	114	114	115	114
	Multifamily	44	47	53	57	62
	CII	117	118	123	128	132
	Other	8	8	8	8	8
	Nonrevenue	16	17	17	18	18
	Raw water	2	2	2	2	2
Retail Agency Total		302	305	317	327	336
Non-retail groundwater producer	M&I	14	14	14	14	14
	Agricultural	25	25	25	25	25
Non-Retail Groundwater Producer Total		38	38	38	38	38
Total (no Conservation) [a]		**340**	**344**	**355**	**366**	**374**
Conservation [b]		12	25	30	36	36
Total (with Conservation)		**328**	**319**	**325**	**330**	**338**

Notes:
[a] Refers to total forecasted demand from baseline scenario, excluding conservation.
[b] Consistent with total county-wide projections of future conservation provided by Valley Water.

2.4 Land Uses Within the Service Area

The existing and projected land use within Valley Water's service area is detailed in Valley Water's Urban Water Management Plan (UWMP). Currently, 52 percent of the land area within Valley Water's general service area is open space. Agriculture accounts for 25 percent of the land area, while residential land use accounts for 15 percent. The combined land use for commercial, industrial, and institutional (CII) use accounts for 7 percent, and transportation and utility use consist of 1 percent.

Water use from retailer billing information provides approximate use of distribution of water use by sector. Approximately 58 percent of the water demand is attributed to single and multifamily residential use. Combined CII use consists of 41 percent. Agriculture is supported nearly entirely by independent groundwater pumping and is therefore not included in the above percentages.

Valley Water developed a statistical/econometric based Demand Model in 2020 using recently available water use data and new housing and economic development forecasts to meet its planning need for robust demand projections, detailed further in the Valley Water 2020 UWMP. The output of this model has projected that agricultural irrigation, independent groundwater pumping and untreated surface water use will remain constant through 2045, and retailer demand will increase by approximately 4 percent with population growth by 2045.

These projections highlight the potential for growing water demand within the region and emphasize the importance of planning and developing sustainable strategies to meet the evolving needs of the community while accounting for the impacts of climate change.

3. Drought Monitoring and Water Shortage Triggers

Valley Water currently uses projected end-of-year groundwater storage to determine if water shortage actions are required. As projected end-of-year groundwater storage decreases during a drought, more intensive stages are triggered in the existing Water Shortage Contingency Plan (WSCP). Although the approach to calculating projected end-of-year groundwater storage incorporates estimates of local supplies and imported water availability, the DRP Benchmark Study (Appendix A) found that many of Valley Water's peer agencies more explicitly incorporate projections and indicators of other supplies into their drought declaration and response process. Furthermore, Valley Water staff have expressed a desire to explicitly consider the diversity of Valley Water's water supplies and their different uses (e.g., surface water supply sent to drinking water treatment plants versus groundwater recharge facilities). In response to these findings and needs, Valley Water has elected to consider new indices for measuring water supply availability and trigger levels for implementing drought response actions. The Water Shortage Triggers technical memorandum evaluated several new indices that Valley Water could use to determine when to request or mandate water use reductions from the community and identified a prioritized list of response actions that may be employed to respond to water shortages caused by droughts.

3.1 Existing Drought Triggers and Stages

Valley Water triggers drought conditions based on projected end-of-year groundwater storage as determined by Valley Water's annual operations plan and groundwater modeling. Valley Water's other supply sources and storage (e.g., local surface water, imported water, storage in out-of-county facilities) are implicitly considered in the groundwater modeling through the Annual Water Operations Plan process (Figure 3-1) with other input assumptions to the groundwater models. Valley Water maintains groundwater models for the Santa Clara Plain, Coyote Valley, and Llagas Subbasin groundwater management areas. The models are used to conduct frequent analyses that estimate current groundwater storage and forecast storage into the future using the assumptions and scenarios determined from Annual Water Operations Plan exercises. The Annual Water Operations Plan (and associated groundwater modeling) is updated at regular intervals throughout the year to continually monitor the status of the projected end-of-year groundwater and WSCP drought triggers. During drought periods, the above analysis is conducted monthly and presented to the Valley Water Board.

Figure 3-1: Summary of Annual Water Operations Plan (Valley Water, 2021a)

Valley Water's WSCP currently defines five water shortage stages that correspond to projected end-of-year groundwater storage. Table 3-1 provides Valley Water's current drought triggers, corresponding shortage stages, and recommended overall water use reduction at each water shortage stage. Note that Valley Water currently uses its own shortage stages in lieu of the six standard shortage levels defined by the DWR WSCP guidance. Valley Water's existing drought triggers are consistent with the sustainable management criteria for groundwater basin storage defined in the Groundwater Management Plan (Valley Water, 2021b). Maintaining groundwater storage above existing Stage 5 conditions is critical to preventing permanent land subsidence, seawater intrusion, and many wells from going dry, although these types of impacts could potentially occur at earlier stages depending on groundwater conditions. Stage 5 also defines the lower threshold for the groundwater storage outcome measure in the 2021 Groundwater Management Plan, and thus represents an undesirable result under SGMA.

Table 3-1: Shortage Stages and Recommended Use Reduction

Trigger (Projected End-of-Year Groundwater Storage)	Stage	Recommended Short-Term Overall Water Use Reduction
Above 300,000 acre-feet (AF)	Stage 1 (Normal)	None
250,000 – 300,000 AF	Stage 2 (Alert)	0 – 10%
200,000 – 250,000 AF	Stage 3 (Severe)	10 – 20%
150,000 – 200,000 AF	Stage 4 (Critical)	20 – 40%
Below 150,000 AF	Stage 5 (Emergency)	>40%

3.2 Need and Objectives for New Drought Triggers

The DRP Benchmark Study (Appendix A) performed a holistic review of drought triggers and response actions amongst several of Valley Water's peer agencies. The Benchmark Study found that several of Valley Water's peers directly consider multiple indices that reflect water supply availability when triggering drought conditions. Subsequent discussions with Valley Water staff and external stakeholders supported a desire to more directly consider local and imported surface water availability to supplement projected groundwater storage when triggering drought response. Based on the finding of the DRP Benchmark Study and discussions with Valley Water Staff, the DRP Task Force, and the DRP Retailer Working Group, four objectives were identified for developing new drought triggers:

- Directly incorporate Valley Water's diverse water supply portfolio.
- Consider proactive (or "long lead") indices that aid early drought response.
- Achieve consistency with DWR's recommended six standard shortage levels.
- Provide clear recommendations for de-escalating drought response as drought eases.

The following section documents the efforts of developing drought triggers that meet these objectives and provides a recommendation for new drought triggers and water shortage stages. The memorandum concludes by suggesting drought response actions be connected to the recommended triggers and stages.

3.3 Development of New Drought Triggers

As part of the Valley Water Drought Response Plan, the DRP project team developed an enhanced drought response matrix. The primary objectives of this matrix are to harmonize Valley Water's drought response framework with the six standard DWR stages, offer Valley Water greater specificity and flexibility in initiating and implementing drought response measures, and integrate response strategies and lessons learned from previous droughts into future drought planning.

The upgraded drought response matrix includes proposed long-lead triggers. These triggers are designed to proactively implement "no-regret" Stage 1 drought response actions at the onset of a drought, ensuring that Valley Water takes necessary steps without hesitation. Additionally, new exit triggers are suggested to facilitate the gradual reduction of drought response actions and water usage as the drought comes to an end. These triggers aim to provide early indications regarding projected imported water allocations and surface water availability, as both factors significantly influence drought-related decisions.

3.3.1 Drought Index Screening Assessment

Below is a description and evaluation of the hydrologic indices, surface water metrics, and groundwater elevations that were considered as possible long-lead drought response triggers.

3.3.1.1 U.S. Drought Monitor and Drought Severity and Coverage Index (DSCI)

Valley Water decided to use the U.S. Drought Monitor as the basis of their long-lead index because the data is readily available and experts and public alike are familiar with it. The U.S. Drought Monitor is a well-established drought metric that provides a weekly assessment of drought in the United States. The Drought Monitor was established in 1999 and weekly data has been available since 2000. Through collaboration between the National Drought Mitigation Center at the University of Nebraska-Lincoln, NOAA, and USDA, the Drought Monitor publishes a weekly map that classifies the extent and severity of drought into six categories (Figure 3-2). The maps are developed by a rotating group of climatologists and other experts through interpretation of relevant data, including the Palmer Drought Severity Index (PDSI), modeled soil moisture, streamflow, Standardized Precipitation Index (SPI), snowpack, fire danger, vegetation status, and local datasets.

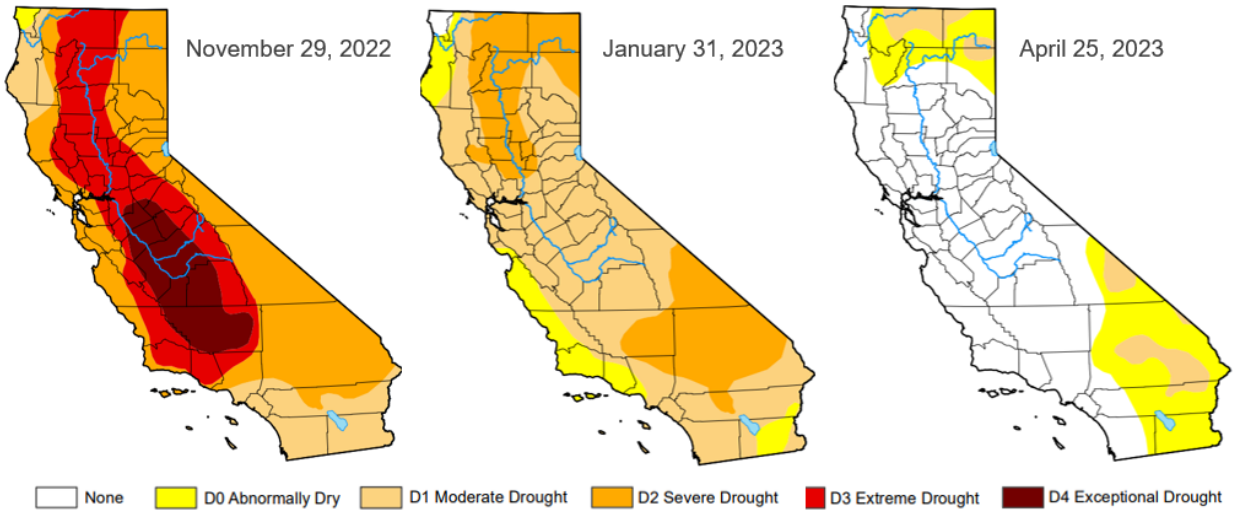


Figure 3-2: U.S. Drought Monitor for California from fall 2022 to spring 2023.

The Drought Severity and Coverage Index (DSCI) was developed as an experimental index to convert drought levels (D0, D1, D2, D3, D4) from U.S. Drought Monitor maps to a single value for a specific area. The Cumulative Percent Area DSCI represents the percentage of an area in drought and is calculated as the sum of the percent area in drought categories from D0 to D4. Cumulative Percent Area DSCI ranges from 0 (no drought in any area) to 500 (all of the area is in the worst drought category). An example of percent area data and calculated DSCI is in Table 3-2.

Table 3-2: Select Weekly Shasta County Drought Monitor Categories and Cumulative Percent Area DSCI, November 2022 to April 2023

Week	None	D0-D4	D1-D4	D2-D4	D3-D4	D4	DSCI
11/29/2022	0.00	100.00	100.00	100.00	89.11	0.00	389
12/27/2022	0.00	100.00	100.00	100.00	89.11	0.00	389
1/31/2023	0.00	100.00	100.00	90.07	0.00	0.00	290
2/28/2023	0.00	100.00	100.00	90.28	0.00	0.00	290
3/28/2023	0.00	100.00	39.48	0.00	0.00	0.00	139
4/25/2023	54.47	45.53	0.00	0.00	0.00	0.00	46

U.S. Drought Monitor Cumulative Percent Area DSCI's from Shasta County, Butte County, and Santa Clara County were analyzed as possible long-lead drought response triggers. Santa Clara County's DSCI was determined to not be an applicable long-lead drought trigger because drought in Santa Clara County is not representative of conditions around the imported supply reservoirs. In Shasta County, DCSI tracks storage in Shasta Lake, which is negatively correlated with drought severity. Higher values of DCSI are indicative of lower Shasta Lake storage levels and thus more intense drought conditions (Figure 3-3).

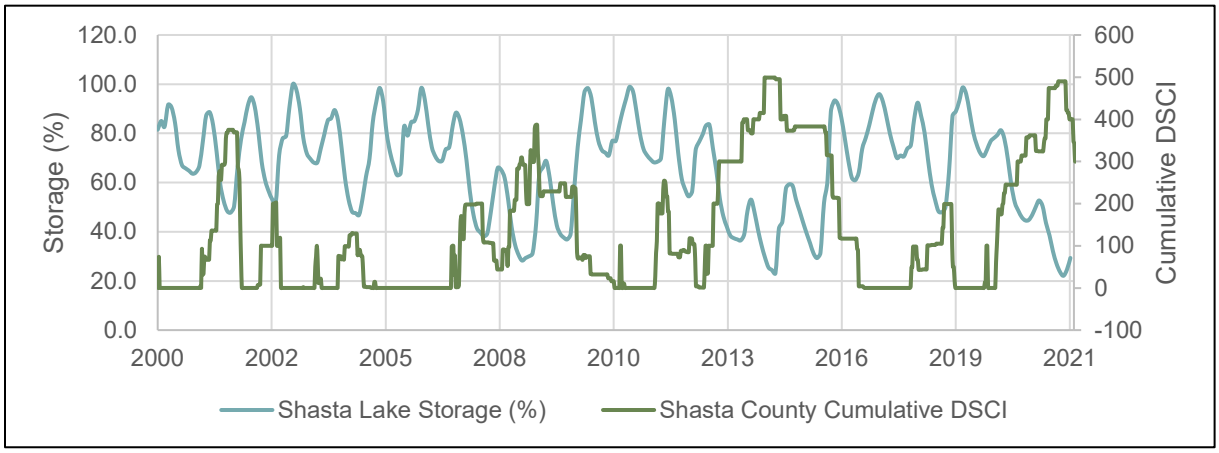


Figure 3-3: Shasta County Cumulative DSCI and Reservoir Storage (%)

Shasta County and Butte County DSCI are strongly positively correlated ($R^2 = 0.94$), with consistent timing and magnitude of variations. The Shasta County DSCI index was selected as a long-lead drought trigger because it reflects hydrologic and climate conditions of the watershed that contributes the larger portion of Valley Water's CVP supply, which is Valley Water's largest imported water contract.

3.3.1.2 Other Indices Considered

Several other long-lead indices were considered in the drought index screening assessment but were ultimately not recommended. A brief overview of alternate indices considered is provided in Table 3-3.

Table 3-3: Overview of Alternate Long-Lead Drought Indices

Drought Index	Description	Comments
Palmer Drought Severity Index (PDSI)	Standardized index used to classify long-term dryness and wetness calculated from temperature and precipitation. PDSI is reported by the NOAA National Weather Service Climate Prediction Center.	Not included in the proposed drought matrix because PDSI is only dependent on temperature and precipitation.
Standardized Precipitation Index (SPI)	Index frequently used in the international community for capturing precipitation deficits. On short time intervals, SPI is often closely related to soil moisture; on longer intervals, SPI can reflect information about groundwater or reservoir storage.	Not included in the proposed drought matrix because SPI is entirely dependent on precipitation and does not include several climatological and hydrologic parameters that affect drought such as temperature, evapotranspiration, or runoff.
Standardized Precipitation Evapotranspiration Index (SPEI)	An extension of SPI that incorporates potential evapotranspiration and impacts of temperature on water availability.	Not included in the proposed drought matrix because it is less comprehensive than U.S. Drought Monitor DSCI index.
Snowpack	Snowpack is one of the most visible indicators of water availability and was explored as an indicator of reservoir storage.	Note included in the proposed drought matrix since it is explicitly incorporated within the U.S. Drought Monitor DSCI index.

3.3.2 Measures of Surface Water Availability

Surface water is available in the Valley Water system as local runoff captured in local reservoir storage, and imported water (including CVP and SWP contract supplies, transfer and exchange agreements, and out-of-county storage withdrawals). Surface water availability (SWA) is a factor in Valley Water's drought decisions but is not explicitly included in the projected end-of-year groundwater thresholds. A proposed surface water trigger is not intended to replace projected end-of-year groundwater in determining drought stage but was found to add additional information to allow early drought response decisions based on available surface water as needed.

The proposed SWA drought trigger was developed using Valley Water's historical water supply operations data and supported by data and modeling retrieved from Valley Water's Water Evaluation and Planning (WEAP) model. The proposed SWA metric is comprised of total usable storage volume in local reservoirs, anticipated allocations from the SWP and CVP, carryover storage in San Luis Reservoir, existing transfer and exchange agreement supplies, and banked supplies in the Semitropic Water Storage District groundwater bank that is available for withdrawal. Historical contributions to total SWA are shown in Figure 3-4.

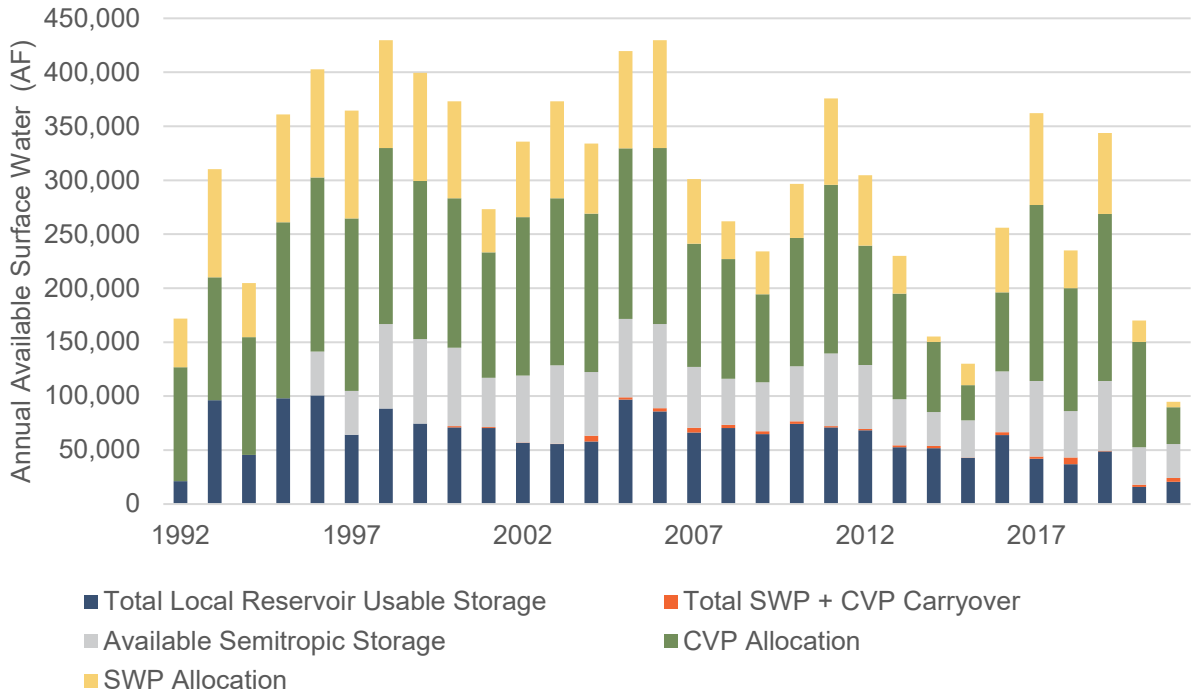


Figure 3-4: Historical Valley Water Total SWA

Trigger levels for the proposed surface water index were developed by comparing total annual SWA with total end-of-year groundwater and refined through discussions with Valley Water staff. Figure 3-5 and Figure 3-6 illustrate scatter plots detailing these comparisons for both the observed and WEAP-modeled datasets. Both datasets show a correlation between anticipated SWA and end-of-year groundwater. These data indicate that anticipated SWA less than 250 thousand acre-feet (TAF) tend to lead end-of-year groundwater storage below existing management thresholds (300,000 AF). A combined drought trigger based on both SWA and projected end-of-year groundwater was also considered, but groundwater and surface water indices do not always align. Valley Water will have more flexibility to enter drought stages and call for drought response actions with separate groundwater and surface water triggers.

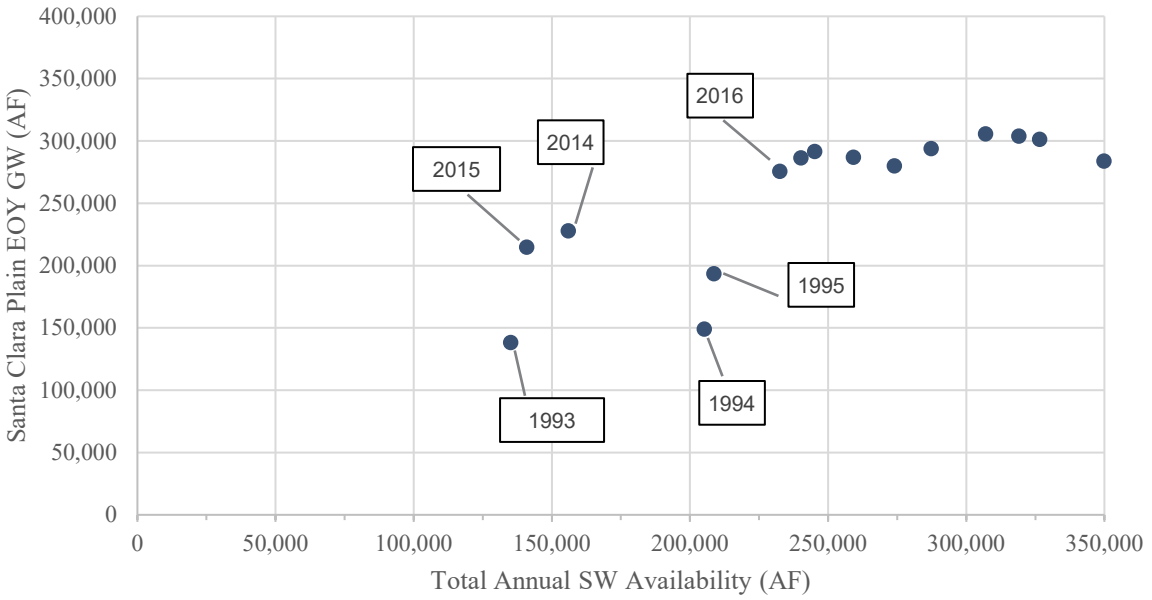


Figure 3-5: Observed Countywide SWA Compared to End-of-Year Santa Clara Plain Groundwater Storage

OBJ

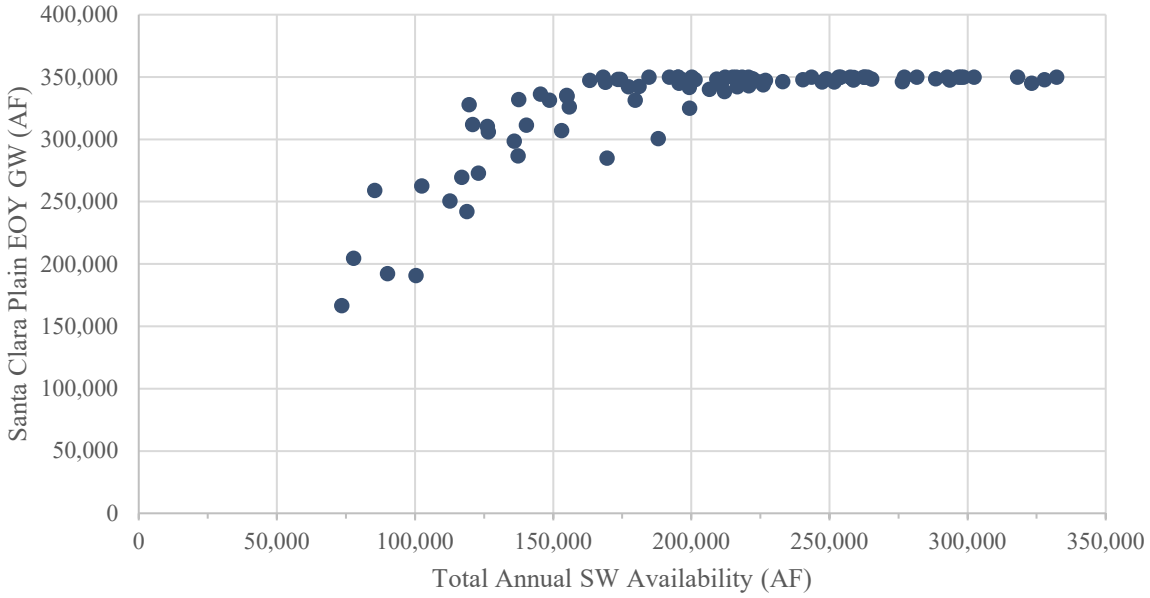


Figure 3-6: Modeled (WEAP) SWA Compared to End-of-Year Santa Clara Plain Groundwater Storage

3.3.3 Groundwater Elevation

Projected countywide end-of-year groundwater storage is the established method in the current WSCP to enter drought stages and trigger drought response actions. Maintaining sufficient groundwater storage provides reserve water for use during droughts or other emergencies and avoids potentially harmful environmental effects such as permanent land subsidence, seawater intrusion, or negative effects on groundwater dependent ecosystems. Projected end-of-year groundwater storage will continue to be a central component of the updated drought response framework.

Projected end-of-year groundwater storage is an effective drought response approach because it integrates countywide information about water availability and system operations. For example, during the 2012-2016 drought, drought response actions triggered by projected end-of-year groundwater storage prevented groundwater levels from dropping too low. However, the countywide metric does not explicitly account for spatial variability in groundwater subbasins, groundwater management areas, system infrastructure outages, water use and production, or operations such as recharge. In an effort to address this gap, water levels in subsidence wells, key water wells, and indicator wells were considered as additional groundwater metrics to be included in the drought response matrix. These wells are distributed across the County and can provide local-to-regional information to improve drought responses (Figure 3-7).

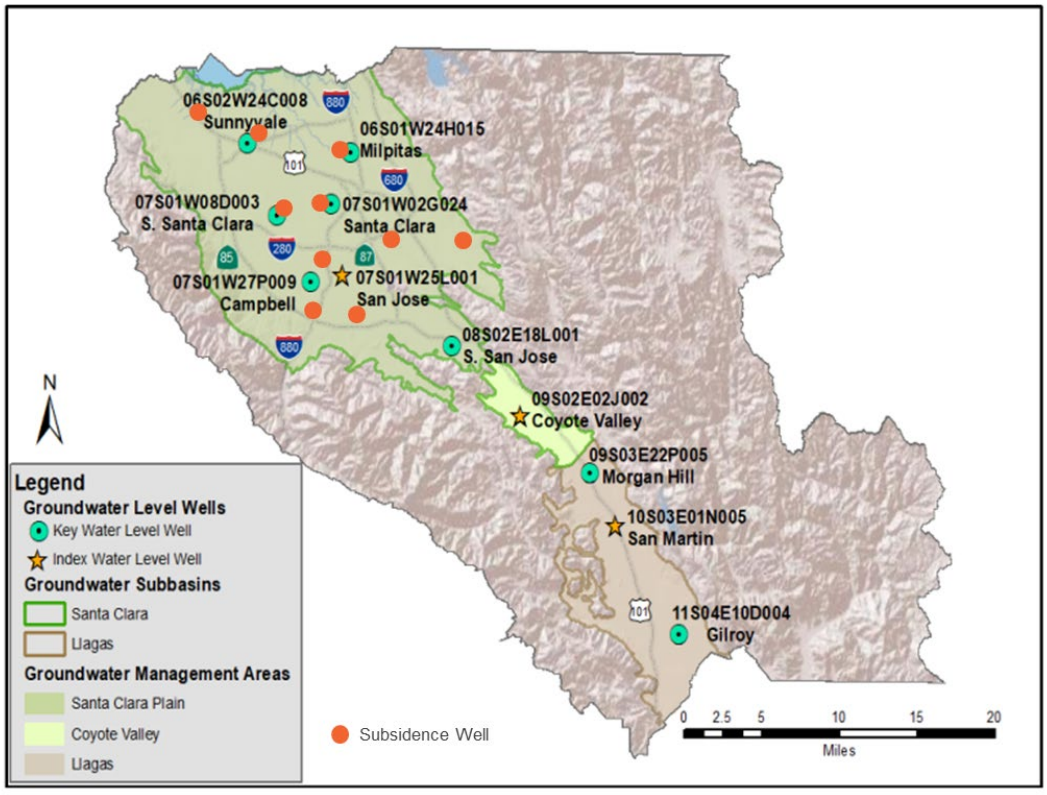


Figure 3-7: Notable Groundwater Wells, Subbasins, and Management Areas in Santa Clara County. Figure adapted from monthly Valley Water Groundwater Condition Reports[9]

[9] Monthly Valley Water Groundwater Condition Reports are available: https://www.valleywater.org/your-water/groundwater/groundwater-monitoring

Operational thresholds for subsidence wells established in the Valley Water Groundwater Management Plan were also considered as possible drought response triggers. However, during the 2012-2016 drought only one subsidence well recorded a water level below its respective threshold (Table 3-4), which indicates that subsidence wells do not provide enough early drought information and therefore not well suited as a long-lead drought trigger.

Table 3-4: Subsidence Well Elevations

Subsidence Index Well Number	State Well ID	Location	Subsidence Threshold Elevation (ft above msl, NAVD 88)	Water Level Below Threshold in 2012-2016? (Yes/No)
1	08S01W03K013	Campbell	169	No
2	08S01E10J004[1]	South San José	-20	No
3	07S01E02J021	East San Jose	-143	No
4	06S01W24H015	Milpitas	-15	No
5	07S01W22E002	West San José	-42	Yes
6	07S01W08D003	South Santa Clara	-44	No
7	06S02W22G005	Mountain View	-23	No
8	06S02W24C008	Sunnyvale	-27	No
9	07S01W02G024	Santa Clara	-32	No
10	07S01E16C011	Downtown San José	-37	No

Note: [1]Well 08S01E10J004 was implemented as the new subsidence index well #2 on 06/09/2021 because the original well (08S01E05N002) was destroyed by the well owner.

Based on analysis of historical groundwater elevation data and discussions with Valley Water staff, it was determined that similar issues exist for key water wells and indicator wells. Due to the heavy reliance on local conditions, it has been decided that data obtained from subsidence wells, key water wells, and indicator wells will not be incorporated into the countywide drought response framework at this time.

3.3.4 Selected Supplemental Indicators and Triggers

The goals of the new proposed drought response triggers are to provide early information about potential imported water allocations and to explicitly incorporate surface water availability into drought response decisions. Both factors play a role in determining Valley Water's level of drought response and are included in end-of-year groundwater storage projections but are not considered on an individual basis. Here, two new drought response indicators are proposed to initiate drought response in the beginning and to ramp down drought actions at the end of a drought: the DSCI and surface water availability.

The DSCI was identified as a new drought response indicator for several reasons. First, the index incorporates the other long-lead indicators considered (PDSI, SPI, snowpack) as well as other regionally relevant datasets. Unlike the PDSI, SPI, or SPEI indices, DSCI is not entirely dependent on temperature and/or precipitation and is developed based on a more comprehensive set of regional drought information and expert opinion. Second, DSCI captures climatological and weather conditions to anticipate long-term

trends in drought severity. This metric complements end-of-year groundwater storage projections, which respond to system-wide water availability and operations but may be slow to capture early information about drought intensification or an easing of drought conditions. Third, the U.S. Drought Monitor, from which DSCI is derived, is familiar to the Valley Water Board and stakeholders as it is commonly publicized during droughts, making it easier to communicate to the public and retailers.

A maximum monthly value of 150 from May through October is proposed as a new trigger to consider initiation of Stage 1 or Stage 2 drought responses. This trigger provides early information to begin "no-regret" drought response actions at the beginning of a drought and a threshold at which drought response actions can be scaled back at the end of a drought. A maximum monthly DSCI value of 100 was considered, but this value was determined to trigger drought response actions too frequently and may leave drought response actions in place for longer than necessary at the end of a drought. The seasonal component of the DSCI prioritizes response during the dry season.

The selected surface water trigger is a measure of total anticipated surface water availability at the beginning of the year. This metric is comprised of total useable storage volume in local reservoirs, anticipated imported water deliveries, carryover storage in San Luis Reservoir, and Valley Water's available storage in the Semitropic Water District groundwater bank. The SWA metric should be revised throughout the year as imported allocations are updated and certainty increases related to transfer and exchange supply delivery.

At the beginning of a drought, the proposed surface water thresholds are total anticipated SWA less than 250 TAF for Stage 1 and total anticipated SWA less than 150 TAF for Stage 2. The Stage 1 SWA threshold was determined based on analysis of historic storage data. The 250 TAF threshold was identified by comparing the timing of historical drought stage onset and the total SWA at the start of that year. Thresholds from 100 to 350 TAF were evaluated in increments of 25 TAF. A total SWA threshold of 250 TAF was most closely aligned to lead the prior onset of prior drought declarations. The Stage 2 SWA threshold was developed based on data analysis and input from Valley Water staff that identified 150 TAF as the historical minimum volume needed to meet full water treatment plant demands and provide a minimum amount of groundwater recharge. The 150 TAF threshold is associated with Stage 2 because this is the first drought stage with mandatory water use reductions.

At the end of a drought, total anticipated SWA greater than 300 TAF indicates recovery of available surface water and a reduction in drought intensity. This proposed SWA trigger is higher than the SWA threshold values at the beginning of a drought to allow surface water to replenish before removing calls for water use reductions.

3.4 Proposed Updates to Water Shortage Stages and Triggers

The drought response framework was developed through an iterative process between Valley Water internal stakeholders and Hazen. Through this process, experience from previous droughts and operational information about the Valley Water system was incorporated into future drought planning. Ultimately, the proposed framework maintains Valley Water's priorities and flexibility in drought response, links drought response triggers with operational thresholds within the system and provides new information that may refine future drought management.

The proposed updates to the drought response framework provide a toolbox of indices to declare drought stages as water supply conditions evolve. The central pillars of the updated framework are to:

- Align the Valley Water drought response framework to the six standard DWR stages.
- Retain projected end-of-year groundwater storage as a drought response trigger because this metric has shown benefit and provides a direct link to GWMP sustainability criteria.
- Add a long-lead drought index to capture early onset of drought events and implement no-regret Stage 1 response actions.
- Add an index representative of surface water availability, which has been observed to be a precursor to low groundwater storage conditions at the beginning of a drought and provides a measure of recovery at the end of a drought.
- Add formal exit triggers to scale back drought response actions at the end of a drought.

3.4.1 Proposed Water Shortage Stages and Triggers

3.4.1.1 Water Shortage Stages

The updated drought response stages are presented in Table 3-5. The updated stages are consistent with the six DWR standard water shortage stages and formalize a new Stage 0 for normal, non-drought operations.

Table 3-5: DWR Six Standard Water Shortage Stages

Stage	Short-term Water Use Reduction
0	None
1	0-10%
2	10-20%
3	20-30%
4	30-40%
5	40-50%
6	> 50%

3.4.1.2 Stage Declaration Triggers

Figure 3-8 presents the proposed triggers and thresholds to enter Stage 1 through Stage 6. When a trigger crosses the threshold for a particular stage, Valley Water staff will bring a recommendation to the Board to enter that stage. When a stage has multiple triggers, any one trigger can be sufficient to enter that stage and initiate corresponding activities, or Valley Water can wait until all triggers are crossed to initiate corresponding activities.[10] Stage 0 (not included in Figure 3-8) represents normal conditions in which supplies are above all proposed triggers and no water shortages are projected.

[10] Exact procedures for bringing recommendations to the Board will be developed as part of a Work Instruction developed outside of this DRP.

Figure 3-8: Proposed Stages and Triggers to Initiate Drought Response Actions

The proposed thresholds to enter Stage 1 are an October to May maximum monthly Shasta County DSCI value greater than 150, or total anticipated SWA at the start of the year[11] less than 250 TAF. Total anticipated SWA is comprised of total usable storage volume in local reservoirs, anticipated allocations from SWP and CVP, carryover storage from SWP and CVP, and available Semitropic storage.

The proposed thresholds to enter Stage 2 are projected end-of-year groundwater storage less than 300 TAF, total anticipated SWA at the start of the year less than 150 TAF, or October to May maximum monthly Shasta County DSCI value greater than 150. The projected end-of-year groundwater storage threshold of 300 TAF is consistent with thresholds established in the current WSCP as well as the storage outcome measure defined in the 2021 GWMP. The total SWA threshold of 150 TAF is the historical minimum volume needed to meet full water treatment plant demands and provide a preferred minimum amount of groundwater recharge.[12] If the preferred minimum amount of managed groundwater recharge cannot be provided, Valley Water will consider recommending Stage 2 demand reduction actions.

The proposed thresholds for entering Stages 3 through 5 are projected end-of-year groundwater storage less than 250, 200, and 150 TAF, respectively, consistent with the current WSCP. Stage 6 occurs after projected end-of-year groundwater storage is less than 150 TAF and/or there is a significant infrastructure outage that requires further water use reductions.

[11] It is expected that the SWA will be monitored and updated throughout the year, particularly when SWP and CVP allocations are adjusted by DWR and the Bureau of Reclamation. Procedures for modeling and updating anticipated SWA will be developed as part of a Work Instruction developed outside of this DRP.

[12] This statement comes from a meeting on November 30, 2022, among Valley Water internal stakeholders discussing proposed drought triggers for the drought response plan; the statement is attributed to James O'Brien.

3.4.1.3 *Exit Triggers*

Exit triggers define when to move to a lower stage as drought conditions improve. Coming out of a drought, decisions to scale back drought response are conservative to ensure that water supplies are replenished, and a surplus of water is available for groundwater recharge before calls for water use reductions and other drought response actions are removed. Lower DSCI values, higher total SWA, and/or higher projected end-of-year groundwater storage indicate a reduction in drought intensity and a recovery of water supplies. As shown in Figure 3-9, these factors can be used in combination to scale back drought response as conditions improve. The proposed exit triggers in Figure 3-9 generally mirror the thresholds used to escalate drought response.

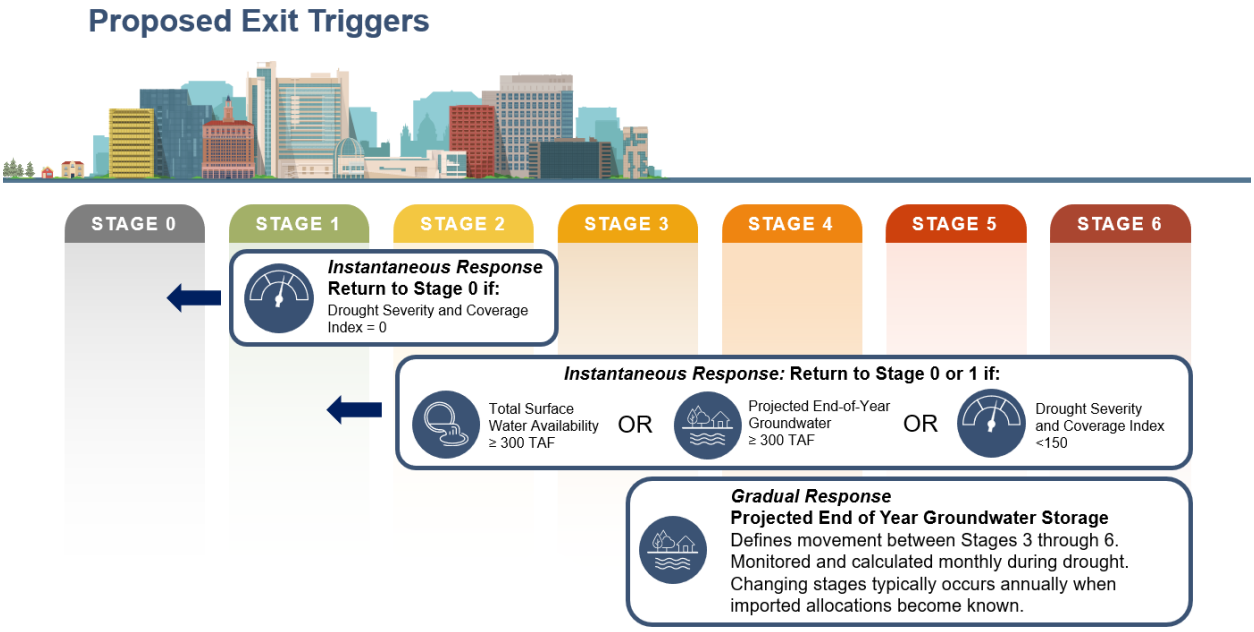


Figure 3-9: Proposed Stages and Triggers to Reduce Drought Response Actions.

From Stages 1 or 2, if May through October maximum monthly Shasta County DSCI is equal to zero, return to Stage 0 (normal conditions). At Stage 2 or higher, if May through October maximum monthly Shasta County DSCI is less than 150, return to Stage 1 or Stage 0.

Total anticipated SWA at the greater than 300 TAF threshold indicates that full water treatment plant demands can be met, groundwater withdrawals can be replenished through managed recharge, and demand reductions are not needed. If total SWA at the start of the year is above 300 TAF when Stage 1 is implemented, return to Stage 0. If total SWA at the start of the year is above 300 TAF when Stage 2 or higher is implemented, return to Stage 1 with no demand reductions or return to Stage 0; the other Stage 1 triggers or exit triggers should be used in parallel to make this decision.

At any stage, projected end-of-year groundwater storage thresholds (Figure 3-9) can be used to move between stages. End-of-year groundwater storage projections are typically updated as imported water allocations become known, typically on a monthly basis.

3.4.2 Performance of Proposed Triggers

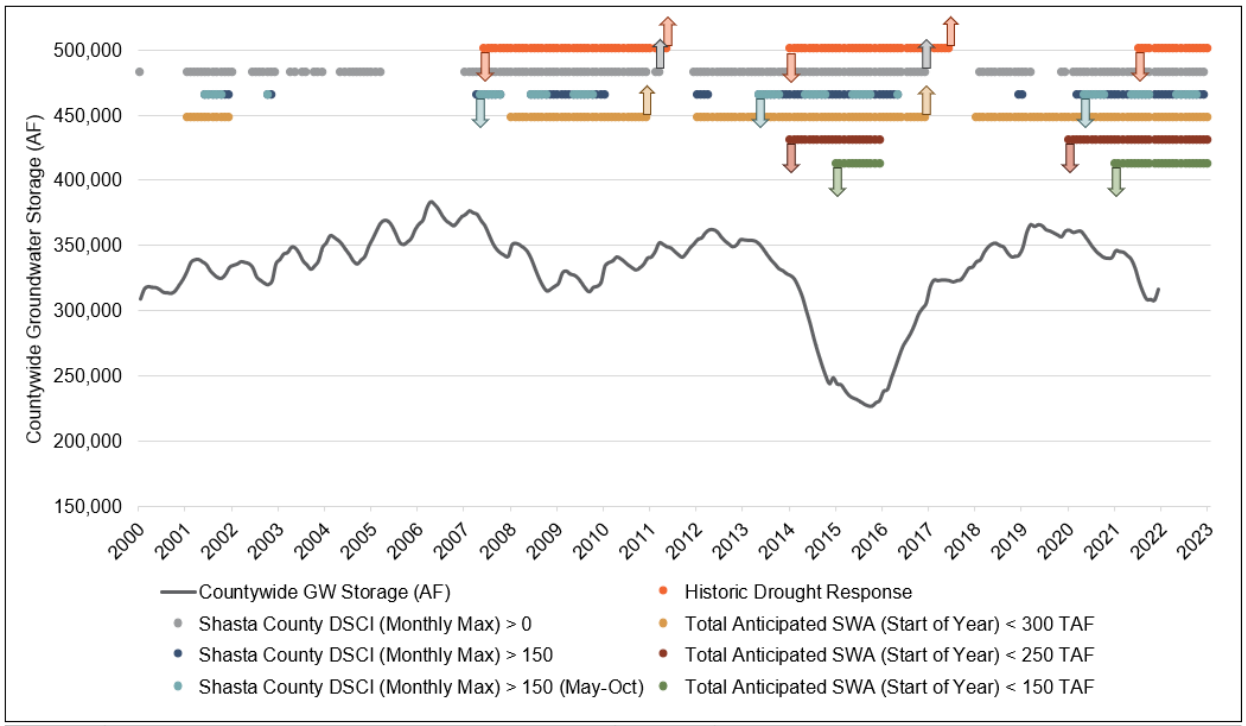
Performance of the proposed triggers was evaluated by comparing the timing of drought actions that would have been called using the proposed triggers versus historical drought response data from 2000 through 2022. The analysis timespan was chosen based on data availability, with DSCI data available beginning in 2000.

Figure 3-12 shows when the proposed DSCI and total anticipated SWA triggers crossed their respective thresholds and when historical water use reductions were in place. Historical groundwater basin storage is provided for reference because a historical record of projected end-of-year groundwater storage is not available.

Results in Figure 3-10 show that the proposed drought triggers offer multiple options to initiate drought response. With the implementation of the new triggers, Valley Water staff will have the ability to propose initiating and reducing drought response measures to the Board sooner. During the 2012-2016 drought Valley Water staff could have used the DSCI trigger to recommend entering Stage 1 more than six months before the historic drought response began. Had staff waited to bring this recommendation to the Board until both the DSCI and SWA triggers crossed their respective thresholds, Stage 1 would have started at the same time (January 2014) as the historic response.

During the period of drought from 2020 to 2023, water usage restrictions were enforced in July 2021. Under the newly proposed long-lead triggers, Valley Water staff could have used either DSCI or the total anticipated SWA triggers to recommend initiating Stage 1 more than a year prior to the implementation of water use restrictions. In fact, due to the draining of Anderson Reservoir in late 2020 and low allocations of imported water in early 2021, the total anticipated SWA at the beginning of 2021 fell below 150 TAF. With the revised drought trigger matrix, staff could have recommended entering Stage 2 and commencing water use reductions seven months before the official decision was made.

As water supply conditions improve at the end of a drought, both the DSCI and total anticipated SWA triggers indicate that drought response could move to less severe stages earlier than has historically been done. For example, December 2016, maximum monthly Shasta County DSCI was zero and total anticipated SWA for 2017 was above 300 TAF but water use restrictions remained in place through June 2017. Decisions to scale back drought response at the end of the drought should be conservative and respond to State-wide drought declarations, but the proposed exit triggers provide Valley Water staff new information to support decision making beyond projected end-of-year groundwater storage to bring drought response recommendations to the Board as supply conditions improve.



⇩	Begin historic drought response	⇧	End historic drought response
⇩	Enter Stage 1 based on DSCI > 150 (May-Oct)	⇧	Return to Stage 0 based on DSCI = 0
⇩	Enter Stage 1 based on total SWA < 250 TAF	⇧	Return to Stage 0 or 1 based on total SWA > 300 TAF
⇩	Enter Stage 2 based on total SWA < 150 TAF		

Figure 3-10: Historical Timing of Proposed Stage Declaration and Exit Triggers

4. Vulnerability Assessment

Several factors are expected to increase Valley Water's vulnerability to water shortages in the future. These factors include climate change, existing and potential environmental and water quality regulations, infrastructure conditions and constraints, and future water quality. Interrelationships between the factors may compound their effects on future water supply reliability. For example, climate change is expected to reduce the availability of nearly all of Valley Water's supply sources since they rely on surface water availability, and this reduction in supply availability will likely be further exacerbated by existing and potential future regulations on imported water. During prolonged drought, the detrimental effects on future water supply reliability are likely to be magnified. For example, existing drought management strategies, such as transfers and exchanges of imported supplies, may be even more difficult to secure and execute during a prolonged drought. These impacts create vulnerabilities in water supply reliability, including reduced water supply availability and reduced operational flexibility.

Consistent with Reclamation guidance, Valley Water has conducted a vulnerability assessment that evaluates the risks and impacts of drought in the County. The vulnerability assessment focused on key factors that increase Valley Water's vulnerability to drought, which included climate change, existing and potential regulations, infrastructure conditions and constraints, and future water quality conditions. Key findings from this assessment include:

- Climate change is expected to reduce the availability of both imported and local supplies, increase the frequency and severity of drought, and decrease the ability to effectively capture and store storm events.
- The Bay-Delta Water Quality Control Plan is expected to resolve conflicts over outflow requirements but will result in reduced exports and fewer access to transfer supplies. The amount of reduction depends on whether the Voluntary Agreements are adopted. Locally, the Fish and Aquatic Habitat Collaborative Effort (FAHCE) implementation could also reduce system flexibility.
- Current storage restrictions to Valley Water's local reservoir system, retail agency distribution system limitations, and challenges with retrieving regionally banked groundwater during critically dry years are key infrastructure constraints that exacerbate drought impacts.
- Water quality impacts, such as algal blooms, water temperature concerns, and regulatory-driven treatment requirements may result in additional system constraints that worsen drought risk.

4.1 Climate Change

The examination of the effects of climate change on water resources is an ongoing process that continually produces new models and updates local and regional datasets. This continuous refinement underscores the need to narrow down the choice of data sources and data analysis methods that are best suited to local conditions. As part of the DRP, the vulnerability assessment is aimed at enhancing our understanding of how climate change will impact future water demand in Valley Water's service area and the sources of water supply during both regular and drought periods.

4.1.1 Overview

The 2021 Climate Change Action Plan (CCAP) built on Valley Water's existing climate change response efforts and presented goals and strategies to continue and expand these efforts (Valley Water, 2021f). Climate change projections for temperature, precipitation, local reservoir inflows, drought and snowpack, wildfire, and sea level rise and their impacts to Valley Water were described in the CCAP. The climate change impacts utilized historical temperature and precipitation data in Santa Clara County from 1950 to 2019 to assess two emission scenarios, an intermediate scenario and a business-as-usual scenario. The major takeaways from these projection analyses included:

- Temperature is projected to increase by 1.8 to 2.0°F by 2050 under the intermediate and business-as-usual scenarios, respectively.
- Snowpack is projected to continue declining, with the Sierra Nevada snowpack declining by 30 to 60% by 2040-2065 under Representative Concentration Pathway (RCP) 8.5, thereby changing the timing and volume of annual runoff of imported water supplies.
- Greater frequency of extreme precipitation events is predicted to occur (e.g. atmospheric rivers), which would then be expected to make up a larger percentage of annual precipitation totals within shorter windows.
- Sea level rise in the San Francisco Bay is expected to accelerate; mean projections under RCP 8.5 expect a rise between 1.6 – 3.4 feet by 2050.

The combination of these factors is expected to decrease the availability of both local surface and imported water supplies as well as increase the frequency and severity of drought in the County.

4.1.2 Impacts to Valley Water

The effects of climate change are expected to limit source water availability and reduce operational flexibility of Valley Water's system. Imported water and local surface water supplies are the most obviously affected, as projected increases in temperature and subsequent lower snowpack and runoff reduces flow into the Sacramento-San Joaquin Delta (Bay-Delta) and local reservoirs. Imported supply availability may also be further limited by sea level rise as seawater intrusion into the Delta reduces the amount of water available for export.[13]

Projected temperature increases are expected to increase evapotranspiration and subsequently increase outdoor water use, which will put additional constraints on supplies to meet peak-season water demand. Increased temperatures are also expected to increase reservoir evaporation both in State/Federal storage projects and local reservoirs. Figure 4-1 shows potential increases in local reservoir evaporation due to climate change as modeled by 16 Global Climate Models (GCMs) (Valley Water, 2021c). On average,

[13] Seawater intrusion can be managed by reducing exports, increasing reservoir releases, or a combination of both.

peak month evaporation is expected to increase over 100 AF by the mid-century and nearly 400 AF by end-of-century.

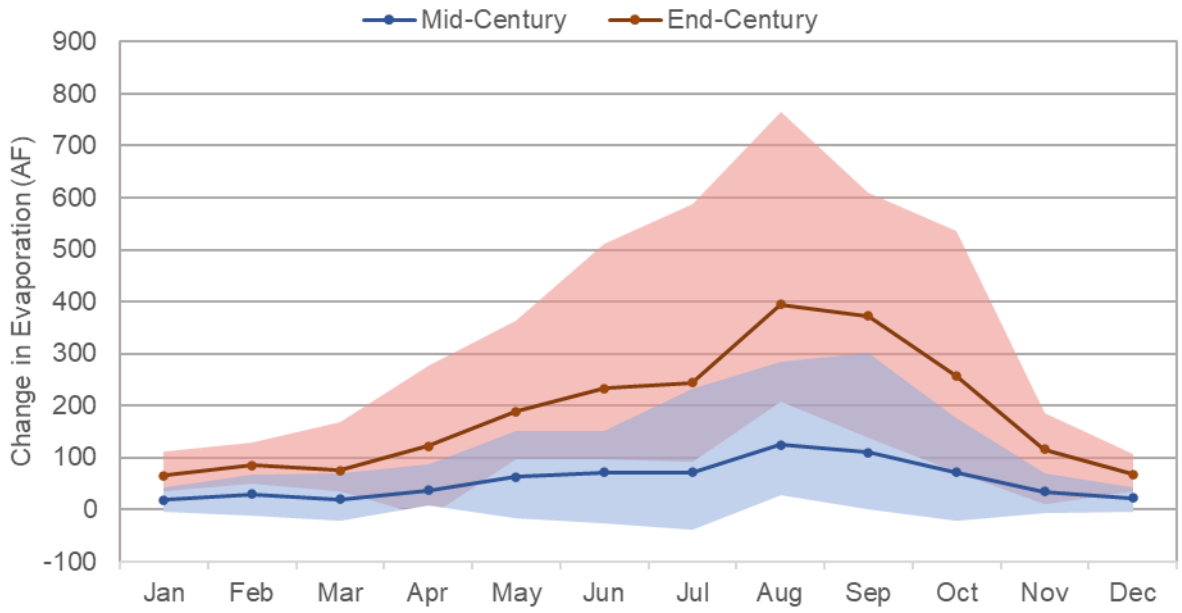


Figure 4-1: Projected Increase in Local Reservoir Evaporation due to Climate Change (Valley Water, 2021c)[14]

Declining availability of local and imported surface water supplies will increase pressure on managed groundwater recharge through two pathways. First, less imported and local surface water will be available for groundwater recharge, which will decrease groundwater storage. Second, if less surface water is available to supply the water treatment plants, groundwater pumping will increase, which will further reduce groundwater storage in the County. While managed groundwater recharge programs will experience future deficits due to limited imported supply, the ensemble mean precipitation of downscaled global climate models indicate that precipitation may increase by 2045. Increased precipitation could increase wet year natural groundwater recharge, which could partially mitigate the loss of dry year surface supplies (Valley Water, 2021d). Sea level rise may pose additional risks to Valley Water's groundwater supplies based on seawater intrusion. Sea level rise and seawater intrusion are further discussed in Section 4.5.

[14] Blue line and shaded area reflect mid-century conditions while red line and shaded area reflect end of century conditions. Shaded areas reflect the range of the 16 models while the solid lines reflect the multi-model average.

Increased frequency of extreme precipitation and high-flow events (such as those caused by atmospheric rivers) can present additional challenges to Valley Water. High-flow events can be more difficult to capture and store in surface water reservoirs and increase the risk of downstream flooding, depending on the timing of the rainfall event. For example, if a significant percentage of annual rainfall occurs when reservoir rule curves are low (e.g. in early December), reservoir operations can limit the amount of water stored after the event.

4.2 Existing and Potential Environmental and Water Quality Regulations

4.2.1 Overview

Existing and potential environmental and water quality regulations coupled with drought conditions will add additional constraints to the availability of imported and local water supplies. A summary of existing and potential regulations is provided in Table 4-1.

Table 4-1: Summary of Existing and Potential Regulatory Risks to Supply

Potential or Existing Regulation	Impacted Supplies	Description / Key Features

Bay-Delta Plan	Imported (CVP, SWP, SFPUC)	• Establishes water quality and flow objectives in the Bay-Delta.
		• SWRCB in the process of updating the plan through two separate plan amendments:
		  ○ *Phase I (Resolution No. 2018-0059):* Established flow standards for the Lower San Joaquin River and its tributaries including the Stanislaus, Tuolumne, and Merced Rivers and revised salinity standards on the San Joaquin River and southern Delta.
		  ○ *Phase 2 (Currently in development):* Will establish flow standards for the Sacramento River and its tributaries, Delta eastside tributaries, Delta outflows, and interior Delta flows.
		  ○ *Phase 3 (not yet started):* Will implement the objectives adopted in Phases 1 and 2 through regulations or adjudicative water rights proceedings, or water quality certifications.
		• New instream flow requirements for the Tuolumne River could result in SFPUC water supply shortfalls of up to 50% in multiple dry years (SFPUC, 2021).
		• New flow requirements for the Sacramento River and Delta eastside tributaries are estimated to reduce Sacramento/Delta surface water supply by 17% (approximately 2 million acre-feet (MAF) (SWRCB, 2018).
		• The State is encouraging stakeholders to negotiate Voluntary Agreements (VAs) that could “reduce the volume of water that needs to be dedicated for instream purposes”. It is expected that a VA would result in significantly less impact from the Bay-Delta Plan on urban and agricultural water supplies, however, the adoption of VAs is uncertain.

Potential or Existing Regulation	Impacted Supplies	Description / Key Features
National Marine Fisheries Service (NMFS) and US Fish and Wildlife Service (USFWS) Biological Opinions (BiOps)	Imported (CVP, SWP)	• Establishes requirements for operation of the CVP and SWP to protect ESA listed species, which affects the amount of water available for export to CVP and SWP service areas, including Santa Clara County. • USFWS and NMFS are in the process of re-initiating consultation on long-term operations of the CVP and SWP.
CA Department of Fish and Wildlife (CDFW) 2020 SWP Incidental Take Permit (ITP)	Imported (SWP)	• Establishes requirements for operation of the SWP to protect CESA listed species, which affects the amount of water available for export to SWP service areas, including Santa Clara County. • The State may amend or issue a new ITP depending on the outcomes of the ongoing federal consultation.
Sustainable Groundwater Management Act (SGMA)	Imported (Semitropic)	• SGMA requires local Groundwater Sustainability Agencies in high- and medium- priority basins to develop and implement Groundwater Sustainability Plans (GSP) or to develop Alternatives to GSPs. • Semitropic Water Storage District's GSP was recently deemed inadequate by DWR (Gosselin, 2022). • Additional constraints could limit the ability to bank and recover supplies.
Water Right Curtailments	Imported (Exchanges/ Transfers, SFPUC)	• Curtailments limit access to full water rights during times of shortage and are issued by the SWRCB in order of seniority. Under severe drought conditions, curtailments can even affect senior water rights holders. • Curtailments can limit availability of transfers/exchanges during drought and/or affect the SFPUC's access to its water right.
FAHCE	Local Surface Water	• 1996 water rights complaint indicated Valley Water's reservoir operation impacted steelhead trout and Chinook salmon. • FAHCE developed a Settlement Agreement (initialed by the parties in 2003) to improve fish and aquatic habitat in Coyote, Stevens Creek, and Guadalupe River watersheds. The Draft Environmental Impact Report was released in 2021 and the Final EIR was certified in August 2023. • Starting in October 2020, a FAHCE Pilot Program is under way on Stevens Creek and Guadalupe Creek. • FAHCE implementation includes modifications to reservoir rule curves and releases (including winter and springtime pulse releases if storage thresholds are met).
Lake and Streambed Alteration Agreements (LSAA)	Local Surface Water	• LSAA with the CDFW for four diversion structures to move water from natural channels to percolation ponds and reservoir operations and releases for Uvas and Chesbro Reservoirs. • Diversion facilities include Coyote Percolation Pond, Alamitos Drop Structure/Percolation Pond, Masson Dam, and Kirk Diversion. • Establish minimum flows at key points along the channel to support aquatic species and habitat

Potential or Existing Regulation	Impacted Supplies	Description / Key Features
		• Sets conditions for inter-basin transfers via the Uvas/ Llagas transfer pipeline. • Requires monitoring of temperature and turbidity. • Valley Water is in negotiations with CDFW for an LSAA for operation of Madrone Channel.
Emerging Contaminant Maximum Contaminant Levels (MCLs) & Hazard Indices	Local Groundwater, Imported (Semitropic)	• The SWRCB Division of Drinking Water (DDW) has recently drafted an MCL for hexavalent chromium (Cr6). • The US EPA has proposed drinking water standards for six per- and polyfluoroalkyl substances (PFAS), including perfluorooctanoic acid (PFOA), Perfluorohexane sulfonate (PFHxS), and perfluorooctanesulfonic acid (PFOS). • These MCLs may require additional groundwater treatment affecting total recovery from local and imported groundwater supplies.
Division of Safety of Dams (DSOD) Reservoir Operating Restrictions	Reservoir Storage	• DSOD has issued reservoir operating restrictions on Coyote, Almaden, Calero and Guadalupe Reservoirs due to seismic stability concerns or active fault movement under dam. • Additional information and capacity restrictions are detailed in Section 4.3 and Table 4-3.
Federal Energy Regulation Commission (FERC) Dam Safety Directive	Reservoir Storage	• FERC issued a dam safety directive in February 2020 reducing Anderston reservoir to Deadpool due to seismic stability concerns • Additional information and capacity restrictions are detailed in Section 4.3 and Table 4-3.

4.2.2 Impacts to Valley Water

Imported Supplies

Table 4-1 identifies Valley Water's impacted supply sources resulting from existing and potential regulations. Figure 4-2 summarizes CalSim II modeling[15] prepared for the State Water Project, which estimates annual SWP exports under several current and potential future scenarios (State Water Contractors, 2020). These scenarios and their assumptions are further described in Table 4-2. At the time of preparation of this report, the CalSim II model is the best available model given the uncertainty with future regulatory impacts, such as the Bay Delta Plan. Staff continue to track new analyses as they are available to evaluate Valley Water's vulnerabilities. Under the preliminary modeling scenario that approximated potential Bay-Delta Plan conditions and climate change, overall SWP exports from the Delta watershed decrease by 0.6 MAF on an annual average basis. Although CVP exports were not explicitly identified in the model output presented to the State Water Contractors, it is not unreasonable to assume that CVP exports will experience similar projected impacts to that of SWP exports. Reductions of this magnitude would decrease Valley Water's overall availability of SWP/CVP supplies under all

[15] CalSim II is a water supply system model maintained by DWR and Reclamation that models the SWP and CVP systems from 1922 to 2003. The 2019 Delivery Capability Report is referenced as it was the basis for 2020 UWMP planning documents, which are foundational references for the DRP.

conditions and likely increase both the frequency and magnitude of supply shortages from current conditions.

Table 4-2: CalSim II Modeling Scenarios Estimating SWP Delta Watershed Exports (State Water Contractors, 2020)

Scenario Name	Scenario Description	Key Assumptions
Scenario 1B	2020 ITP	Current climate and 2020 SWP ITP and 2019 NMFS BiOp
Scenario 2	Current Trends	Climate change [(a)] and 2020 SWP ITP and 2019 NMFS BiOp
Scenario 3B	Increased Delta Outflow Requirements	Climate change and Delta outflow requirements approximating Bay-Delta Plan conditions without VAs
Notes: [(a)] Climate change conditions assume 2035 median projections plus 45 cm of sea level rise.		

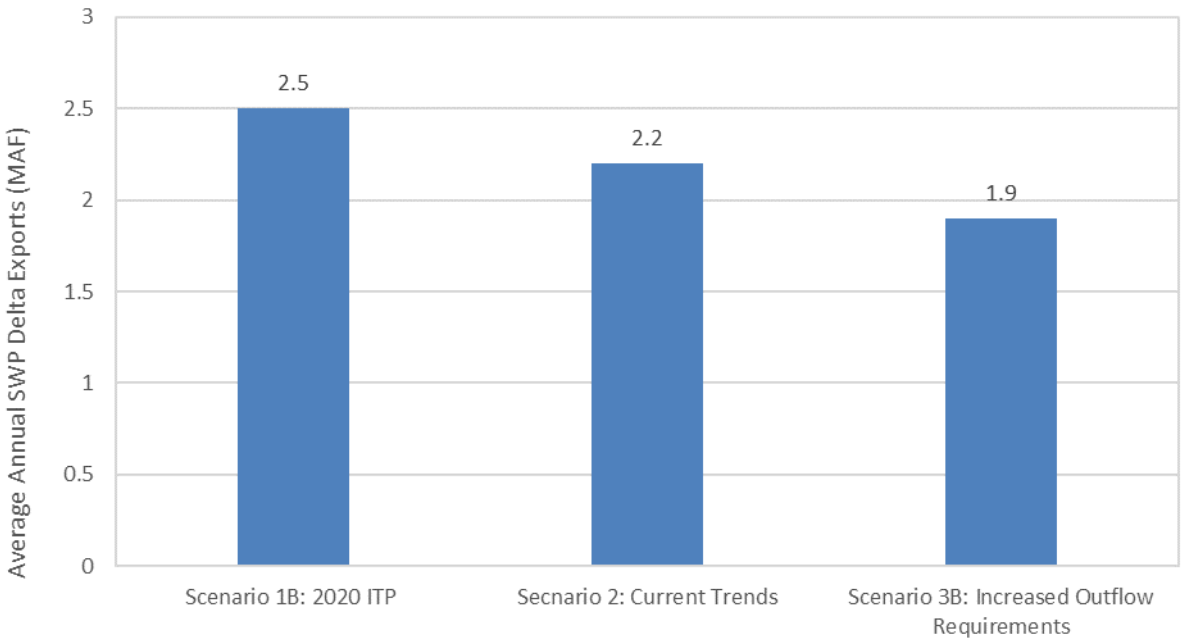


Figure 4-2: Comparison of Existing and Future Scenarios of Average Annual Estimated SWP Delta Watershed Exports (State Water Contractors, 2020)

SFPUC's supplies may also be severely impacted by implementation of the 2018 Bay-Delta Plan updates, which is of particular concern to the North County retailers who purchase water from SFPUC. SFPUC modeled projections of the reduction in supply availability due to the Bay-Delta Plan as a part of their Water Supply Reliability Assessment in their 2020 Urban Water Management Plan (SFPUC, 2021). Figure 4-3 summarizes projected wholesale water supply shortages under the 2018 Bay-Delta Plan (without a VA) under demands projected for 2025, 2035, and 2045. By 2045, it is projected that shortages could exceed 50%, or nearly 101 TAFY (90 million gallons per day (MGD)), in the fourth and fifth year

of drought conditions. Efforts to develop a VA for the Tuolumne River are ongoing and are uncertain, and the 2018 updates to the Bay-Delta plan are currently being litigated. If the Bay-Delta Plan is implemented according to the assumptions in the SFPUC's Water Supply Reliability Assessment, affected Santa Clara County retailers may increase usage of other supply sources, including local groundwater managed by Valley Water (Valley Water, 2021b).

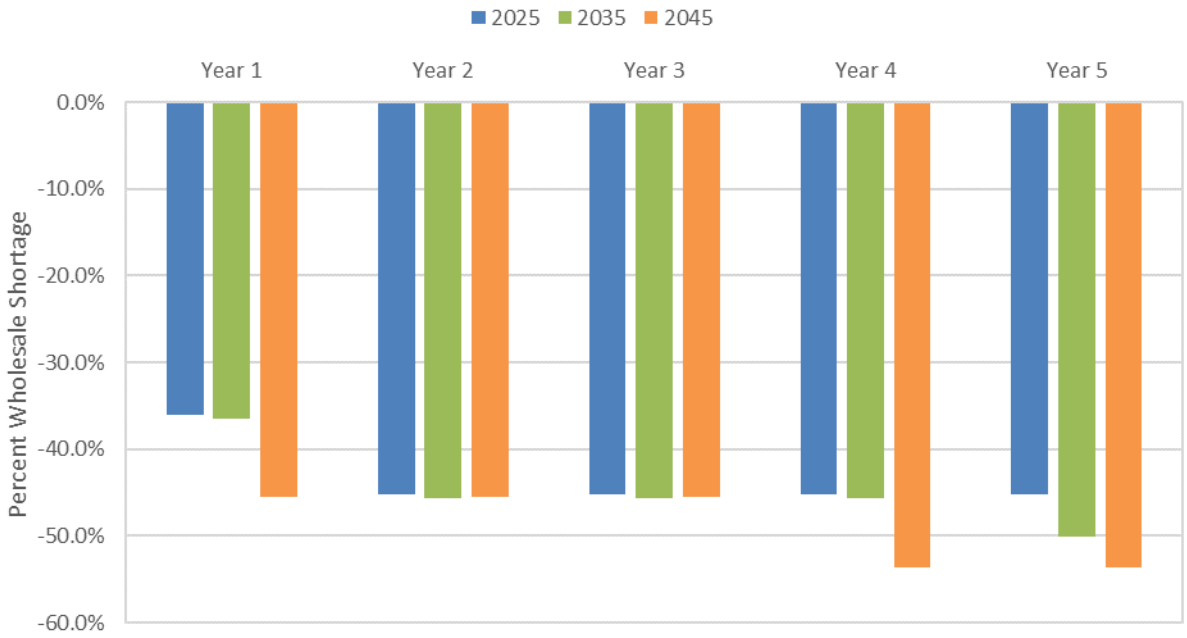


Figure 4-3: Projected SFPUC Wholesale Water Supply Shortages Under Bay-Delta Plan Conditions (SFPUC, 2021)

Water right curtailments and out-of-county groundwater sustainability concerns can also affect Valley Water's imported water reliability. Water right curtailments are a secondary risk to Valley Water as curtailments have the effect of further constraining the ability to execute exchanges and transfers of watershed supplies during drought. Curtailments may also impact SFPUC's water rights, which could increase supply shortages for Valley Water's SFPUC-dependent retail agencies.

Semitropic Water Storage District is one of Valley Water's largest sources of supplemental supply during critical dry years. DWR rejected the GSPs for Kern County water agencies, including Semitropic Water Storage District, causing uncertainty in the basin's management. It is unclear whether implementation of SGMA will result in -restrictions on Semitropic Water Storage District operations and therefore limit Valley Water's access to its water stored in the Semitropic Water Storage Bank during drought years; more information about this risk will be made available over the next year through the State Water Resources Control Board process related to SGMA. Potential reductions in banked storage recovery would reduce both drought year supply and flexibility within Valley Water's operations.[16]

[16] Potential reductions in banked storage from SGMA may also affect other out-of-county banks being explored by Valley Water.

Local Supplies

Table 4-1 identifies two existing and potential regulations affecting Valley Water's local supply sources: the FAHCE Settlement Agreement and emerging contaminant MCLs. The modifications to local reservoir operations rules codified in the FAHCE settlement are likely to add additional constraints to Valley Water's groundwater recharge operations and raw water supply. Proposed pulse releases may result in flow conditions that exceed the capacity of diversions to existing groundwater recharge facilities. In addition, reservoir operation rules for Anderson and Coyote reservoirs have not yet been finalized.[17] New operational rules for releases to Coyote Creek could result in additional operational constraints on Valley Water's local surface water system.

New drinking water regulations could affect the local groundwater supply. The recently drafted Cr6 MCL and impending PFOA and PFOS MCLs, among other emerging contaminant regulations by the DDW and/or EPA, are regulations that may require investment in costly groundwater treatment for well owners depending on the existing water quality of the groundwater basin. Further detail about how MCLs of emerging contaminants could affect Valley Water are discussed in Section 4.5.

4.3 Infrastructure Condition and Constraints

4.3.1 Overview

As described in Section 2.2, Valley Water maintains a complex water supply system that integrates several different supply sources through its raw and treated water infrastructure. A diverse supply portfolio and redundancies in key raw and treated water facilities provide Valley Water with significant system flexibility to maintain service during droughts and other major system outages (Valley Water, 2016). Despite this flexibility, several existing infrastructure constraints present distinct challenges during droughts which include:

- Reliance on SWP exchange capacity to recover banked supplies in the Semitropic Groundwater Bank.
- Loss of local reservoir storage capacity due to the DWR, Division of Safety of Dams (DSOD) and the Federal Energy Regulatory Commission (FERC) restrictions.
- Concurrent system outages during drought, such as a failure of the South Bay Aqueduct[18] or a seismic event that breaches levees in the Delta.
- Retail agency distribution system limitations on supply substitution or blending.

[17] Release rule curves for Coyote Creek will be formally established through the Anderson Dam Seismic Retrofit Project (ADSRP). The Draft EIR for the ADSRP was released in September 2023.

[18] Rehabilitation of the South Bay Aqueduct will be required given its age and condition. The rehabilitation will likely take decades to complete and cost hundreds of millions of dollars.

4.3.2 Impacts to Valley Water

The infrastructure constraints identified above have the effect of limiting operational flexibility during drought. Specific impacts are summarized below.

Constraints on Semitropic Groundwater Bank Recovery

Valley Water recovers banked supplies from the Semitropic Groundwater Bank through an SWP exchange. This framework presents challenges when there is insufficient water being conveyed in the SWP system (Valley Water, 2017). During the 2012-2016 drought, Valley Water explored implementation of a program for retrieving water stored in the Semitropic Groundwater Bank via the California Aqueduct Reverse Flow Project (Bureau of Reclamation, 2014) due to the uncertainties with exchange abilities during these periods . Discussions with Valley Water staff indicated that the California Aqueduct Reverse Flow Project would be a strategy of "last resort" in future droughts. Valley Water has been able to take stored water from Semitropic Groundwater Bank consistent with its contract when needed to date; nevertheless, the projects illustrate the challenges of physical delivery, exchange, and timing constraints from the Semitropic Groundwater Bank if needed in the future. Recovery of banked water is constrained by timing of take, where take is generally lower in summer months when in-basin demands are higher.

Current Limits to Local Storage Capacity

DSOD and FERC have capacity restrictions in place on several of Valley Water's reservoirs, as summarized in Table 4-3.

Table 4-3: Current Reservoir Capacity Restrictions

Reservoir	Capacity (AF)	Restricted Available Capacity (AF)	Restricted Capacity (%)
Almaden	1,555	1,443	93%
Anderson	89,278	3,159 [(a)]	3.5% (deadpool)
Calero	9,738	4,414	45%
Coyote	22,541	11,843	53%
Guadalupe	3,320	2,134	64%

Notes:
[(a)] Deadpool capacity was updated in Valley Water's 53rdProtection and Augmentation of Water Supplies (PAWS) report (Valley Water, 2024).

The DSOD and FERC restrictions have currently reduced over 103 TAF of total storage capacity from Valley Water's local reservoir system. The current loss of Anderson Reservoir (expected to be at least 10 years while seismic retrofits are completed) is the most challenging from a drought management perspective given Anderson Reservoir's overall capacity and ability to carry over storage from one year to another and supply the treated water system. While Anderson Reservoir is out of service, Valley Water staff consider Calero Reservoir to be "backup" storage to address short-term low supply conditions affecting the distribution system; however, Calero Reservoir has a small, restricted storage capacity (4,414 AF) and can only deliver about 40 cubic feet per second or 26 MGD by gravity to the raw water distribution system, which is not sufficient to meet the demand of a single water treatment plant during an outage.

Concurrent System Outages

A system outage occurring concurrent with a drought event can severely limit the ability to deliver water. Valley Water's Infrastructure Reliability Plan (IRP) identified several outage scenarios reflecting relevant local hazards, including:

- Three earthquake scenarios, affecting the San Andreas and Calaveras faults,
- An extreme storm event,
- Outages to the Delta lasting 6 months and 24 months in duration, and
- An out-of-county power outage.

In each scenario, the IRP performed modeling and repair sequencing to determine minimum time to return service and to recommend infrastructure projects to enhance system redundancy and resiliency. The "worst case" scenario was determined to be a magnitude 7.9 earthquake on the San Andreas fault, which would disrupt treated water delivery to service[19] up to 30 days (Figure 4-4 shows an example repair sequence for this scenario). Treated water deliveries are expected to be returned to service within 14 days for both the extreme storm and out-of-county power outage scenarios. The Delta outage scenarios concluded that Valley Water could maintain service for the outage duration with 20% reductions in demand under above average local hydrologic conditions and groundwater storage, completion of key Water Supply Master Plan projects (e.g. indirect potable reuse)[20], and utilization of the SFPUC intertie. Returning and maintaining service during each of these scenarios, in particular the Delta outage, would be considerably more difficult with concurrent drought conditions and under summertime demands.

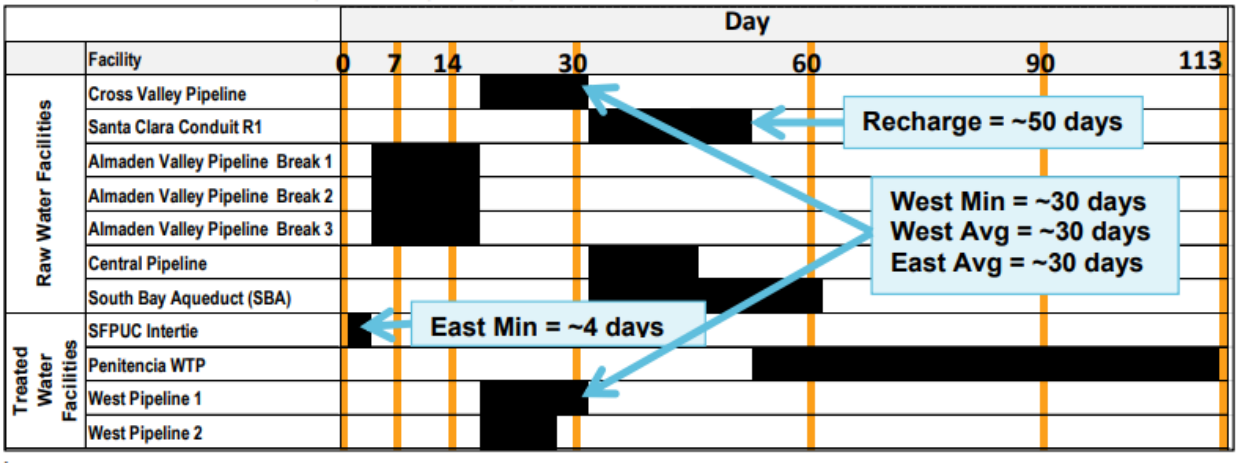


Figure 4-4: Example Repair Sequence for a San Andreas Earthquake Outage Scenario (Valley Water, 2016)

Retail Agency Distribution System Constraints

[19] Assumed to be wintertime minimum monthly demand.

[20] See Section 4.6 for additional description of Water Supply Master Plan projects.

In general, retail agencies are flexible to switch supply sources (e.g. offsetting groundwater use with additional treated water purchases), but certain retailers have physical limits, operational limits, or water quality constraints that pose challenges for changing supplies. Several retail agencies' distribution systems have pressure zones that are heavily reliant on one supply source and do not currently have the system flexibility to easily switch sources (e.g. from treated water to groundwater) during an outage or a drought event that asymmetrically affects supply sources. Outside of pressure zone constraints, several retail agencies do not have connections to all supply sources provided in the County. For example, portions of Milpitas' service area do not have access to the groundwater basin. Similarly, other retail agencies, like Palo Alto and Purissima Hills Water District, do not have connections to Valley Water's treated water distribution system, and South County retailer agencies are entirely dependent on groundwater pumping.

4.4 Future Water Quality Conditions

4.4.1 Overview

Climate change and water shortages are expected to create additional challenges to maintaining water quality in the Delta. As noted in Section 4.1, sea level rise due to climate change will result in the need for additional outflow to maintain existing water quality objectives. Projected lower water levels in local reservoirs and warmer ambient temperatures will result in increased risk of harmful algal bloom (HAB) formation, including cyanobacterial blooms. Cyanobacteria may produce taste-and-odor compounds that impart undesirable taste and/or odor to surface water. In addition, some species of cyanobacteria can produce cyanotoxins which can cause illness and death in humans and animals.

Climate change-driven rising water temperatures also pose risks to fish and aquatic habitats, and temperature management measures are included in FAHCE and the NMFS BiOp for long-term operations of the CVP and SWP. Water temperature is an important monitoring parameter under the Uvas and Chesboro LSAAs. In these agreements, water temperature is identified as a parameter to meet using in-stream flow requirements and volume. Maintaining safe streamflow temperatures helps preserve wildlife in creeks and the aquatic habitats within Valley Water's watersheds.

Emerging contaminants like PFOA, PFOS, and Cr6 will also likely require additional treatment and operational measures to meet future state regulations. The SWRCB DDW recently published a draft MCL for Cr6 of 10 parts per billion (ppb) (DDW, 2022), and the EPA has proposed drinking water regulations for six PFAS, including MCLs of 4 parts per trillion for both PFOA and PFOS.

4.4.2 Impacts to Valley Water

With sea level rise and loss of Sierra snowpack, available imported supplies from the Delta watershed and transfers will likely be reduced. In response to seawater intrusion into the Delta, additional water supplies will be required to manage Delta salinity and thus not be available for SWP/CVP allocations. The loss of snowpack will impact the ability of SWP/CVP to capture and store winter precipitation which will also impact SWP/CVP allocations.

Locally, HABs could become a concern especially when San Luis Reservoir is at its low point. Responding to HAB events in San Luis Reservoir or within Valley Water's in-county reservoirs could require additional watershed/lake management or result in the need for additional treatment plant optimization. Seeking additional treatment for local surface water sources will require costly investment by retail agencies and Valley Water. Not only does treatment involve design, planning, and construction, but also higher operational costs to achieve treatment goals, and monitoring and maintenance costs. The COVID-19 pandemic demonstrated that supply chain challenges can result in unreliable and expensive chemical deliveries. Appropriate planning will be required to ensure treatment will be functional in the long-term to meet treatment goals and state regulations.

In addition to water quality impacts to imported and local surface water supplies, local groundwater supply may be further constrained due to emerging contaminant regulations and sea level rise/seawater intrusion. During drought conditions, additional treatment constraints and/or water quality concerns could reduce operational flexibility if affected groundwater wells have been removed from service. Based on the recent 2021 Groundwater Management Plan (GWMP) (Valley Water, 2021d), most wells monitored by Valley Water, including annual monitoring network wells and public water system data reported to DDW were below the 10 ppb Cr6 draft MCL. However, for the principal aquifer zone, which is represented by wells primarily drawing water from depths greater than 150 feet, the maximum reading was 10 ppb in 2019. The presence of naturally occurring Cr6 sources may require affected well owners in limited geographic areas to pursue treatment depending on the adopted MCL.

Based on public water system testing to date, 14 wells in Santa Clara County have detected PFOA of PFOS above the proposed drinking water limit of 4 parts per trillion (California State Water Resources Control Board, n.d.). The number of potentially impacted wells may increase as additional testing occurs under the EPA's fifth Unregulated Contaminant Monitoring Rule, which requires many public water systems to test for PFAS by 2025.

As sea level rise increases (see Section 4.5) seawater intrusion is expected to increase in the shallow aquifer zone primarily through an expected increase in tidal incursion into rivers and creeks. The 2021 GWMP identified that currently 49 wells (1.7% of current groundwater pumping) are at the highest risk to this vulnerability because they are located within the seawater intrusion outcome measure – lower threshold area of the Santa Clara Plain.

4.5 Future Baseline Water Shortages and Sectoral Impacts

If left unmitigated, future drought events will result in impacts to human health and safety, the economy, and the natural environment in Santa Clara County. This section explores impacts to these sectors informed by modeling of future water shortages developed under Valley Water's WSMP and 2021 WSMP Monitoring and Assessment Program (MAP) reports.

4.5.1 Modeled Future Water Shortages

The 2021 MAP conducted updated water supply system modeling using Valley Water's WEAP system model that considered future assumptions reflecting several of the key vulnerabilities identified in

Section 4.5 including climate change, future regulatory risks, and infrastructure constraints. Key modeling included:

- 2045 projected demands assumed the achievement of Valley Water's long-term conservation goal (110 TAFY estimated from 1992 onward).
- 94 years of monthly historical hydrology (1922 – 2015) adjusted with five climate change scenarios to bracket local impacts to hydrology (e.g. reservoir inflows, evaporation, precipitation, natural groundwater recharge, and impacts to water demand).
- Updated imported water (i.e., SWP/CVP) availability[21] based on recent DWR CalSim II model results presented in the 2019 Delivery Capability Report (DWR, 2020) adjusted downward to account for climate change and regulatory impacts (e.g. the Bay-Delta Plan).
- Dry year transfers/exchanges, outside of those associated with groundwater banks, were not considered since they are not included in the WSMP's Board-approved suite of projects as well as the risks associated with their long-term reliability.
- FAHCE reservoir operations.
- The model baseline contained representation of current infrastructure conditions and constraints (e.g. reduced SBA capacity) but assumed investment in key ongoing Capital Improvement Plan (CIP) projects, including dam seismic retrofits, Vasona Pump Station upgrades, and the Rinconada Water Treatment Plant Reliability Improvement Project.
- No new projects identified in the WSMP or MAP were included in the baseline.

Based on these assumptions, the model baseline presented a reasonable estimation of future water supply conditions in Santa Clara County. Figure 4-5 shows a time series plot identifying modeled water supply shortages (presented as percent reduction in demand) resulting from drought events in the model period of record. The model identified six distinct drought events resulting in water supply shortages ranging from 10% to 40%. The event occurring between hydrologic years 1989-1995 was the most severe and included two consecutive years of 40% water shortages.

[21] Impacts to SFPUC supplies associated with the Bay-Delta Plan were not considered.

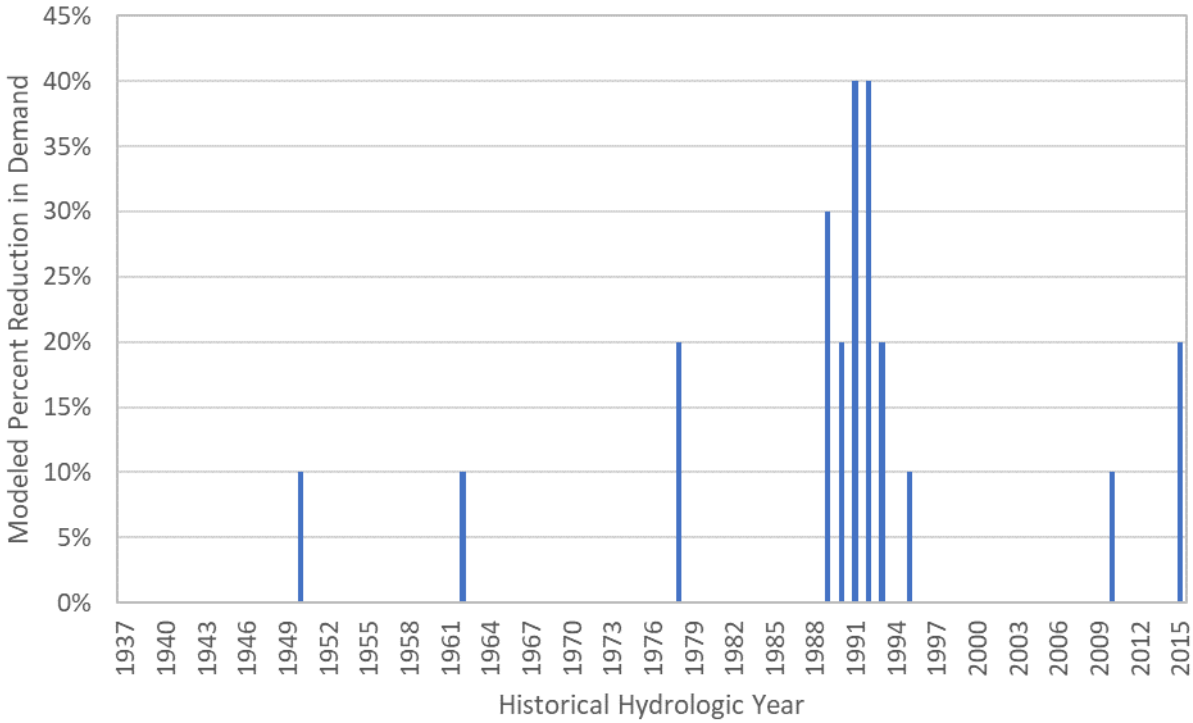


Figure 4-5: Modeled Water Supply Shortages Under Baseline Future Conditions

4.5.2 Impacts to Human Health and Safety

The largest potential for impacts to human health and safety from drought-driven water shortages are expected to occur within the County's residential customer base. Residential customers' health and safety may be affected primarily through lower available water quantities[22] for indoor activities including human consumption, cooking, and cleaning.

Prior studies (Valley Water, 2021a) have estimated county-wide average indoor use at 62% of total demand (38% reflects estimated outdoor use).[23] This indicates that most drought events modeled in Figure 4-5 can be managed to minimize human health and safety impacts by prioritizing reductions in outdoor use. However, it is unrealistic for outdoor use to be completely eliminated, in particular agricultural use and certain CII uses that fall outside of the non-functional turf restrictions. The most extreme years with 40% shortages and assuming no new investments will likely require reductions in indoor use. Greater efficiency in indoor use can mitigate impacts to human health and safety, however this may be challenging as several Valley Water retail agencies have average per capita residential water use close to 55 gallons per capita per day (gpcd), the minimum requirement for health and safety (Department of Water Resources, 2022).

[22] Residential customers' health and safety are also at risk from decreased source water quality as identified in Section 3.4. Water treatment standards and facilities are expected to mitigate water quality concerns to residential customers however operational costs may increase under future conditions.

[23] Indoor/outdoor use was estimated based on total water use across all retail agency customer classes.

4.5.3 Impacts to the Economy

Drought related impacts to the economy are examined by considering impacts of water shortages to the County's CII and agricultural customer base. The primary quantity related risk to CII customers concerns reduced availability of water for processes critical for business operations such as industrial cooling and food processing. CII customers are also affected by water quality degradation during drought events, in particular, industrial and tech companies whose processes are highly sensitive to changes in TDS. Reducing CII outdoor use (e.g. eliminating watering of non-functional turf) can mitigate impacts to core business processes, however the most extreme years (40% shortages) modeled in the MAP may be difficult to address with outdoor reductions alone. Disruptions in the quality and volume of water needed for critical business processes could result in increased cost for goods and services produced in the County.

Drought also poses significant risk to the County's agricultural sector. Higher temperatures and lower precipitation during drought events may result in higher agricultural demand for water. Without sufficient water availability, the agricultural sector could experience lower crop yields and pasture loss which may threaten the economic viability of existing farms and/or result in increased cost of agricultural goods produced in the County. Although the agricultural sector is not subjected to the same water use restrictions as M&I users in the County, the Valley Water Board strongly encourages agricultural water users to consider water shortage conditions in planting and irrigation practices. Agricultural users are also at risk of declining groundwater levels and/or dry wells if drought conditions are unchecked.

4.5.4 Natural Environment and Recreation

Drought events pose significant risks to the natural environment and associated outdoor recreation activities. Higher temperatures and lower precipitation experienced during drought can result in losses in tree and other plant growth, increased wildfire risk, and impaired aquatic habitat/fisheries through reduced streamflow and higher water temperatures. Additionally, lower groundwater elevations can result in impairment of groundwater dependent ecosystems including wetlands, rivers, streams, estuaries, seeps and springs, and terrestrial vegetation.

These impacts to the natural environment pose direct risks to outdoor recreation activities. Increased wildfires constrain the publics ability to recreate outdoors due to smoke inhalation concerns and immediate risk of fire hazards.[24] Meanwhile, lower levels in local reservoirs can result in restrictions on boating, and degradation and loss of aquatic ecosystems directly impact the publics access to aquatic recreation activities, such as fishing.

5. Mitigation Actions

Reclamation provides a specific definition of mitigation actions in its guidance for drought contingency planning, which states that:

[24] Wildfires and associated smoke inhalation also pose significant risks to human health and safety and economic impacts due to business disruption.

[Mitigation actions] build long-term resiliency and mitigate risks posed by drought. Mitigation measures are actions, programs, and strategies implemented before drought to address potential risks and impacts. These actions are outside of regular water management activities and are intended to decrease sector vulnerabilities and reduce the need for response actions.

Mitigation actions are distinct from "response actions" in that mitigation actions are implemented before drought occurs rather than during a drought. For that purpose, this section focuses on preemptive projects and programs envisioned to increase water supply resiliency, decrease drought risk, and address the vulnerability factors identified in Section 4. Mitigation actions reviewed in this section were primarily selected from projects and programs identified within Valley Water's WSMP and associated MAP reports. Two additional mitigation actions were identified based on discussions with Valley Water staff.

This section is structured to:

- Review the planning objectives informing the mitigation actions,
- Provide an overview of the identified mitigation actions, and
- Evaluate the potential performance of the identified mitigation actions.

5.1 WSMP Planning Objectives Inform the Mitigation Actions

The WSMP identified several planning objectives that guide Valley Water's strategy for meeting future demands and ensuring reliable delivery of safe, and clean water to its customers. Valley Water uses these objectives to guide the development and evaluation of alternatives, projects, and programs. A full summary of the WSMP planning objectives is provided in Appendix C. Several of the WSMP planning objectives directly address the vulnerability factors identified in Section 4 and are summarized in Table 5-1 below. Consideration and adherence to these planning objectives will collectively help select project alternatives to address identified drought vulnerabilities.

Table 5-1: Summary of WSMP 2040 Planning Objectives and Vulnerabilities Addressed

Planning Objective	Objective Summary	Vulnerabilities Addressed
Provide a reliable water supply for municipalities, industries, agriculture, and the environment	Defines the importance of meeting service area demands, level of service (LOS) goals, maintaining groundwater storage, securing existing water supplies, reducing reliance on the Delta watershed, and maximizing water conservation and efficiency.	• Climate change • Regulatory conditions
Ensure drinking water quality	Focuses on protecting surface water and groundwater quality and meeting drinking water quality regulations.	• Water quality conditions
Maximize flexibility in the water supply system	Recognizes the importance of system flexibility, including prioritizing local control over operations and supplies, minimizing complexity, allowing for phased implementation of new projects, and explicitly accounting for climate change.	• Climate change • Infrastructure condition and constraints
Protect the Natural Environment	Identifies the importance of avoiding impacts to natural resources, protecting, and restoring aquatic ecosystems, and reducing greenhouse gas emissions.	• Climate change • Regulatory conditions • Water quality conditions
Ensure community benefits	Addresses Valley Water's mission to fulfill customer service goals, improve quality of life in the County, and provide flood protection benefits.	• Climate change • Infrastructure condition and constraints • Water quality conditions

5.2 Overview of Potential Mitigation Actions

Several mitigation actions were identified within the WSMP and from discussions with Valley Water staff. Mitigation actions fall into two main categories:

1. Investment in WSMP Projects and Programs
2. Implementation of Management Actions

Specific mitigation actions are described in the following sections.

5.2.1 Investment in WSMP Projects and Programs

The WSMP identified dozens of future infrastructure projects[25] for Valley Water to consider implementing to advance the key planning objectives identified in Table 5-1. The 2021 MAP provided updates to eight projects considered in the WSMP based on the most recent data and project information available. Valley Water is considering additional projects as part of the update to the WSMP, which is expected to be completed in 2025. Table 5-2 summarizes the projects from the 2021 MAP along with two key additional projects from the WSMP update. Valley Water will continue evaluation and participation in the broader list of projects included in the WSMP to allow for future adjustments to account for project risk, climate change, future demands, and regulatory uncertainties.

[25] A detailed summary of WSMP projects is provided in Appendix C.

Table 5-2: Summary of WSMP Projects

Project	Description
Direct Potable Reuse – 24 TAFY (DPR) [a]	Uses effluent from a wastewater partner for a 24 TAF direct potable reuse project to feed a new Advanced Water Purification Facility adjacent to the existing Silicon Valley Advanced Water Purification Center.
Potable Reuse – 8 TAFY [a]	Uses effluent from regional wastewater facilities to feed a new Advanced Water Purification Facility. .
Lexington Pipeline[a]	A new pipeline that would allow surface water from Lexington Reservoir to be put to beneficial use elsewhere in the County (increasing utilization of existing water rights) and potentially better utilize wet-weather flows during high-flow events such as atmospheric rivers.
Los Vaqueros Reservoir Expansion (LVE) [a]	Expands Contra Costa Water District's (CCWD) Los Vaqueros Reservoir from 160 TAF to 275 TAF. A new conveyance facility, the Transfer Bethany Pipeline, would be constructed as a part of the project, which would provide a direct connection of CCWD's system to the California Aqueduct above Bethany Reservoir, which serves the SBA.
Pacheco Reservoir[a]	Enlarges Pacheco Reservoir from about 5,500 AF to 140,000 AF and connects the reservoir to Valley Water's raw water system through the Pacheco Conduit. Supply sources to the expanded reservoir are local creek inflows and imported supplies.
Refinery Recycled Water Exchange (RRWE) [a]	An out-of-county recycled water project between Valley Water, Central Contra Costa Sanitary District (Central San), and CCWD. Allows Central San to provide recycled water to two oil refineries in Contra Costa County in lieu of CCWD's CVP water. CCWD's freed up CVP water would then be supplied to Valley Water.
Sites Reservoir[a]	Construction of a 1,500 TAF off-stream water supply reservoir north of the Delta that would collect flood flows from the Sacramento River. Potential to provide dry year yield and storage benefits. The project would be operated in coordination with the SWP and CVP.
Delta Conveyance Project (DCP) [a]	Constructs alternative conveyance capable of diverting up to 6,000 cfs from the Sacramento River north of the Delta and delivering it to the SWP pumps at the southern end of the Delta. The project purpose is to restore and protect the reliability of SWP water deliveries and, potentially, CVP water deliveries south of the Delta, consistent with the State's Water Resilience Portfolio. Objectives include addressing sea level rise, minimizing public health and safety impacts from a major earthquake that causes Delta levee failure, protecting the ability of the SWP to deliver water when hydrologic conditions and regulations allow, and providing operational flexibility to improve aquatic habitat in the Delta.
Out of County Groundwater Bank(s)[a]	Investment in an additional out-of-county groundwater bank to diversify storage options, maximize "put" capabilities during wet years, and maximize "take" capabilities during dry years.
B.F. Sisk Dam Raise and Reservoir Expansion Project[b]	Joint project by the U.S. Department of the Interior, and participating San Felipe water users to create an additional 130,000 acre-feet of storage space in San Luis Reservoir.
Local Desalination[b]	Valley Water is exploring the feasibility of a desalination plant in south San Francisco Bay
South County Recharge Facility	Expansion or development of one or more new recharge facilities in South County, with water supplied from existing imported water contracts and/or local surface water supplies.
Water Conservation Targets	Planned Water Conservation Targets will include a conservation portfolio that will either maintain or achieve additional savings beyond Valley Water's currently planned conservation activities.

Notes:
[a] Updates included in the 2021 MAP
[b] Information not available for modeling analysis in 2021, but is currently being evaluated as part of the update to the Water Supply Master Plan, which is expected to be completed in 2025

5.2.2 Implementation of Management Actions

In the DRP, management actions are defined as non-infrastructure programs that can help address Valley Water's identified vulnerability factors as well as overall drought risk. Several actions were identified within both the WSMP and from discussions with Valley Water staff, including:

- Continued implementation of the Water Conservation Strategic Plan, and
- Investment in new agreements.

Continued Implementation of the Water Conservation Strategic Plan

Continued implementation of county-wide conservation efforts is critical to maintaining and improving Valley Water's water supply reliability. Long-term conservation is a key element in the WSMP and directly addresses the planning objective to provide a reliable water supply for municipalities, industries, agriculture, and the environment. Valley Water has set specific targets to conserve 110 TAFY by 2040 relative to a 1992 water use efficiency baseline. Valley Water has made considerable progress towards these targets and estimates to save approximately 83 TAFY as of 2023 through a combination of passive savings[26] and active programs[27].

In continued support of these conservation targets, Valley Water completed a Water Conservation Strategic Plan (Strategic Plan) in 2021 that provided a blueprint for meeting Valley Water's established conservation policy objectives and targets (Valley Water, 2021a). The Strategic Plan concluded that Valley Water will be able to meet its conservation targets provided that:

- Program implementation rates are increased, shifted towards the highest saving programs (e.g., programs targeting outdoor water use and water use by the CII sectors) and focused on areas with historically low participation;
- Conservation staffing levels are increased to support expanded program implementation; and
- Valley Water continues to leverage new technology to enhance conservation, more effectively target new potential customers (including small site landscape customers) supported by data and trends, increase awareness of long-term conservation programs, and consider expanding program offerings to include savings related to reducing distribution system water loss.

A summary of the projected water savings required to meet the conservation targets is provided in Figure 5-1. Valley Water's savings of 77 AF in 2021 are 13 AF away from meeting the 2025 projected water savings needed to reach conservation targets.

[26] Passive savings include water conservation efforts that occurred due to changes in plumbing/building codes/markets which resulted in retail agency customers installing water efficient fixtures.

[27] Valley Water has implemented over 43 programs since the 1990s covering water saving devices and strategies in the single-family residential, multi-family residential, irrigation, agricultural, and CII water use sectors (Valley Water, 2021a).

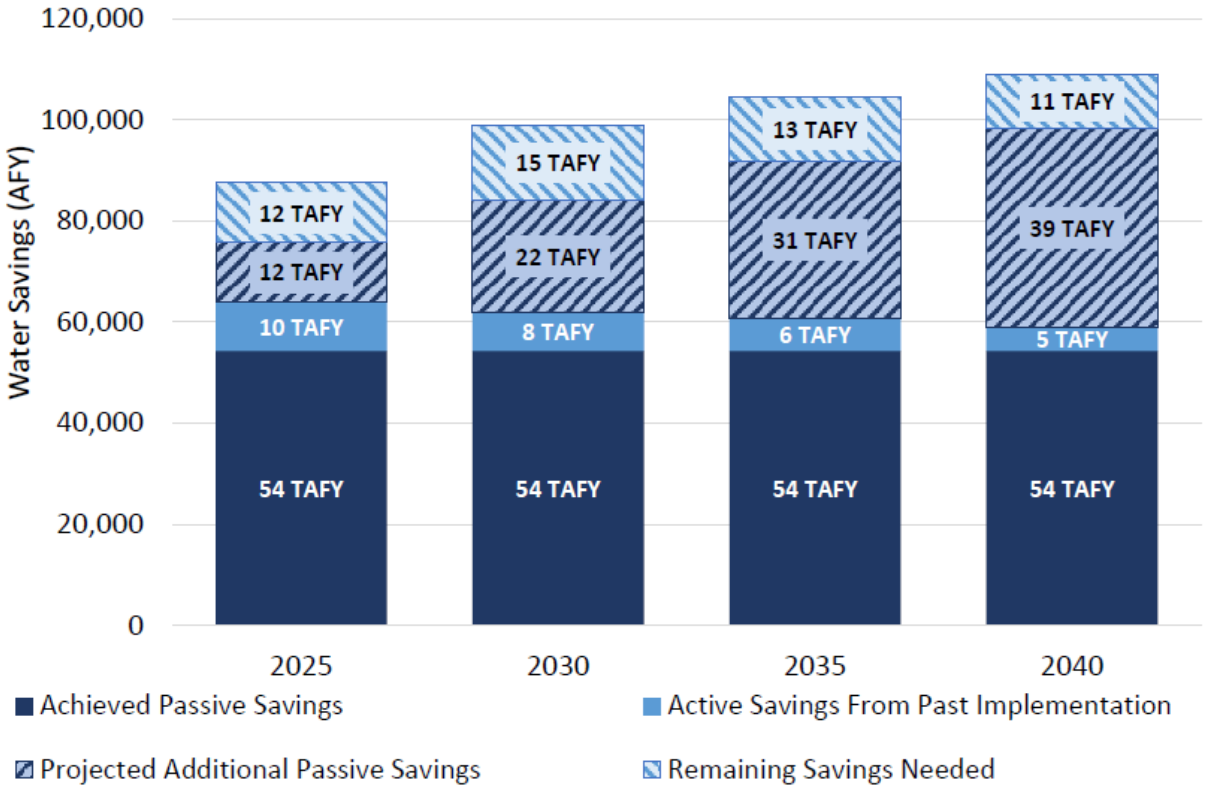


Figure 5-1: Projected Water Savings Needed to Reach Conservation Targets (Valley Water, 2021a)

Investment in New Agreements

Water shortage vulnerability can also be mitigated through investment in agreements that secure additional supplies or allow for additional storage of imported (i.e., Delta watershed) supplies. Since the 2012-2016 drought, Valley Water has established multi-year transfer agreements as well as single-year transfer agreements . In parallel to developing longer-term agreements, Valley Water works closely with DWR and Reclamation staff to secure allocations to meet critical public health and safety needs in years of shortage.

5.2.3 Linkage Between Mitigation Actions and Key Vulnerabilities

The mitigation actions described in the prior sections can reduce the impact of the vulnerabilities described in Section 3. Table 5-3 on the following pages summarizes how each mitigation action addresses the identified vulnerabilities.

Table 5-3: Summary of Vulnerabilities Addressed by Mitigation Actions (Continued on Following Page)

Mitigation Category	Project/Program	Climate Change	Regulatory Risks	Infrastructure Constraints	Water Quality
Infrastructure Project	Direct Potable Reuse (DPR)	• Reuse supplies are less vulnerable to changes in temperature and precipitation	• New local supply supplements existing surface water supplies and groundwater banks vulnerable to regulatory impacts	• Increases system flexibility by adding an additional supply source	• Addition of highly purified water directly to distribution system or ahead of water treatment plant
Infrastructure Project	Indirect Potable Reuse (IPR)	• Reuse supplies are less vulnerable to changes in temperature and precipitation	• New local supply supplements existing surface water supplies and groundwater banks vulnerable to regulatory impacts	• Increases system flexibility by adding an additional supply source	• Addition of highly purified water to groundwater basin
Infrastructure Project	Lexington Pipeline	• Would allow for increased beneficial use of high flow events	• Would expand use of local supply to supplement existing supplies vulnerable to regulatory impacts	• Increases system flexibility by expanding the raw water system and allowing an additional reservoir to supply Rinconada treatment plant	• Addition of supply source increases options for optimization of source water quality
Infrastructure Project	Los Vaqueros Reservoir Expansion (LVE)	• Allows for better capture of high flows events under imported water contracts • Additional dry year storage	• Additional means for storing imported water during periods of excess availability	• Increases diversity in storage • Provides a new conveyance pathway to access imported water	• Addition of dry year storage increases options for optimization of source water quality
Infrastructure Project	Pacheco Reservoir	• Allows for better capture of high flows events under imported water contracts • Additional dry year storage	• Additional means for storing imported water during periods of excess availability	• Increases diversity in storage	• Addition of dry year storage increases options for optimization of source water quality
Infrastructure Projects and Programs	Refinery Recycled Water Exchange (RRWE)	• Recycled water supply less vulnerable to changes in temperature and precipitation	• Increases access to imported water via a recycled water exchange	Increases drought year supply availability	• Addition of supply source increases options for optimization of source water quality

Table 5-3: (Continued): Summary of Vulnerabilities Addressed by Mitigation Actions

Mitigation Category	Project/Program	Climate Change	Regulatory Risks	Infrastructure Constraints	Water Quality
Infrastructure Projects and Programs	Sites Reservoir	• Allows capture of high flow events to offset imported water shortages • Additional dry year storage	• Additional imported supply source to supplement existing imported water supplies	• Increases system flexibility by adding an additional supply source	• Could assist in mitigating water quality related Delta outages
Infrastructure Projects and Programs	Delta Conveyance Project	• Mitigates sea level rise impacts with new intakes and tunnel	• Expected to improve reliability of Delta exports under future regulatory conditions	• Increases system flexibility by providing new conveyance for imported water • Decreases seismic and Delta Levee concerns	• Flexibility in diversions help manage salinity and mitigate water quality related Delta outages
Infrastructure Projects and Programs	Groundwater Bank Diversification	• Additional dry year storage • Groundwater banks avoid evaporative losses of surface water reservoirs	• Additional means for storing imported water during periods of excess availability • Additional means for retrieving imported water during drought periods	• Increases diversity in storage • Additional flexibility in recovering supply from out-of-county banks	• Addition of dry year storage increases options for optimization of drought source water quality
Management Actions	Water Conservation Strategic Plan	• Increased conservation helps offset increases in demand from higher temperatures and lower precipitation • Increased conservation reduces energy needs for water supply chain, which reduces pollutant emissions from energy production.	• Increased conservation helps reduce strain on supplies vulnerable to regulatory impacts • Will assist in complying with California water conservation legislation	Does not rely on raw and treated water infrastructure	• Reduced pumping demands provides more water availability for treatment plant blending • Reduced treated water demands reduces the volumes needed for blending
Management Actions	Transfer Agreements	• Could help offset some near-term impacts of climate change	• Could help offset lower allocations of imports resulting from regulatory conditions but may be more difficult to execute	• Increases system flexibility by adding an additional supply source	Could assist in blending to maintain water quality at the treatment plants during droughts

5.3 Mitigation Action Performance Evaluation

This section provides a performance evaluation of the mitigation actions identified in Section 5.2 based on planning objectives identified in the WSMP and modeled performance from the 2021 MAP (Valley Water, 2021c). The 2021 MAP conducted updated water supply system modeling using Valley Water's WEAP system model that considered future assumptions reflecting several of the key vulnerabilities identified in Section 4 including climate change, future regulatory risks, and infrastructure constraints. Key modeling assumptions and performance of the baseline scenario were discussed and presented in Section 4.6.1.

Seven of the infrastructure projects from the 2021 MAP identified in Table 5-2 (excluding DCP and an additional out-of-county groundwater bank)[28] were modeled independently[29] and in combination as future project portfolios.[30] A key performance metric from the WEAP modeling for the 2021 MAP is frequency of overall supply shortage. Figure 5-2 summarizes the frequency and severity of the shortages for each modeled project and portfolio. Projects and portfolios that met Valley Water's current dry year LOS goal of meeting at least 80% of annual water demand are highlighted in teal.

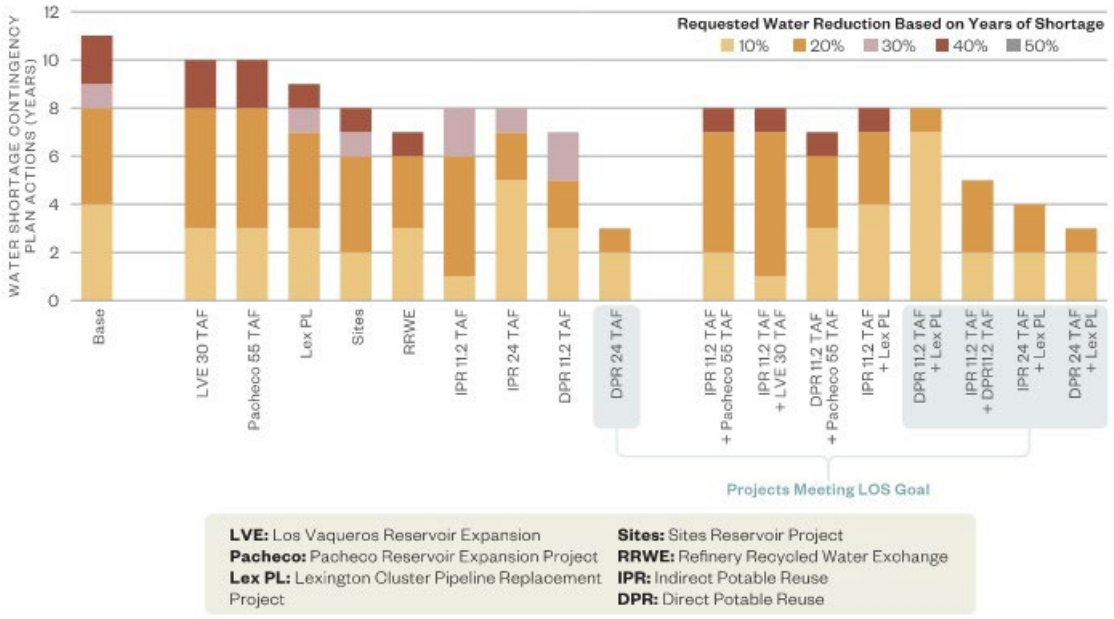


Figure 5-2: Modeled Frequency and Severity of Expected Shortages Assuming 2045 Demand Under the Median Climate Change Scenario (Valley Water, 2021c)

[28] DCP was not modeled in the 2021 MAP since it is in early stages and there is insufficient information on proposed operations to model and quantitatively evaluate water supply benefits to Valley Water. Additional out-of-County groundwater banking for diversifying put and take capabilities was evaluated on a conceptual basis.

[29] Certain projects, including DPR and IPR, were modeled considering multiple potential capacities.

[30] Eight distinct project portfolios were evaluated combining new supply sources with different storage/conveyance options. Portfolio were developed in a collaborative process among Valley Water staff and with Board input.

Key conclusions from the 2021 MAP analyses are as follow:

- Shortages under baseline conditions, which include meeting conservation targets, reach 40%.
- Shortages under all conditions would be higher if conservation targets are not met.
- No single project modeled, aside from DPR at 24 TAF, meets the dry year LOS goal.
- Implementation of potable reuse (either direct or indirect) is critical to meeting the dry year LOS goal.
- The combination of Lexington Pipeline with any of the direct potable reuse alternatives modeled is sufficient to meet the dry year LOS goal.
- Diversification of out-of-county storage could improve operational flexibility and Valley Water's ability to transport supplies to local storage during a drought.

Project risks, including cost, ability to implement (e.g., maturity of planning/design, regulatory/permitting requirements), operability concerns (e.g., project interdependencies, lack of local control), supply reliability issues (e.g., future timing and availability of source water), and susceptibility to climate change impacts differ between each of the projects identified in Section 5.2. The MAP conducted a detailed risk assessment (see Appendix D) so that project risks are identified and can be mitigated. Cost and other project risks are important to consider as projects are selected and implemented.

In addition to the modeling and analysis presented in the 2021 MAP for the mitigation measures defined in Section 5.2, additional analyses could be added in future MAP analyses to align with other vulnerability factors and mitigation measures identified in this report, including:

- More explicit consideration of anticipated reductions to SFPUC deliveries resulting from the Bay-Delta Plan.
- Inclusion of Delta Conveyance Project in water supply modeling data from DWR.

Data relating to the above items became available during the summer of 2024, and Valley Water is in the process of evaluating to identify impacts to be included in the next update of the WSCP, which is in progress.

5.4 Mitigation Action Prioritization

Prior sections of this report provided a review of the key factors expected to exacerbate Valley Water's vulnerability to drought, identified potential mitigation actions to address these vulnerabilities, and evaluated their potential performance based on the modeling analyses supporting the WSMP and MAP. The below list highlights the prioritized mitigation actions identified in Section 5 consistent with the findings of the WSMP and MAP[31]:

[31] Formal ranking, analysis of risks, and prioritization of projects and programs (including the mitigation actions identified in this memorandum) are primary functions of Valley Water's WSMP and MAP processes. Valley Water's existing WSMP and MAP

- Meeting Valley Water's conservation targets is important in managing water demands and is a key component of meeting LOS goals. For that purpose, implementing the Water Conservation Strategic Plan should continue to be prioritized. A thorough messaging campaign will be essential to the success of implementing the Water Conservation Strategic Plan.

- Investing in transfer agreements and advocating for enhanced protection of minimum imported (i.e., SWP and CVP) delivery should continue to be prioritized to relieve dry-year stressors until Valley Water can implement WSMP infrastructure projects and complete seismic retrofits. Vulnerabilities to imported water sources are expected to increase in the future, so these investments may be most beneficial and feasible in the short-term.

- Potable reuse projects are important new supply sources that are less impacted by climate change, drought, and the environmental flow regulations. IPR projects can improve groundwater basin water quality through the introduction of purified water to the receiving basin. Per the 2021 MAP modeling, reuse projects are critical new supply sources to supplement the declining availability of existing local sources and imported water supplies and increasing system demand. Reuse projects should continue to be prioritized.

- Diversification of storage projects by investing in one or more of LVE, Pacheco Reservoir, Sites, Sisk Dam Raise, and/or additional out-of-county groundwater banks increase operational flexibility to be able to put larger volumes of wet year supplies into storage and retrieve larger volumes of water during dry years to improve overall reliability.

- Given CVP and SWP imported water supplies account for approximately 40% of Valley Water's annual average water supply, continued participation and evaluation of projects that address long-term reliability of imported supplies, such as DCP, should be continued.

Lastly, future vulnerabilities that are not modeled in the 2021 MAP (i.e., expected reductions in SFPUC deliveries, local/out-of-county water quality impacts, and short-term outages concurrent with drought) should continue to be tracked and more explicitly analyzed for potential impacts to future water supply shortages and development/selection of mitigation action portfolios.

allows for phased implementation of these projects and continued evaluation of project risks to ensure that the right-sized project(s) are funded and implemented at the appropriate time.

6. Drought Response Actions

During a drought, it is important to implement specific response actions and activities to manage the limited water supply and decrease the severity of drought impacts. These actions should be triggered at specific stages of the drought and are intended for quick implementation to realize targeted benefits. The DRP includes drought response actions designed to align with the geography, water supply sources, operations, retailers, and other stakeholders of Valley Water. Through meaningful collaboration and coordination with Valley Water's Divisions and Units, existing drought response actions were recategorized and new drought response actions were developed. This section provides detail for the prioritized list of revised drought response actions.

6.1 Categories of Drought Response Actions

The existing drought response actions as defined in the WSCP were designed to:

- Allow for flexibility in Valley Water's response, to consider the operational and supply augmentation responsibility of Valley Water, and
- Delegate primary enforcement responsibility to the County, cities, and retailers that Valley Water serves.

The approach taken for updating the drought response actions under the DRP focused on defining clear categories, aligning existing drought response actions to water shortage stages, and identifying new drought supply actions. Enhancements to the WSCP drought response actions included more clearly defining the stage and timing of outdoor irrigation restrictions, descriptions of resource needs and communications associated with enforcement, and specificity on the conditions in which SGMA authorities may be implemented.

The updated Valley Water Drought Response Plan drought response actions can be organized into the following categories: demand management, operational, supply augmentation, and others. Figure 6-1 illustrates the categories of drought response actions.

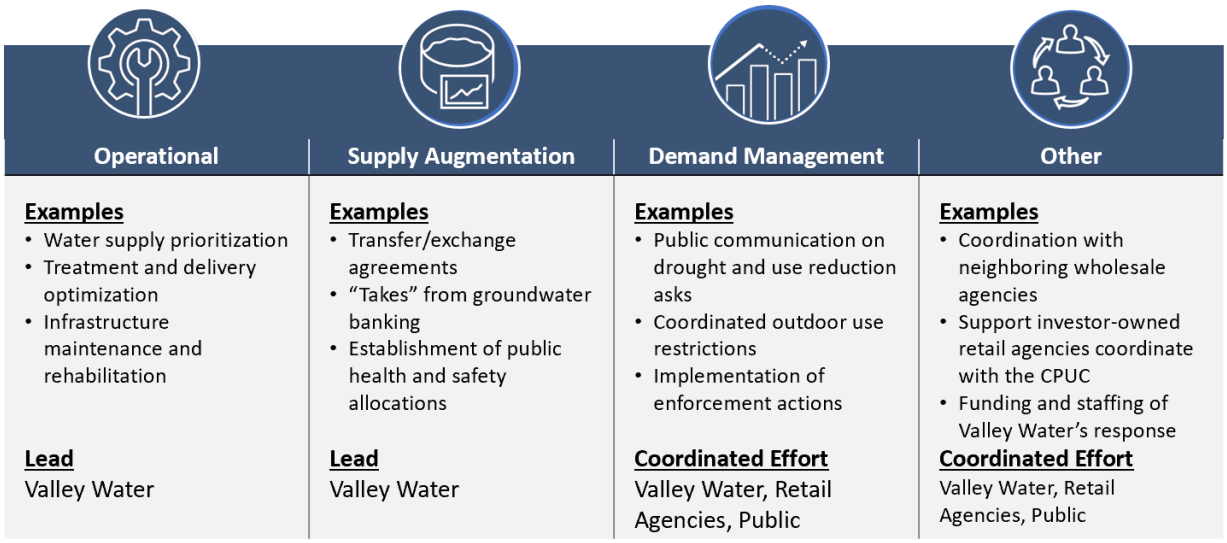


Figure 6-1: Drought Response Action Categories

6.2 Updated Drought Response Actions

Updated drought response actions were collaboratively developed by Valley Water staff with input from key stakeholders including the Retailer Working Group and the Task Force. The updated drought response actions build upon the information gathered during the Benchmark Study and Vulnerability Assessment phases of the DRP process. The drought response actions were also designed to ensure consistency with the Water Conservation as a Way of Life Resolution and Valley Water's updated water use efficiency ordinance.[32] As part of the development, updated drought response actions were created that include both new actions as well as existing operational procedures that were not captured as part of the previous WSCP. A summary of the updated drought response actions is provided in Table 6-1 on the following page. Appendix E provides a detailed overview of the specific drought response actions organized by stage, trigger, and drought response action category.

[32] Both the resolution and ordinance were adopted by Valley Water's Board in June 2023.

Table 6-1: Summary of Updated Drought Response Actions

Stage	Triggers	Shortage Percentage	Summary of Updated Response Actions
0 – Normal	*Above Stage 1 Triggers*	0%	Maintain drought preparedness, including identification of members for a regional Drought Response Group, building a financial reserve within the Water Utility Enterprise Fund, routine monitoring and data collection, and completing a post-drought report after exiting Stage 2 or higher.
1 – Alert	Projected EOY GW >= 300 TAF *and* DSCI (May-Oct) >150 *Or* Total Surface Water Available <250 TAF	Up to 10%	Actions include identification of a drought coordinator from Valley Water staff, enhancing existing conservation programs, determining funding sources and budget codes for drought response actions (including potential enforcement), collaborating with retailers to develop water use guidelines, evaluating the availability of supply augmentation options, and identifying behavioral actions that produce short-term savings.
2 – Warning	Projected EOY GW <300 TAF *Or* Total Surface Water Available <150 TAF	10-20%	Actions include enhancing existing conservation programs, securing funding for potential enforcement and program enhancement, holding monthly Drought Response Group coordination meetings, implementing an umbrella public awareness campaign, and working with retailers to provide targeted information to customers with water use guidelines. Supply augmentation will be further evaluated and executed where necessary.
3 – Severe	Projected EOY GW <250 TAF	20-30%	Actions include monitoring information from retailers on the potential implementation of excessive use rate structures, supporting retailers in conducting water audits for customers with high water use, encouraging the County, cities, and retailers to increase enforcement activities, implementing mandatory water use restrictions and watering restrictions, encouraging the use of non-potable supplies, and execution of necessary water supply augmentation.
4 – Critical	Projected EOY GW <200 TAF	30-40%	Actions include increasing the frequency of Drought Response Group meetings to once per week, increasing the coverage and intensity of the umbrella public awareness campaign, continuing the implementation of enhanced existing programs that reduce water demand, increasing mandatory water use restrictions, and augmenting efforts to secure additional transfers, exchanges, and withdrawals from groundwater banks.
5 – Extreme	Projected EOY GW <150 TAF	40-50%	Actions include temporarily banning non-essential water uses, continuing Stage 0-4 activities and expanding as necessary, consideration of groundwater pumping restrictions, and augmenting efforts to secure additional transfers, exchanges, and withdrawals from groundwater banks.
6 – Emergency	Projected EOY GW <150 TAF *and* Disaster related infrastructure outage	> 50%	Actions include temporarily banning discretionary water uses, reviewing the enforcement program and fine structure to determine if changes are needed, considering restrictions on groundwater pumping, and continuing Stage 5 activities and expanding as necessary.

6.3 Drought Response Action Prioritization

Many of the drought response actions identified in Section 6.2 and Appendix E can and will be implemented in phases. As such, the organization of drought actions and stages were prioritized to allow for progressive implementation. Because each drought is different, it was important to keep flexibility within each drought stage for when to implement each drought response action. This allows Valley Water to identify and implement the actions that will provide the most benefit for the specific drought conditions. Figure 6-2 depicts the overall strategy developed to prioritize implementation of drought response actions.

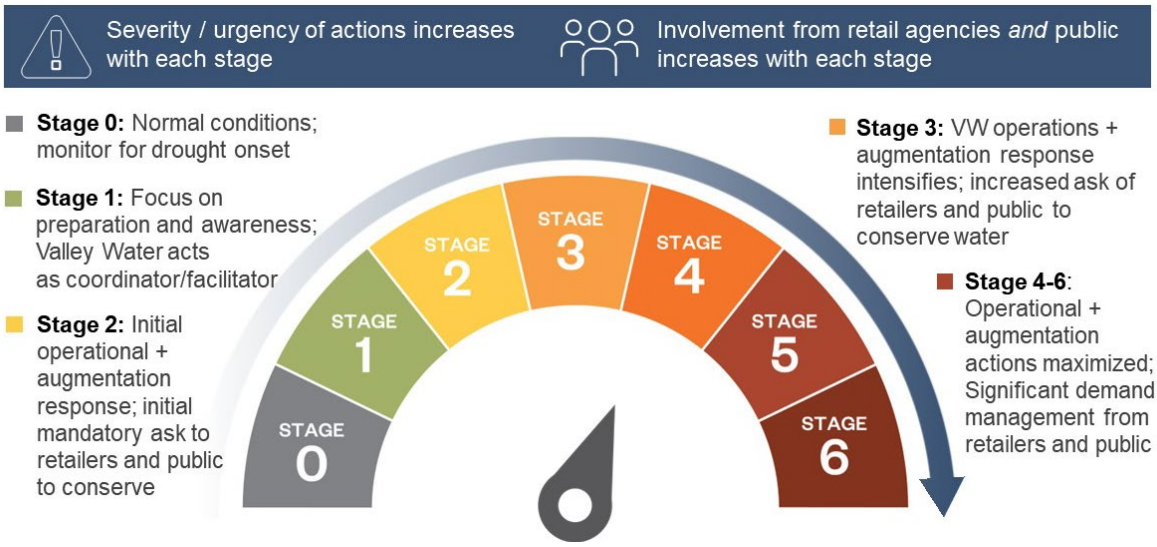


Figure 6-2: Overall Drought Response Action Strategy

The drought response action strategy and matrix were reviewed by the DRP Task Force and the Retail Agencies through virtual meetings held on May 30, 2023, and June 20, 2023. Comments from those groups were considered when finalizing the DRP.

6.4 Financial Response and Implications

The financial implications of drought can be significant for Valley Water. During droughts, revenue generally decreases as retailers and their customers reduce water consumption.[33] At the same time, Valley Water's expenses tend to increase, resulting from increased coordination, external communication and public outreach activities, and staffing associated with managing the drought response. The cost of water, particularly supplemental imported supplies, can also increase. The increased cost of water and overall operations combined with decreased revenue run the risk of impacting water rates in subsequent years following drought. To mitigate these financial risks, Valley Water has implemented several key measures which are summarized in Table 6-2 below.

[33] Valley Water's revenue from water sales are entirely volumetric. Valley Water's rate structure does not include or allow for fixed charges.

Table 6-2: Summary of Financial Strategies to Mitigate and Respond to Droughts

Strategy	Discussion
Build and utilize reserves	• Drought Reserves utilized to offset increased operational expenses during drought events. Drought Reserve goal is being increased to $10 million following the most recent 2020-2023 drought. • Rate Stabilization Reserve utilized post-drought to offset and "smooth" rate increases resulting from decreased revenues and increased operating expenses. • Climate change and "back-to-back" drought events present risks to reserve health, as reserves take years to build up.
Grant funding	• Valley Water's grant administration staff actively track and apply for state and federal grant opportunities related to drought response and relief. • During the 2020-2023 drought Valley Water applied and was awarded grants totaling $5.8 million toward projects and programs that supported the drought response.
Leverage existing conservation programs and funding	• In the 2020-2023 drought, Valley Water amended several and created additional conservation-related cost sharing agreements with retail agencies and cities. • While these specific opportunities may not be available in all future droughts, they illustrate a creative approach towards increasing funding to support drought response.
Implementation of drought-specific financial tracking	• Valley Water has established financial reporting and tracking protocols to identify, track, and report drought-related expenses (e.g., increased conservation expenses, hiring, and integration of temporary staff). • Financial reporting allows for more accurate budgeting and planning for future drought responses.

Historically, the financial strategies identified above have been sufficient for addressing the financial risks associated with drought. However, future uncertainties, in particular climate change and the cost of imported water, have the ability to compound financial risks and must be continually monitored and managed. Valley Water may consider the following additional strategies to further balance future financial risks associated with drought:

- Explicitly consider climate change (e.g., more frequent, more intense drought events) when determining reserve building strategies and goals.
- Continue planning and evaluation of mitigation actions identified in Section 5, in particular local supply projects that may reduce the need for expensive water purchases and transfers.
- Evaluate the feasibility of optimizing the volume of supplemental imported supplies purchased considering water supply shortage risk and cost.

Several of Valley Water's peer wholesalers (e.g., SFPUC, MWD, SDCWA) and retailers implement additional price instruments such as fixed surcharges that can be adjusted or implemented during drought events. Temporary fixed charges, when fairly allocated, can potentially be effective in mitigating revenue

losses resulting from decreased water consumption during droughts. Valley Water does not control retailer water rate setting but supports retailer drought response efforts.

6.5 Opportunities During Drought

Although drought events present significant water supply, operational, and financial challenges, they can present unique opportunities to advance planning initiatives and to conduct operations and maintenance activities. Table 6-3 below provides a summary of opportunities associated with water supply planning, conservation, and facility maintenance that have presented themselves during the last two drought events. Valley Water staff should continue to search for such opportunities during future drought events, and seize them when appropriate, although the specific opportunities may vary.

Table 6-3: Summary of Opportunities During Drought

Opportunity	Discussion	Examples[(a)]
Advance water supply planning initiatives	Droughts can help further ongoing planning initiatives as they highlight project needs, create an environment that supports stakeholder collaboration, and can open additional funding opportunities.	• The 2020-2023 drought saw significant advances in the Flood-Managed Aquifer Recharge project and the Agricultural Baseline Study • The last two droughts (2020-2023 and 2012-2016) saw advances in planning for both recycled water and purified water planning and implementation • Recent droughts have spurred new state and federal funding opportunities for water supply projects
Enhance conservation initiatives	Droughts create acute incentives to conserve, increased public interest in conservation programs, and can open additional funding opportunities.	• Increases in financial incentives to water users for participating in programs that increase water-use efficiency outdoors and in the CII sectors (e.g., Landscape Rebate Program and Water Efficient Technology Rebate Program, respectively) • Acceleration of Model Water Efficient New Development Ordinance (MWENDO) adoption and implementation • Increased activities piloting and implementing leak detection, fixture repair/retrofit, and support for retailer Advanced Metering Infrastructure (AMI) implementation
Maintain uniquely accessible Valley Water facilities	Lower surface water levels in reservoirs and ponds provide easier access to certain Valley Water facilities, such as recharge ponds and intake structures.	• During the 2012-2016 drought, while most recharge ponds were empty due to scarce surface water, Valley Water cleaned the ponds to remove fine sediments, restoring percolation capacity.
[(a)]Examples are not intended to limit future opportunities.		

7. Operational and Administrative Framework

The operational and administrative framework is designed to outline the roles, responsibilities, and associated procedures essential for the effective implementation of the DRP:

1. Conduct drought monitoring – Detailed in Chapter 3.
2. Coordinate response actions in conjunction with the WSCP – Described in Chapter 6.
3. Implement Mitigation Actions – Outlined in Chapter 5.

Updates to the DRP are integrated into the operational and administrative framework. This chapter provides a summary of the responsibilities linked to the primary DRP elements, as well as the roles assigned with carrying out these duties. At the end of this chapter is an overview of the administrative and operational framework for this DRP.

7.1 Roles and Responsibilities

Various entities, including Valley Water, its retail water agencies, and the Drought Task Force, hold responsibilities associated with the key elements of the plan.

7.1.1 Valley Water Responsibilities

Valley Water assumes responsibilities such as developing regional demand and supply projections, identifying infrastructure constraints affecting supply delivery, evaluating supply and demand estimates in light of infrastructure constraints, recommending Valley Water's water shortage stages and response actions, developing strategic external communications , participating in and coordinating the Drought Task Force, implementing mitigation actions within ongoing planning efforts, and updating the DRP. These responsibilities are typically executed through the following roles:

- Chief Operating Officer (COO) of Water Utility
- Deputy Operating Officer (DOO) of Water Supply
- DOO of Raw Water
- Chief Financial Officer (CFO)
- Communications Manager
- Water Supply Planning and Conservation Unit Manager
- Drought Coordinator

Refer to Table 7-1 for a breakdown of the level of responsibility associated with each role concerning the primary tasks outlined above.

Table 7-1: Level of Responsibility for the Key Roles Relative to Primary DRP Responsibilities

DRP Responsibilities	Valley Water Role						
	COO Water Utility	DOO Water Supply	CFO	Comms Manager	WSPC, Imported Water, Raw Water Operations, and Groundwater Units	DOO Raw Water	Drought Coordinator
Demand projections and collection of retailer data	I	I	I	I	R	I	I
Supply projections	I	A	I	I	R	C	I
Identify infrastructure constraints	A	I	I	I	R	C	I
Management of overall drought response	A	C	C	C	C	C	R
Communication of Response Actions	I	C	I	R	C	C	A
Assembly of the Drought Task Force	A	I	I	I	I	I	R
Implement mitigation actions	A	C	C	I	C	C	R
Update the DRP	I	A	C	C	R	C	C

Key
R = Responsible: *does the work to complete the task*
A = Accountable: *Delegates work and is the last one to review the task or deliverable before it is deemed complete*
C = Consulted: *Provides input based on how it will impact their project work or their domain of expertise on the deliverable*
I = Informed: *Needs to be kept in the loop on project progress, rather than roped into details of every deliverable*

All Valley Water roles identified above, with the exception of the Drought Coordinator, are permanent positions within the agency. During droughts, a Drought Coordinator is appointed by the COO via a temporary assignment (under the Water Utility) to develop and strategize drought actions in collaboration with internal staff, management, the Board and Board Committees. The Drought Coordinator plays a crucial role in Valley Water's response to drought and is directly responsible for organizing weekly strategy meetings, management of the drought response budget, tracking and facilitating action items, and working behind the scenes to ensure smooth coordination among the various Units[34] involved in the drought response. The Drought Coordinator also plays a key role in integrating communications, including strategy on internal communications, communications with the Board, and communications with external stakeholders and the public. Following the end of a drought event, the Drought Coordinator

[34] Several Units that are under the Water Supply Division (Water Supply Planning and Conservation and Imported Water) and the Raw Water Division (Raw Water Operations and Groundwater Management) typically provide direct support to the Drought Coordinator and overall drought response.

position is temporarily retained to “close out” remaining drought-related work items, such as budget reporting and development of the post-drought report.

The Drought Coordinator role is usually a temporary assignment that is taken by existing Valley Water staff. In past droughts, the Drought Coordinator’s former role has not been replaced, which can create workload difficulties. To address this, Valley Water could consider doing a staffing analysis to see if it would be beneficial to make the Drought Coordinator role a permanent one.

7.1.2 Retail Agency Responsibilities

During drought, Valley Water’s retailers are tasked with providing monthly updates on water consumption data by supply source, recommending their own water shortage stages, and implementing local drought response actions consistent with their WSCP. Their responsibilities also include active participation in the Drought Task Force, initiating strategic communication regarding drought response actions, implementing mitigation measures as part of continuous planning efforts, and participation in updates to the DRP.

7.1.3 Drought Task Force Responsibilities

The Drought Task Force operates collectively to review regional conditions, identify and plan for appropriate response actions where they have jurisdiction, seek approval for these actions through the relevant board channels, and communicate with constituents and external stakeholders once response measures are underway.

The Drought Response Task Force currently consists of 39 members representing various stakeholder segments in the region. Triggers outlined in the Drought Monitoring Framework, as detailed in Chapter 3, are used to convene the task force. Meeting frequency adjusts based on trigger occurrences. When convened, the Drought Task Force engages in the following:

- Evaluate regional conditions and identify agencies/organizations/water users experiencing water shortages.
- Discuss the necessity for a coordinated response and identify potential response actions.

Given variations in the timing and severity of drought impacts among task force members, flexibility is crucial. Each retailer is empowered to implement relevant and actionable shortage levels and response actions in their service area, consistent with their individual WSCPs and communication protocols.

After the Drought Task Force identifies potential response actions, Valley Water and its retail agencies independently plan for implementation. This includes obtaining Board or Council approval and strategically communicating with customers about the requirements and how to achieve the intended results.

7.2 Coordination and Communication

Effective communication is crucial during droughts to ensure that all stakeholders are informed and can take appropriate action. Internally, Valley Water aims to have clear and consistent communication to organize an efficient response to worsening drought conditions. This includes regular meetings, updates, and reports to keep all relevant parties (see roles identified in Section 7.1.1) informed and aligned on the drought response efforts. Externally, effective communication is essential to convey the severity of the drought and the need for water-use reduction to water retailers and the public.

During drought, Valley Water implements several communication and coordination strategies to organize an efficient response to worsening drought conditions. This includes weekly Task Force meetings, consistent updates to Committees and the Board of Directors, monthly Drought Reports, and frequent additional meetings concerning communication, water supply, and conservation. Monthly Drought Reports in particular are an important tool for keeping stakeholders informed and aligned on the drought response efforts. These reports generally feature regular updates on the status of the drought, including information on water use to date during the drought, water supply operations and outlook (including imported water status), and local reservoir storage.

External communications are of critical importance because they help inform water retailers and the public about how serious droughts are and why they need to use less water. Since Valley Water does not directly set rates to County residents it cannot set drought surcharges, so effective communication is key for reducing water use. Valley Water's communications strategies have changed with technology and include many ways of directly reaching out to the public, from face-to-face meetings to social media. Valley Water's external communications strategy also features different levels of information and messages for different audiences (e.g., general public vs. retail agencies and officials). Table 7-2 provides a summary of Valley Water's external communication goals and strategies organized by target audience.

Table 7-2: Summary of External Communication Goals and Strategies

Audience	Communication Goal(s)	Example Strategies Employed
Retail agencies and municipalities	• Effective and consistent coordination of drought response • Support retailers to achieve target water use reductions	• Monthly Drought Emergency Response Reports to Board and public • Frequent communication and reporting through retailer subcommittees • Tracking and reporting of water use by retailer and water source to display monthly and cumulative water savings • Targeted outreach associated with groundwater use, including sensitive geographical areas and reports of dry wells • "Partner Toolkit" with consistent digital materials, videos, bill inserts, tabletops, and hangers with information about the drought and water use reduction targets
Water users and general public	• Promote awareness of the drought and water use reduction targets emphasizing outdoor savings • Promote understanding of ways to conserve water and awareness of programs that can help users do so	• Development of multilingual, umbrella drought communications campaign • Streaming video, audio, digital, and static ads were placed on digital and social media, newspapers, and public spaces • Frequent updates of Valley Water's digital properties (e.g., webpage, social media) to share drought status information and Board actions • Utilization of elected officials, local news personalities, local professional sports figures, and social media influencers to spread drought awareness • Targeted outreach to CII sectors and large water users promoting Valley Water's Landscape Rebate and Water Efficient Technology Rebate programs as well as technical services that increase water-use efficiency • Targeted advertisements on social media and streaming video platforms • Targeted communication to agricultural customers providing information on water use reduction targets and an ask to help reduce water use • In-person speaking and community events

Valley Water's communication strategies in the last two drought events have been comprehensive and forward thinking and should continue to recognize and leverage changes in technology and media consumption to effectively get the word out. At the same time, well executed communication plans are time and resource intensive to run; AWWA currently recommends that large water agencies budget approximately $1 per person within an agency's service area to support water conservation messaging during droughts. In recognition of this, Valley Water should continue to aggressively pursue funding sources to budget for communication in future droughts and simultaneously identify the communication strategies that most effectively engage water users and influence behavioral water use reductions.

7.3 DRP Evaluation and Update Process

The DRP is a dynamic document designed for continuous assessment and subsequent updates as necessary. Valley Water commits to regular reviews of the DRP, making adjustments as required. This process includes a thorough post-drought evaluation aimed at gauging the effectiveness of the DRP following its implementation.

The post-drought evaluation encompasses an analysis of climatic and environmental factors during the drought, an examination of its economic and social consequences, an assessment of how pre-drought planning contributed to mitigating impacts, facilitating relief or assistance to affected areas, and aiding in post-recovery efforts. Additionally, any weaknesses or issues not covered by the DRP will be identified. Valley Water is dedicated to updating the DRP's demand and supply projections, as well as incorporating additional mitigation actions based on the findings of the evaluation.

7.4 Summary of Operational and Administrative Framework

Table 7-3 provides a concise summary of the tasks and procedures integral to the operation and administration of the DRP.

Table 7-3: Operational and Administrative Framework Summary

DRP Element	Task	Procedure
Conduct Drought Monitoring	Develop annual supply and demand projections	Estimate demands and available supplies for the upcoming year.
	Identify infrastructure constraints	Identify any known Valley Water infrastructure issues that may pertain to near-term water supply reliability.
	Conduct supply assessment	Compare supplies and demands and discuss any infrastructure constraints that may impact supply delivery, assess which shortage stage is recommended.
	Initiate Drought Task Force	Initiate Drought Task Force based on identified triggers in Section 3.
Coordinate Response Actions	Identify response actions	Based on the water shortage response stage identified, determine which response actions are recommended.
	Evaluate county-wide conditions	Identify county-wide drought issues and discuss the need for a regional response with Drought Task Force.
	Plan for response actions	Develop scope, schedule, and budget for implementation of recommendations.
	Approval and implementation of response actions	Approval by Valley Water Board as needed.
	Communicate response actions	Inform retailers, municipalities, and the public about the necessary requirements and provide guidance on how to attain the desired outcomes.
Implement Mitigation Actions	Ongoing evaluation and prioritization of mitigation actions	Continue assessment of mitigation actions by Valley Water staff.
	Identify funding opportunities	Pursue funding opportunities.
	Implementation of mitigation actions	Initiate design, environmental documentation, permitting, and construction as necessary.
Update DRP	DRP evaluation	Conduct a post-drought evaluation.
	DRP update(s)	Thoroughly examine the DRP and make updates to the framework as necessary.

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Appendix A: Benchmark Study

Appendix B: Adoption Resolution

Appendix C: Summary of WSMP Planning Objectives

Appendix D: 2021 WSMP Monitoring & Assessment Plan (MAP) Report

Appendix E: Drought Response Actions

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Valley Water Drought Response Plan

Drought Response Plan Framework

Water Storage and Demand Committee Meeting, June 24, 2024

Valley Water

Hazen

Drought Response Plan Goals

Help Valley Water be more <u>proactive</u> :

- Refine Water Shortage Contingency Plan drought triggers and align with State guidelines
- Determine early indicators of drought
- Expand toolbox of drought actions
- Improve communication and consistency with external partners

Drought Response Plan History

- Received United States Bureau of Reclamation Grant in 2020
- Formed external Task Force, Retailer Working Group in 2021
  - Task Force: Local agencies, retailers, environmental groups
  - Five meetings for feedback thus far
- Provided regular updates to Board Committees
  - Water Conservation and Demand Management
  - Environmental Water Resources Committee

Review of DRP Components

Benchmark Study
March 2022
- Background Information
- Lessons Learned

Vulnerability Assessment
August 2022
- Risks to water sources & infrastructure
- Drought risk mitigation actions

Water Shortage Response
June 2023
- Monitoring
- Triggers
- Response actions

Drought Response Framework

- Refine drought response triggers
- Determine early indicators of drought
- Establish a toolbox of actions during drought
- Ensure consistency with master planning efforts
- Communications Plan
- Budget and staff support needs for drought

Peer Agencies in the Benchmark

Selected based on similarities in size, water supply sources, and organizational structure

San Francisco Water Power Sewer
Services of the San Francisco Public Utilities Commission

ACWD
Alameda County Water District

The Metropolitan Water District of Southern California

Contra Costa Water District

EBMUD

San Diego County Water Authority

Sonoma Water

Denver Water

Tampa Bay Water
Supplying Water To The Region

Vulnerability Assessment
Key Factors Increasing Water Shortage Risks

Climate Change

Regulatory Risks

Infrastructure Constraints

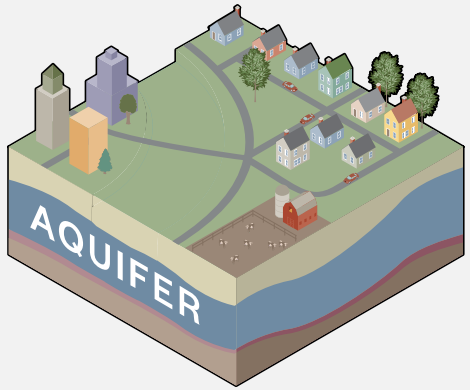
Water Quality

- Factors are interrelated and compounding

- Risks:
  - **Reduced water supply availability**
  - **Operational flexibility limitations**

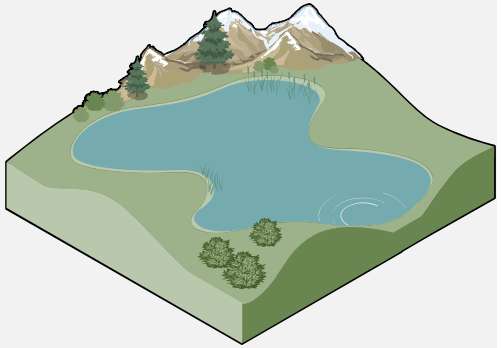
Drought Triggers

New drought indices and triggers



Projected End-of-Year Groundwater Storage

- Integrates other sources and system conditions
- Direct linkage to GWMP

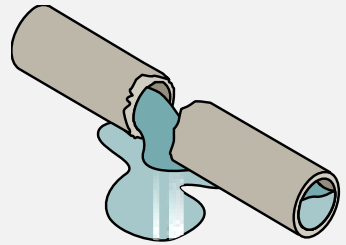


Surface Water Availability

- Leads drawdown of groundwater storage
- Responsive to outages

Drought Severity and Coverage Index (DSCI)

- Long-lead index
- Use for source areas of imported water
- Incorporates several hydrologic indices



Infrastructure Outage

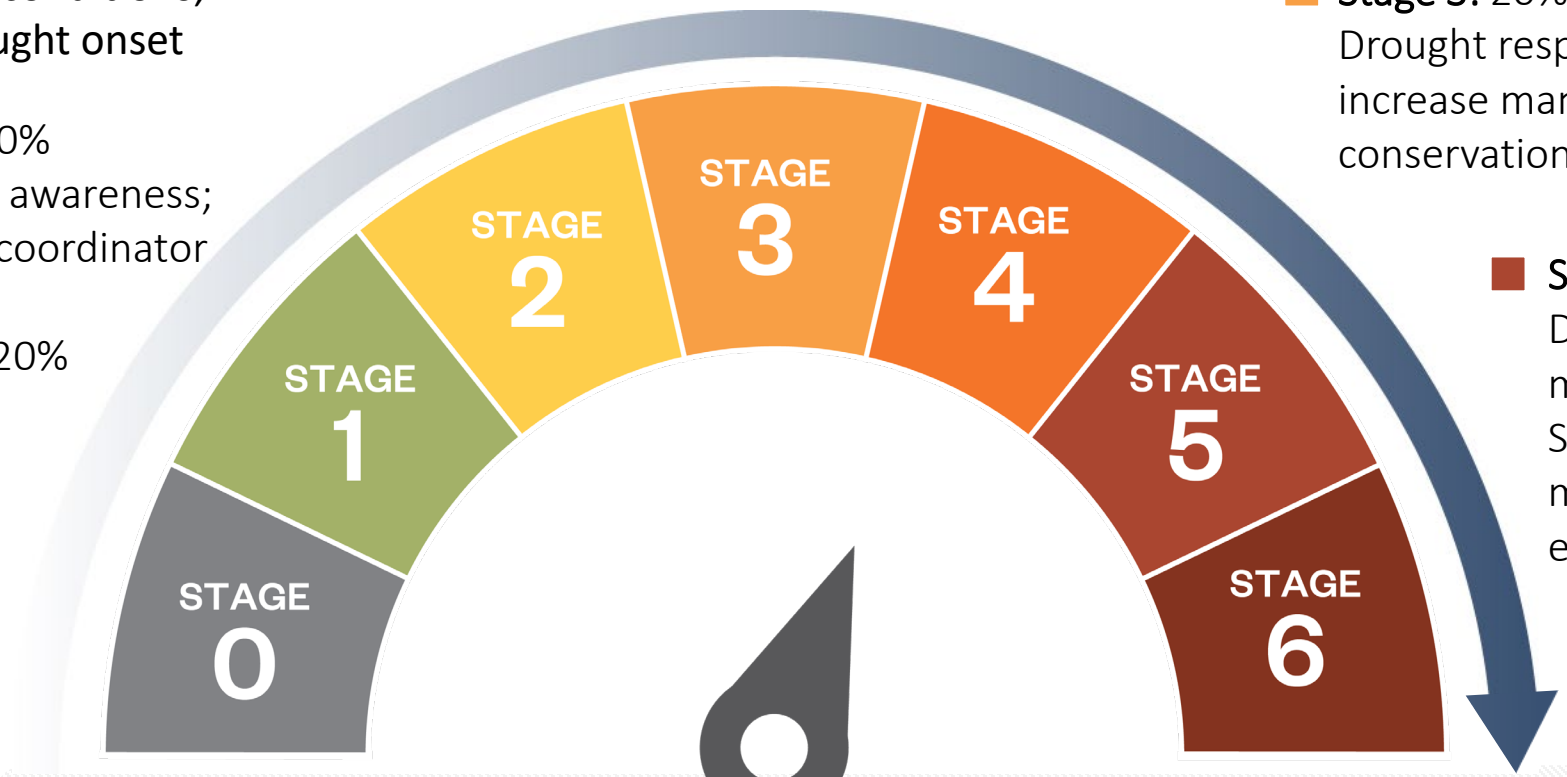
- May disrupt water transport and treatment
- Can exacerbate drought conditions

Overall Response Action Strategy

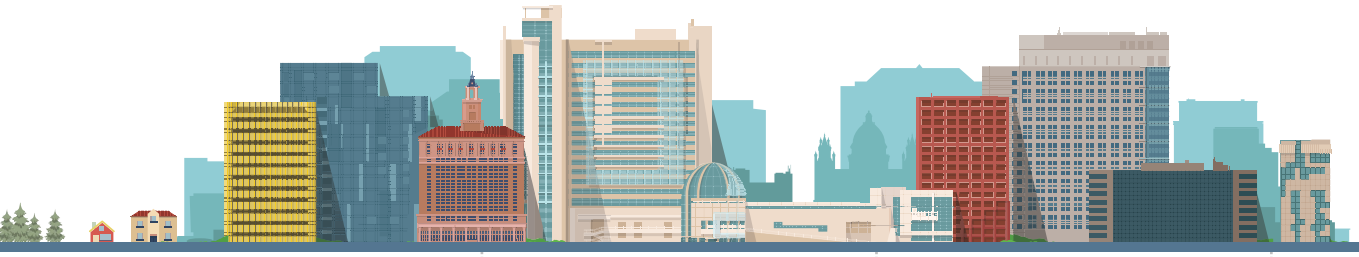
Severity / urgency of actions increases with each stage

Involvement from retail agencies *and* public increases with each stage

- **Stage 0:** Normal conditions; monitor for drought onset
- **Stage 1:** 0% to 10% Preparation and awareness; Valley Water as coordinator
- **Stage 2:** 10% to 20% Initial drought response; mandatory conservation
- **Stage 3:** 20% to 30% Drought response intensifies; increase mandatory conservation
- **Stage 4-6** 30% + Drought response maximized; Significant demand management enforced



Integration of Stages and Triggers



Projected End-Of-Year Groundwater | Surface Water Availability | DSCI | Infrastructure Outage

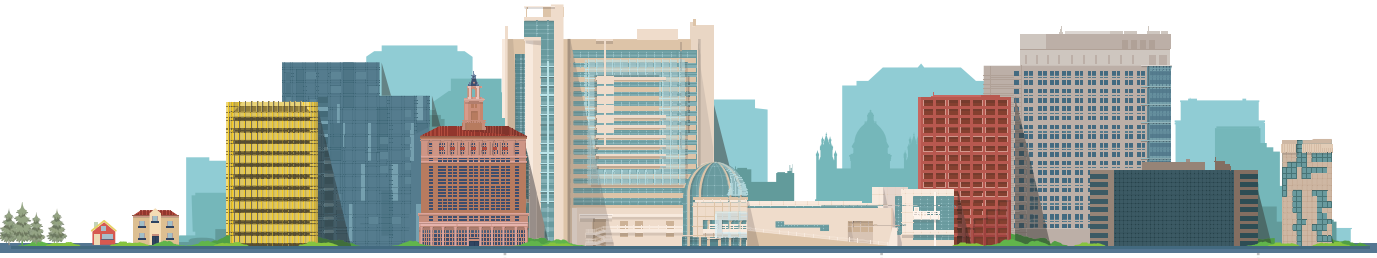
STAGE 1 (0-10%)	STAGE 2 (10-20%)	STAGE 3 (20-30%)	STAGE 4 (30-40%)	STAGE 5 (40-50%)	STAGE 6 (>50%)
≥300*	<300*	<250*	<200*	<150*	<150*
+	+				
<250*	<150*				
AND/OR	AND/OR				
>150	>150				

** Values in 1,000 AF*

Response Action Categories

Demand Management	Supply Augmentation	Operational	Other
Examples • Communication on drought and use reduction • Enforcement actions **Coordinated Effort** Valley Water, Retail Agencies, Public	**Examples** • Transfers / exchanges • Takes from GW banking • Public health and safety allocations **Lead** Valley Water	**Examples** • Water supply prioritization • Treatment and delivery optimization **Lead** Valley Water	**Examples** • Work with neighboring wholesale agencies • Support CPUC coordination **Coordinated Effort** Valley Water, Retail Agencies, Public

“Exit” Triggers



STAGE 0 | STAGE 1 | STAGE 2 | STAGE 3 | STAGE 4 | STAGE 5 | STAGE 6

Return to Stage 0 if:
Drought Severity and Coverage Index = 0

Return to Stage 0 or 1 if:

Surface Water Availability ≥ 300 TAF

OR

Projected End-of-Year Groundwater ≥ 300 TAF

OR

DSCI <150

Gradual Response
Projected End of Year Groundwater Storage
Defines movement between Stages 3 through 6

Next Steps

- Finalize draft Drought Response Plan based on comments from Committees, Task Force, and Retailer Working Group
- Submit Draft Drought Response Plan to USBR
- Consideration of Draft and Final Drought Response Plan by Board
- Update Water Shortage Contingency Plan

File No.: 24-0530

Agenda Date: 6/24/2024
Item No.: 4.5.

COMMITTEE AGENDA MEMORANDUM
Water Supply and Demand Management Committee

Government Code § 84308 Applies: Yes ☐ No ☒
(If "YES" Complete Attachment A - Gov. Code § 84308)

SUBJECT:
Receive Information on the Water Supply Master Plan 2040 Conservation and Stormwater Capture Project Update - "No Regrets" Package Implementation.

RECOMMENDATION:
Receive information on the Water Supply Master Plan 2040 Conservation and Stormwater Capture Project Update - "No Regrets" package implementation.

SUMMARY:
As part of the Water Supply Master Plan 2040 development, Valley Water's Board of Directors (Board) approved a "No Regrets" package for implementation in September 2017 (attachment 2). The "No Regrets" package of conservation and stormwater capture projects and programs is broadly supported by stakeholders, relatively low cost, and can be implemented independently of other projects and programs in the Water Supply Master Plan 2040. These projects and programs include:

1. Advanced Metering Infrastructure
2. Leak Repair Incentives
3. Graywater Rebate Program Expansion
4. Model Water Efficiency New Development Ordinance
5. Stormwater Capture

This memo provides an update on the efforts and progress to date on the implementation of the "No Regrets" package since the Water Conservation and Demand Management Committee update on August 28, 2023.

ADVANCED METERING INFRASTRUCTURE (AMI)

Advanced Metering Infrastructure (AMI) in concert with a proposed customer-side leak repair incentive program are critical elements to have in place by 2040. AMI facilitates customer engagement with their water usage and enables water retailers to track water usage remotely and

frequently. Valley Water encourages AMI installation by retailers through cost-share agreements and has developed and updated AMI program guidelines.

As of May 2024, Valley Water has cost-sharing agreements providing approximately $4 Million dollars in AMI funding in the following service areas:

- City of Morgan Hill (approximately 17,000 AMI meters installed),
- City of Milpitas (approximately 16,800 AMI meters installed), and
- City of Palo Alto (approximately 21,000 AMI meters funded in June 2023 with installations ongoing).

Under development through Valley Water's Guiding Principle 5 (GP5) Program, the City of Mountain View is anticipated to receive additional AMI funding later this calendar year. When paired with the AMI Program, staff anticipates Mountain View to install approximately 17,800 AMI meters over the next couple of years.

Additionally, Purissima Hills Water District has received funding for approximately 1,000 AMI meters through the Safe, Clean Water Program, while the City of Gilroy has funded approximately 14,400 AMI meters through an Integrated Resources Water Management Proposition 1 grant applied for with Valley Water support.

San Jose Water Company received approval for AMI implementation by the California Public Utilities Commission in June 2022. They will be investing approximately $100 million over the next several years to install 253,000 meters within its service area.

While AMI implementation progress across service areas varies, staff estimates about 49,000 AMI meters have been installed to date in Santa Clara County through a combination of Valley Water cost -share agreement funding, Valley Water grant funding, and Valley Water support for external grant funding. As the Cities of Palo Alto and Mountain View proceed with their AMI deployment, this total is anticipated to increase to approximately 88,000 AMI meters. Though these numbers may change as the projects are implemented at different schedules in each service area, staff continues to encourage additional water retailers to prioritize AMI installation.

Valley Water's goal is to collaborate with retailers and cities throughout our service area to implement AMI through incentives, grants, and support letters (i.e., IRWM, California Public Utilities Commission, etc.). The conservation budget includes dedicated funding to assist in the implementation of this program.

LEAK REPAIR INCENTIVES

Leak Detection and Repair Training
Though customers are alerted of possible leaks much more quickly with AMI, a trained workforce is required to fix leaks expeditiously. Valley Water and Bay Area Water Supply and Conservation Agency (BAWSCA) determined the need for a leak certification (i.e., establishing a licensing program) or certificate program to provide professionals with the necessary skills to identify and

repair leaks. After completing this proposed training program, professionals will be placed on a reliable, objective resource list for landlords and homeowners to address leaks.

To conduct comprehensive research and offer training framework recommendations, Valley Water and BAWSCA collaborated with the California Water Efficiency Partnership (CalWEP), a non-profit organization aiming to maximize urban water efficiency and conservation throughout California between 2021 and 2023. The research and stakeholder engagement focus of Phase 1 highlighted the interest and need across California for an affordable, relevant, and accessible leak detection and repair training program that emphasizes the importance of water conservation. Leveraging the findings from Phase 1, Phase 2 outlined different training framework options, factoring in different accreditation approaches and delivery methods (e.g., certificates versus certifications, in-person versus virtual, etc.). Phase 2 provided various pros and cons of key decision points that will need to be considered in refining the final frameworks and curriculum needed for a successful leak training program. Phase 3 will be under a new contract and focus on curriculum development, finalizing proposed training frameworks, and piloting the training regionally. CalWEP continues to work with Valley Water and BAWSCA staff to seek potential regional funding partners. The launch of Phase 3 will be contingent on staff resources and outcomes from negotiating with potential partners.

Leak Detection and Repair Pilots
Additionally, Valley Water completed two pilots focused on low-income, disadvantaged, or underrepresented communities. The vendor-supported pilots leveraged an existing program between Richard Heath and Associates, Inc. (RHA) and Pacific Gas and Electric's (PG&E's) Energy Savings Assistance (ESA) Program.

The Leak Assessment and Repair Pilot, in conjunction with the Toilet Assessment and Retrofit Pilot, concluded in August 2023. Both pilots successfully delivered equity-based water conservation measures to 214 low-income households across various service areas including the City of Gilroy, Great Oaks Water Company, San Jose Municipal Water, and San Jose Water Company.

The Leak Assessment and Repair Pilot facilitated 214 leak Assessments, 66-bathroom faucet replacements, 20-kitchen faucet replacements, and 45-hose bib replacements Simultaneously, the Toilet Assessment and Retrofit Pilot conducted 438 toilet assessments, 103 toilet retrofits, 5 flange repairs, and 15 angle stop replacements. Collectively these pilots achieved savings of 12,123,560 gallons of water, or 37.30-acre feet (AF) over the expected useful life of the measures provided. Staff will incorporate pilot findings in future work on fixture replacement as well as leak repair programs.

GRAYWATER REBATE PROGRAM EXPANSION

During the Spring of 2024, Valley Water's conservation and communications teams developed a marketing campaign that targeted past Landscape Rebate Program lawn conversion participants who met the Graywater Rebate Program requirements. Communication about the Graywater Rebate Program was sent to the list of over 11,000 participants resulting in a 66% increase in graywater applications and a 2,700% increase in graywater email and phone inquiries (2 in 2023 versus 56 in 2024). Valley Water is also in the process of developing a direct installation program geared towards low-income community members in Santa Clara County. The program will provide qualifying

homeowners with lawn conversions and graywater laundry to landscape system installations, along with the option of irrigation equipment upgrades, rainwater capture installations, and street tree plantings.

Valley Water has continued to develop its Graywater Rebate Program by partnering with cost-sharing retailers to double the overall rebate from $200 to $400 in those service areas. In addition to the direct install pilot, Valley Water issues on average 10 rebates per year, for a total of 154 Graywater Laundry to Landscape systems installed in Santa Clara County. While Valley Water does not currently plan to rebate for more advanced Graywater systems, we have provided additional graywater system resources including guides, evaluation tools, virtual workshops and webinars, informational and instructional videos, and a list of local graywater installers available at www.watersavings.org <http://www.watersavings.org>.

MODEL WATER EFFICIENCY NEW DEVELOPMENT ORDINANCE

The Model Water Efficiency New Development Ordinance (MWENDO), developed in 2015 by the Santa Clara County Water Efficient New Development Task Force, composed of representatives from Santa Clara County, several cities, Valley Water, Sustainable Silicon Valley, and Joint Venture Silicon Valley, is intended to be adopted by jurisdictions in Santa Clara County to ensure water use efficiency in new development. The ordinance is designed to be customizable depending on cities' needs and includes a variety of water efficiency measures for new developments, including the following.

- Single-Family Residential
- Multi-Family Residential and Nonresidential Projects
- Commercial Facilities

To advance water efficiency and conservation efforts, Valley Water continues to promote and monitor actions related to the adoption of MWENDO, which would ensure that new developments meet strong water efficiency standards. Valley Water has actively advocated with the County and all 15 cities to adopt all or parts of MWENDO and continues to provide support to municipalities to advance the County's and cities' interests in expanding water efficiency measures. To assist jurisdictions with MWENDO adoption, Valley Water has developed a template staff/Council agenda report, a cost-effectiveness study, and instructions for filing with the California Building Standards Commission (CBSC) and California Energy Commission (CEC).

MWENDO has been revised in preparation for the upcoming building code adoption cycle and reflects the most up-to-date water efficiency standards and water conservation reach code best practices. The revised ordinance also includes a supplemental provision related to decorative, non-functional turf on commercial, industrial, and institutional (CII) sites, which complements recently enacted state legislation, AB 1572 (*Chapter 849, Statutes of 2023*), that phases out the use of potable water for irrigation of non-functional turf on state and local government properties by 2027, on CII properties by 2028, and on homeowner association, common interest development, and community service organization properties by 2029.

While the 2022 version of California's Title 24 building code update was effective January 1, 2023,

jurisdictions may consider water efficiency measures to be included as part of the building code adoption cycle in 2025 and can adopt additional reach codes like MWENDO at any time. Currently, no jurisdictions have adopted the ordinance either in part or in whole; however, some cities already have reach codes as part of their existing municipal code that align with portions of MWENDO.

Staff has made adoption of MWENDO as easy as possible for cities and the County, but building code adoption under state law remains a complicated process for local jurisdictions. Outreach to date has focused mostly on city and county staff, who have been reluctant to take on a reach building code adoption process amid other priorities. That being said, several cities have expressed interest and staff continue to work on promoting adoption of parts or all of MWENDO.

STORMWATER CAPTURE

Stormwater capture can have water quality, water supply, flood management, environmental, and community (e.g., aesthetics, recreation, and education) benefits. The “No Regrets” package proposed evaluating stormwater capture projects to develop at least 1,000 acre-feet per year (AFY) on average of stormwater water supply (which brings the 2040 target from 109,000 to 110,000 acre-feet saved per year).

Countywide Planning and Flood-MAR Efforts

Valley Water helps lead stormwater capture efforts countywide via development of two stormwater resources plans. Information on this effort can be found in the “Stormwater Capture Opportunities” item on this agenda.

In 2023, Valley Water was awarded $350,000 in Proposition 1 funding under the Integrated Regional Water Management (IRWM) Grant to support Flood-Managed Aquifer Recharge (Flood-MAR) implementation in Santa Clara County. Flood-MAR uses open space to recharge stormwater or floodwater into the aquifer. An example of this type of project is in the Central Valley where floodwaters are diverted onto agricultural fields to recharge the aquifer. Valley Water completed a preliminary feasibility analysis on Flood-MAR in Santa Clara County in 2023. While water supply benefits from Flood-MAR in Santa Clara County are small, the study indicates there may be sites that could support stormwater recharge, but site-level analyses would need to be done to determine project feasibility. As a next step, Valley Water is developing a pilot program and potentially implementing a pilot project, conditional on the Board’s approval. The pilot program will provide guidance on how to identify and select projects, incentivize participation, administrative requirements (e.g., funding, staffing, etc.), and project requirements (e.g., legal, maintenance, etc.).

Rebate Programs

Valley Water launched Rainwater Capture rebates under its Landscape Rebate Program on January 1, 2019. This program includes rebates for rain barrels, cisterns, and rain gardens, and is included in our larger Landscape Rebate Program. The program rebate amounts are as follows: $35 per qualifying rain barrel installed to collect rainwater from existing downspouts; $0.50 per gallon for diverting existing downspouts to qualifying cisterns; and $1 per square foot of roof area diverted (up

to $300 per site) into an installed rain garden to collect roof water runoff. Cities of Cupertino, Milpitas, Morgan Hill, and Santa Clara, as well as San José Municipal Water Services, have or currently cost share with Valley Water to increase Rainwater Capture rebate amounts.

Through April 2024, the program has supported the installation of 734 rain barrels, 61 cisterns, and 104 rain gardens. The rain gardens filter and percolate water from over 71,000 square feet of roof surface. More details on the program can be found at <https://valleywater.dropletportal.com/overview/>.

ENVIRONMENTAL JUSTICE AND EQUITY IMPACT:
Environmental justice and equity impacts on EJ populations are expected/likely to result from the implementation of the No Regrets Package to achieve 2040 Goals. The package aims to balance cost and benefit. The benefits and the impact/mitigation strategies on disadvantaged communities are discussed in greater detail below.

Water conservation offers a range of environmental justice benefits by promoting equitable access to clean water, reducing pollution, protecting ecosystems, mitigating climate change, saving costs for vulnerable communities, enhancing drought resilience, and empowering residents with knowledge and skills for sustainable water use. Valley Water provides such water conservation information in multiple languages and via various outreach techniques to reach all members of our community. Valley Water acknowledges that during drought, disadvantaged communities may be disproportionately impacted. To address these impacts, Valley Water established the Water Rate Assistance Program and promotes access to equitable and affordable water supplies (Water Supply Goal 2.6). Valley Water offers specific programs, such as the Lawn Busters program to provide water -efficient landscapes to low-income, elderly, disabled, or veteran homeowners and schools within disadvantaged communities.

ATTACHMENTS:
Attachment 1: PowerPoint
Attachment 2: 2017 No Regrets Package
Attachment 3: Water Conservation Flyer

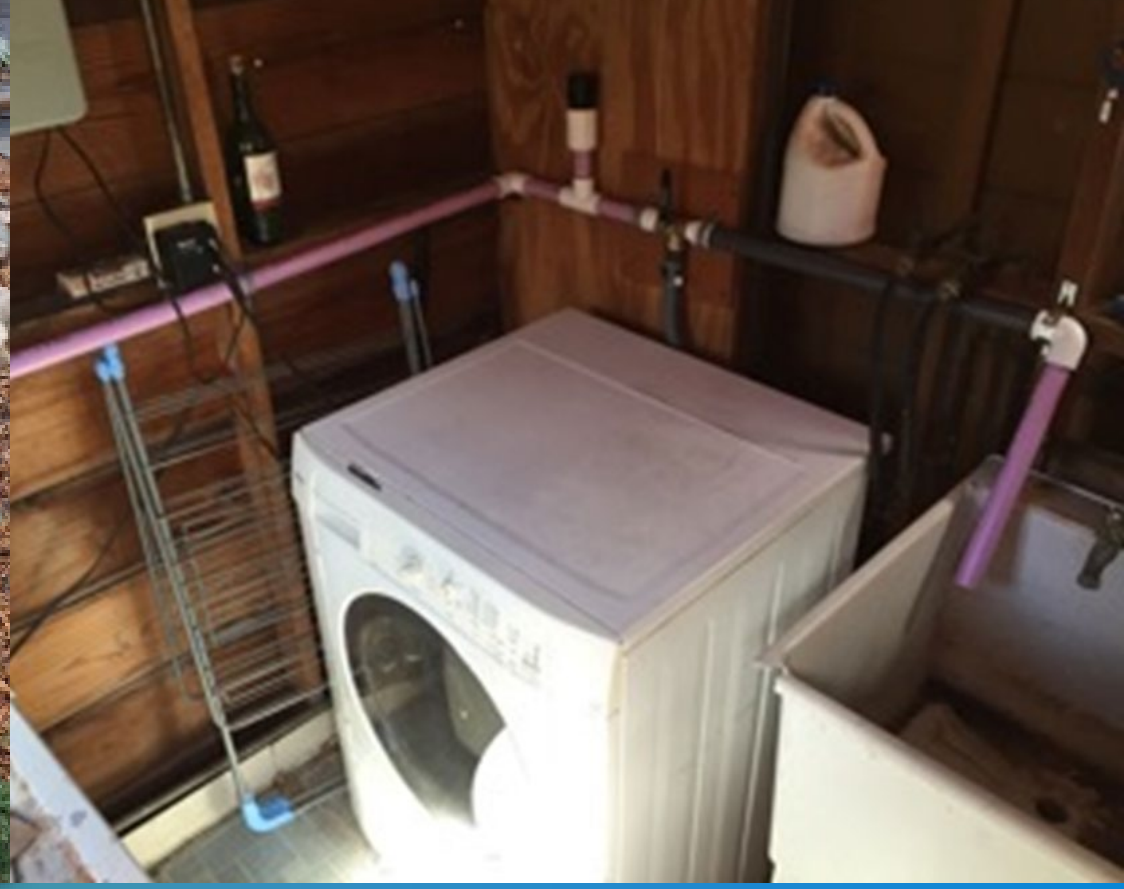
UNCLASSIFIED MANAGER:
Kirsten Struve, 408-630-3138

Valley Water

Clean Water • Healthy Environment • Flood Protection

Valley Water PPT Template
Version Release v.2.02





No Regrets Package Implementation

Presented by: Metra Richert, Water Supply Planning & Conservation Manager
Water Storage and Demand Management Committee – June 24, 2024

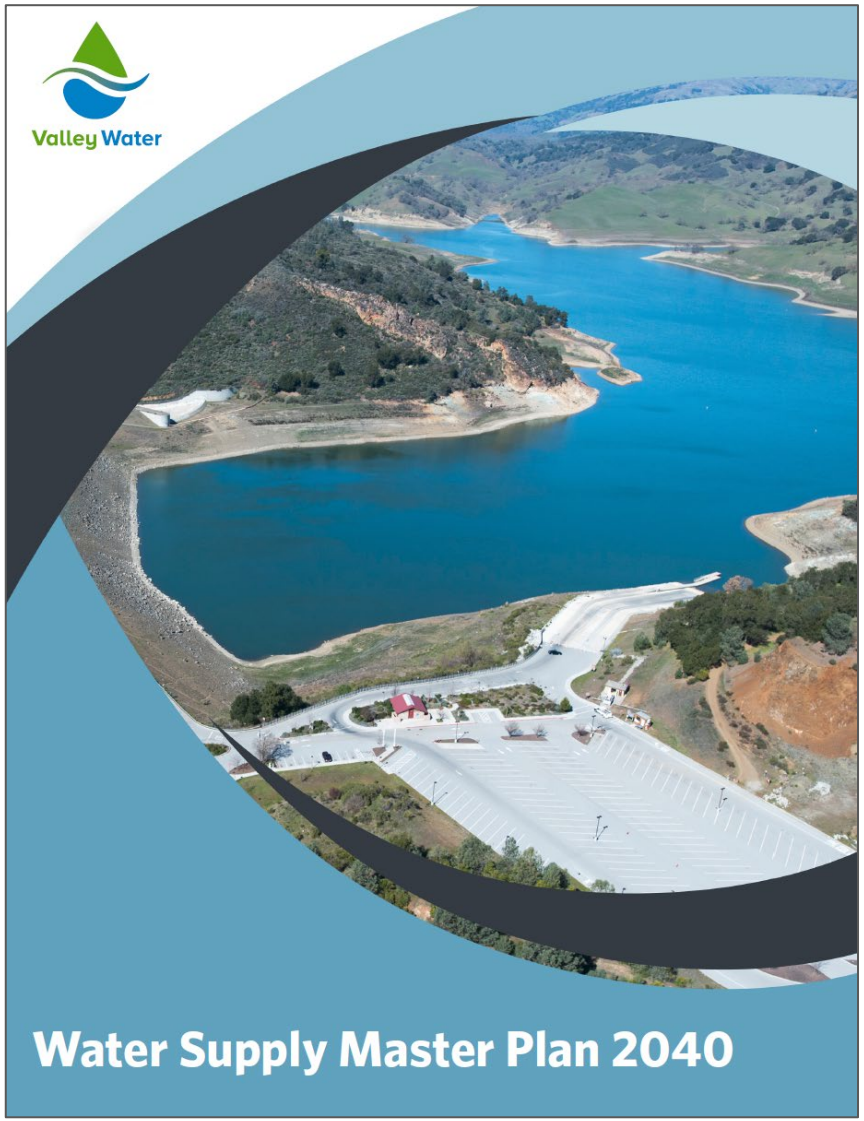
Water Supply Master Plan

Guiding document for long-term water supply investments

Major update every five years

“No-regrets” package part of Water Supply Master Plan 2040

Approved by the Board in 2017



No Regrets Package

An investment of $100 million to provide 11,000 acre-feet of water supply savings at a unit cost of about $400 acre-foot

Menu of conservation and stormwater capture projects

1. Advanced Metering Infrastructure
2. Leak Repair Incentives
3. Graywater Rebate Program Expansion
4. Model Water Efficiency New Development Ordinance
5. Stormwater Capture

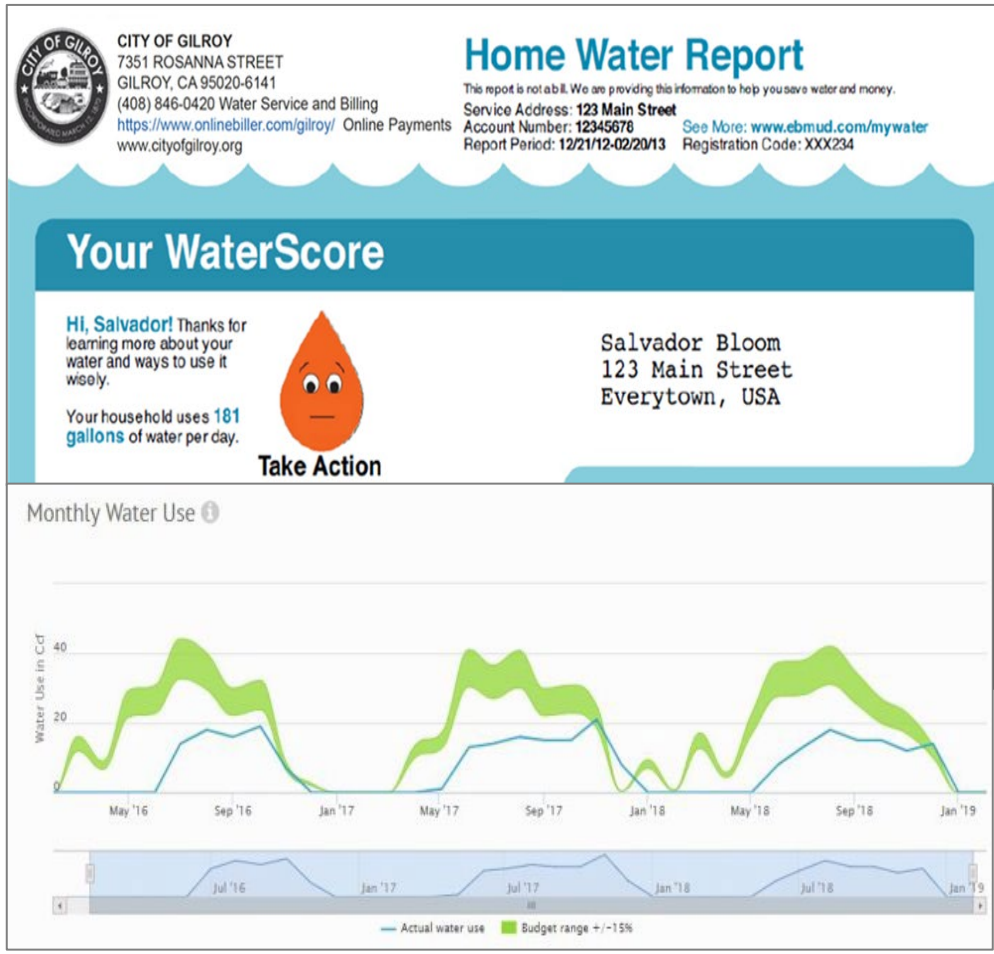
AMI and Home Water Use Reports

Advance Metering Infrastructure (AMI)

- Milpitas, Morgan Hill, Gilroy, Palo Alto, Purisima Hills Water District, San Jose Water Company, and Mountain View (under development)

Home Water Use Reports

- Gilroy, Santa Clara, Milpitas, Morgan Hill, San Jose Muni



Leak Repair Incentives

Research showed the need for a leak certification or certificate program to provide professionals with the necessary skills to identify and repair leaks

- Conducting comprehensive research to establish a training framework
- Next steps include developing a request for a proposal

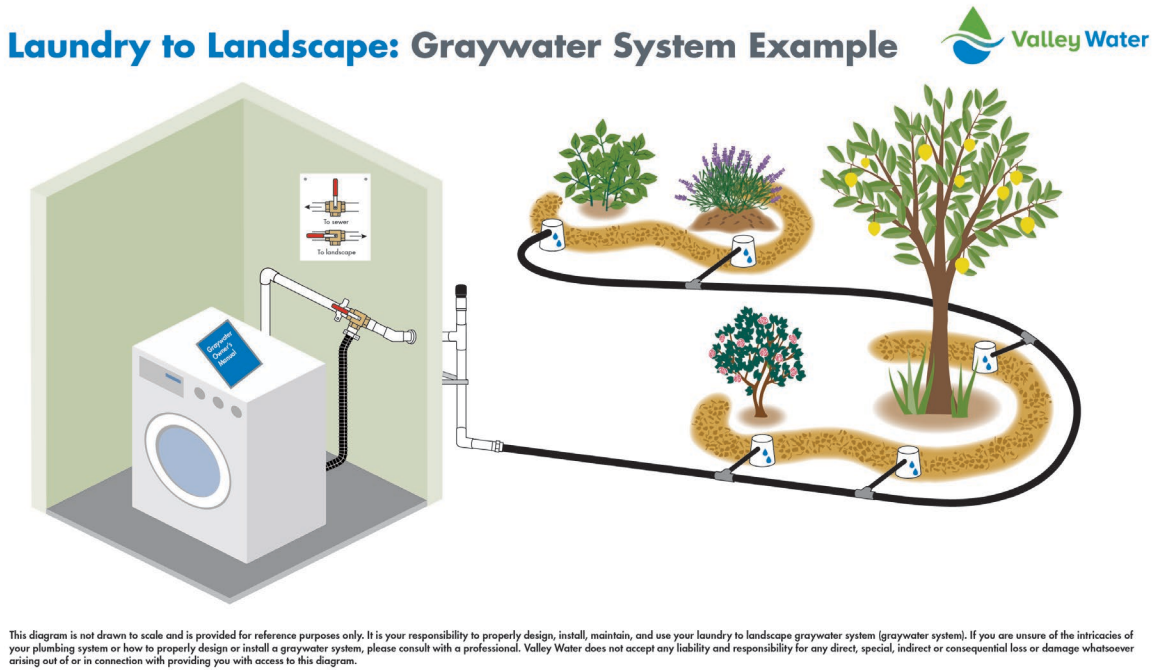
214 households have been served under two pilots

1. Leak Assessment and Repair Pilot
2. Toilet Repair and Retrofit Pilot

Graywater Rebate Program Expansion

The 2024 marketing campaign focused on past LRP participants resulted in a 66% increase in applications

Issued a total of 159 rebates



Model Water Efficiency New Development Ordinance (MWENDO)

- Developed in 2015 through a collaboration of various Santa Clara County organizations
- Intended to ensure water use efficiency in new developments
- Designed to be customizable depending on cities' needs
- Every jurisdiction in the county has been approached
- Finalizing updates to the ordinance to reflect the latest Title 24 updates, water conservation reach code best practices, and Valley Water ordinance.

Stormwater Capture

Support centralized and decentralized projects from Stormwater Resources Plans

GSI projects from the Santa Clara Basin Plan. Green areas are GSI sites, yellow areas are green streets.

Focusing on decentralized capture:

- Rain barrels
- Cisterns
- Rain gardens
- Flood-Managed Aquifer Recharge (Flood-MAR)

valleywater.org

Stormwater Capture Rebates

Flood-MAR: Completing preliminary study summer 2023

Cisterns: 61 installed; ~ 57,000 gallons

Rain Barrels: 734 installed

Rain gardens: 104 rebates from ~71,000 sq ft of roof surface

Education: 2 Valley Water-led webinars in July 2022 on greywater and rainwater collection

valleywater.org

Valley Water

Clean Water • Healthy Environment • Flood Protection

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2017 Water Supply Master Plan -
Project and Program Descriptions (as of September 2017)

Projects and Programs Currently Being Considered for Inclusion in the 2017 Water Supply Master Plan

No Regrets Package:	**Average Annual Yield (AFY)**[1]	**Present Value District Cost (2017)**	**Cost/AF**
All the portfolios under consideration include the following 9 water conservation and stormwater projects.	Total: 11,000	Total: $100 million	$400
Advanced Metering Infrastructure (AMI): Implements a cost share program with retailers to replace current meters with AMI. AMI would alert customers of leaks and provide real-time water use data.	4,000	$26 million	$200
Graywater Rebate Program Expansion: Expands existing District rebates for the installation of graywater systems that reuse laundry, shower, and sink water. The rebates would be for residential sites and certain applicable commercial sites.	< 1,000	$1 million	$2,200
Leak Repair Incentive: Incentivizes homeowners to repair leaks.	< 1,000	$2 million	$7,800
New Development Model Ordinance: Encourages municipalities to adopt an ordinance for enhancing water efficiency standards in new and retrofitted developments. Potential components include submetering multi-family residences, onsite water reuse (rainwater, graywater, black water), and point-of use hot water heaters.	5,000	$1 million	$100
Stormwater - Agricultural Land Recharge: Constructs a recharge pond on a South County agricultural parcel that would receive water either from roadside ditches or adjacent hillslopes.	< 1,000	$14 million	$1,000
Stormwater - Rain Barrels: Provides rebates for the purchase of a rain barrels.	< 1,000	$36 million	$15,100
Stormwater - Rain Gardens: Initiates a District rebate program to incentivize the construction of rain gardens in residential and commercial landscapes.	< 1,000	$14 million	$2,800
Stormwater - San Jose: Constructs a stormwater infiltration system in San Jose. Assumes 5 acres of ponds. Potential partnership with the City of San Jose.	1,000	$4 million	$100
Stormwater - Saratoga: Constructs a stormwater infiltration system in Saratoga. Assumes 5 acres of ponds. Assumes easement rather than land purchase. Close to Stevens Creek Pipeline, so could also potentially be used a percolation pond.	< 1,000	$4 million	$1,100

[1] The average annual yield of many projects depends on which projects they are combined and the scenario being analyzed. For example, groundwater banking yields is higher in portfolios that include wet year supplies. Similarly, they would be lower in scenarios where demands exceed supplies and excess water is unavailable for banking.

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Water Conservation Rebates and Programs

Valley Water

Say YES to Saving Water!

Valley Water's water conservation rebates and programs are designed to make water conservation easier, helping you say YES to saving water. Learn more about all of our conservation programs and resources by visiting ***watersavings.org***.

Online Shopping Cart

Valley Water offers free water conservation devices that can help you save water. You can request free water efficient devices and free resources to evaluate your water use efficiency. Visit ***cloud.valleywater.org/shopping-cart*** to order your FREE gear and literature today!

Landscape Rebate Program

The Landscape Rebate Program can help you create beautiful drought resilient landscapes. Get started by finding more information at ***valleywater.dropletportal.com***. Make sure you submit an online application for approval and schedule a pre-inspection **before beginning any work** on your project.

Rebate Caps

The following landscape rebate site caps apply to the combined program components, including Landscape Conversion, Large Landscape Lawn to Mulch, Irrigation Equipment Upgrade and Rainwater Catchment.

- $3,000 for single-family or multi-family residential properties (4 or fewer units)
- $100,000 for all commercial, industrial, institutional properties or multi-family residential properties (5 or more units)

Rebate rates and caps may be higher in some areas. Other programs are capped separately.

Landscape Conversion

Any property with qualifying high-water using landscapes (i.e., lawn or functional swimming pools) can receive a rebate of at least $2 per square foot (sq. ft.) for converting to a drought resilient landscape.

Large Landscape Lawn to Mulch

Any commercial, industrial, institutional properties or multi-family residential properties can receive a rebate of at least $1 per sq. ft. for converting a qualifying lawn to a minimum of 3 inches of mulch (minimum 15,000 sq. ft. lawn area). The irrigation system watering any trees in the converted lawn area needs to be converted to a low-flow irrigation system. Golf course options are offered.

A converted low-water use garden featuring California poppies in bloom.

Irrigation Equipment Upgrade

Rebates are offered for replacing old, inefficient irrigation equipment with new, qualifying high-efficiency equipment, including:

- High-efficiency nozzles (up to $5 each)
- Rotor sprinklers or spray bodies with pressure regulation and or check valves (up to $20 each)
- Rain Sensors (up to $50)
- Flow sensors, hydrometers, and dedicated landscape meters (up to $1,000)
- Smart irrigation controllers (up to $300–$2,000 each)
- Sprinkler to In-Line Drip Conversion ($0.25 per sq. ft.)

Rainwater Capture

Rainwater capture or diversion projects collecting rainwater from existing downspouts can receive rebates for the following:

- Rain barrels up to 199 gallons (up to $35 per barrel)
- Cisterns 200 gallons or more ($0.50 per gallon)
- Rain gardens ($1 per sq. ft. of roof area diverted, up to $300)

Graywater Rebate Program

Receive at least $200 per home for transforming your clothes washer into a graywater system. Plants don't need drinking water to thrive: reuse graywater in your yard! Apply online and find how-to videos at ***watersavings.org***. No pre-inspection is required but **wait for approval before beginning any work**.

Landscape Surveys

Request to have your landscape and irrigation system surveyed by a trained irrigation professional for FREE. Following the survey, the specialist will provide you with a customized report, outlining any apparent leaks or inefficiencies, suggestions for irrigation scheduling, and recommendations for money-saving landscape rebates. Whether your landscape is small or large, we have a program to fit your needs.

- ### Water Wise Outdoor Survey Program

  A Water Wise Outdoor Survey is for landscapes at single-family, small commercial, industrial, institutional properties or multi-family residential sites up to half an acre. To get started, have a recent copy of your water bill on hand and submit a request at ***valleywater.org/outdoor-survey***.

  Call **408-630-2000** or email ***waterwise@valleywater.org*** with questions. If you are a customer of San Jose Water Company, please contact them directly to schedule a CATCH survey at **408-279-7900** or ***customer.service@sjwater.com***.

- ### Large Landscape Program

  A Large Landscape Survey is for landscapes at commercial, industrial, institutional properties or multi-family residential common areas with over half an acre. Also, free landscape water budgets are available for some properties, which compare your actual irrigation use to a property specific budget. Visit ***waterfluence.com*** to see if your property already receives this free benefit. Request a survey at ***watersavings.org***.

Commercial and Facility Rebates

Receive up to $100,000 for replacing or updating equipment with water-efficient technology that results in measurable water savings. This custom rebate based on the measured amount of water saved is available to qualifying facilities including facilities like businesses, schools, hospitals and government buildings. The rebate is $4 per 100 cubic ft. of water saved per year, or 100% of the project cost (excluding labor and taxes), whichever is less.

Fixture Replacement Program

Replace old qualifying fixtures for FREE! Inefficient fixtures can be replaced for free by licensed plumbers at qualifying commercial, industrial, institutional properties or multi-family residential properties. Inefficient fixtures that qualify include toilets, urinals, showerheads, faucet aerators, and pre-rinse spray valves. Sign up at ***blusinc.com***, call **800-597-2835**, or ***customerservice@blusinc.com***.

Submeter Rebate Program

Submeters can save 10-30% of water used! Received at least $150 per installed water submeter by upgrading from a single meter. Accessory dwelling units (ADUs or granny units), mobile home parks, apartments, and condominium complexes can qualify. There is no rebate cap when all eligibility requirements are met.

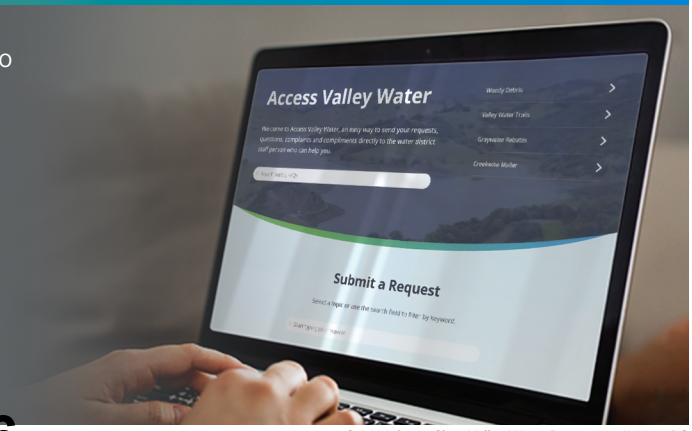
Report Water Waste

Help local residents and businesses preserve our shared water supply by confidentially reporting water waste and violations of outdoor water-use restrictions. Any specific notes like location, date and time, or frequency will help our inspectors follow up. To report water waste, you may do one of the following:

- Use our Access Valley Water app (by downloading or using the QR code)
- Email ***waterwise@valleywater.org***
- Call **408-630-2000**

CONTACT US

To find out the latest information on Valley Water projects or to submit questions or comments, use our **Access Valley Water** customer request system at ***access.valleywater.org***.



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File No.: 24-0528

Agenda Date: 6/24/2024
Item No.: 4.6.

COMMITTEE AGENDA MEMORANDUM
Water Supply and Demand Management Committee

Government Code § 84308 Applies: Yes ☐ No ☒
(If "YES" Complete Attachment A - Gov. Code § 84308)

SUBJECT:
Receive and Discuss Information on Stormwater Capture Opportunities.

RECOMMENDATION:
Receive and discuss information on stormwater capture opportunities.

SUMMARY:
Stormwater capture can have water quality, water supply, flood management, environmental, and community (e.g., aesthetics, recreation, and education) benefits. Valley Water's Water Supply Master Plan 2040 "No Regrets Package" was adopted by the Board of Directors in 2017 and includes 1,000 acre-feet per year (AFY) of stormwater capture for reuse and groundwater recharge. To support this goal, Valley Water is evaluating, and in part implementing, two different scales of stormwater capture projects - "centralized" and "decentralized."

This item provides an update on local stormwater capture activities.

Stormwater Capture Opportunities Related to Water Supply
"Centralized" projects are those that capture water from multiple parcels and/or are municipal projects, including "green streets" projects and stormwater recharge on open space (e.g., Flood-Managed Aquifer Recharge [Flood-MAR]). "Decentralized" projects focus primarily on keeping stormwater onsite and/or private citizen projects. Valley Water has implemented two decentralized programs - rain barrel/cistern rebates and rain garden rebates.

To support evaluation of centralized projects, Valley Water led the development of the Storm Water Resources Plans (SWRP) for the northern part of Santa Clara County flowing to the Bay and for the South County area flowing towards Pajaro Watershed. The SWRPs develop, prioritize, and plan "centralized" stormwater projects in Santa Clara County that are typically located on public lands. Valley Water will continue to track city and County efforts, develop partnerships where there may be complementary project interests, and seek grant funding for partnership projects.

In addition to the SWRPs, staff are also investigating the potential of Flood-MAR in Santa Clara County. An update on the status of the Flood-MAR study is planned to be presented to this committee and the Environmental and Water Resources Committee in late 2024.

Regarding “decentralized” projects, Valley Water launched the new Rainwater Capture Rebate Program on January 1, 2019. This program includes rebates for rain barrels, cisterns and rain gardens and is included in our larger Landscape Rebate Program. So far, the program has supported the installation of 734 rain barrels, 61 cisterns, and 104 rain gardens.

Stormwater Capture Constraints and Considerations Related to Water Supply
While there is potential for stormwater capture in Santa Clara County, as shown by the success of Valley Water’s Rainwater Capture Rebate Program, the water supply benefit may be limited. Stormwater capture for recharge needs to be located where the groundwater is unconfined and there is sufficient depth to groundwater to avoid nuisance from high groundwater. It is also important to consider potential contaminant loads in stormwater and the soils where capture and recharge may occur.

In addition, a significant proportion of the precipitation that would become stormwater in Santa Clara County is already captured by Valley Water’s 10 reservoirs. The reservoirs store the water, providing supply for recharge and Valley Water’s water treatment plants. In addition, the reservoirs provide incidental flood protection.

Stormwater as a water supply is mostly available during wet years, when Valley Water’s groundwater is already full. This limits its benefits to support drought response and reduces the ability to recharge captured stormwater.

Conclusions
Stormwater capture projects can be installed for water quality, environmental, flood management, and community (e.g., aesthetics, recreation, and education) benefits. Valley Water will continue to collaborate with partners on potential stormwater projects, evaluate Flood-MAR, and provide rain barrel, cistern, and rain garden rebates.
Valley Water originally brought this item to the Water Storage Exploratory Committee in 2023 and will continue to provide stormwater updates to this committee and Board advisory committees as needed.

ENVIRONMENTAL JUSTICE AND EQUITY IMPACT:
There are no environmental justice and equity impacts associated with this information item on stormwater capture opportunities in Santa Clara County. This update will not result in human health or environmental effects, impede upon an EJ population, or result in adverse impacts and is not associated with an equity opportunity. This is informational only and is not a proposal or recommendation for consideration of a specific project. This item provides information about how stormwater capture benefits and how Valley Water already is or could be implementing it.

ATTACHMENTS:
Attachment 1: PowerPoint

UNCLASSIFIED MANAGER:
Kirsten Struve, 408-630-3138

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Stormwater Capture in Santa Clara County

Water Supply and Demand Management Committee, June 24, 2024

Water Supply Master Plan - Stormwater

"No Regrets" Package Includes 1,000 Acre-Feet Stormwater Capture for Reuse/Recharge

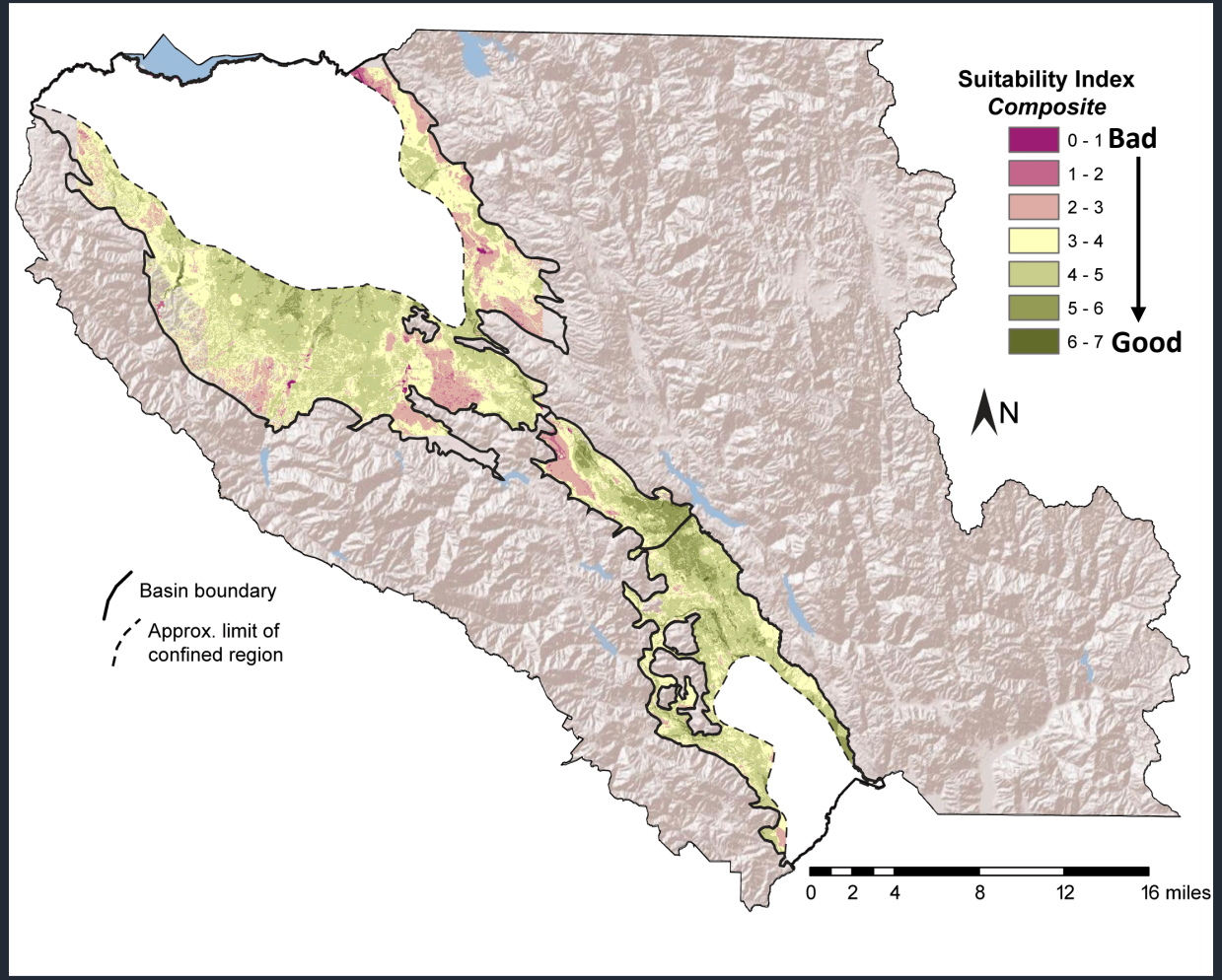
- Focusing on decentralized capture:
  - Rain barrels
  - Cisterns
  - Rain gardens
  - Flood-Managed Aquifer Recharge (Flood-MAR)
- Support centralized and decentralized projects from Stormwater Resources Plans

Rain Garden

Flood-MAR/Stormwater basin

Where can we capture stormwater for water supply?

- Unconfined zones
- Adequate depth to groundwater or adequate space for cisterns/barrels
- Minimal soil and surface/roof runoff contaminants
- Land cover/use
- Reservoirs



Groundwater recharge suitability for stormwater capture

“No Regrets” Stormwater Progress

- **Flood-MAR**: Completing preliminary study summer 2023
- **Cisterns**: 61 installed; 56,555 gallons
- **Rain Barrels**: 734 installed
- **Rain gardens**: 104 rebates from ~71,400 sq ft of roof surface
- **Education**: Two Valley Water-led webinars in July 2022 on greywater and rainwater collection
- **Stanford Urban Runoff Purification**: Initial water quality study is completed
- **Butterfield Basin**: Preliminary assessment completed - groundwater too high
- **Martial Cottle Stormwater**: Indication of high groundwater, further assessment needed

Stormwater capture is also about multi-benefits

Green stormwater infrastructure (GSI) for…

- Water quality
- Flood risk reduction
- Habitat improvement
- Environmental justice
- And more!

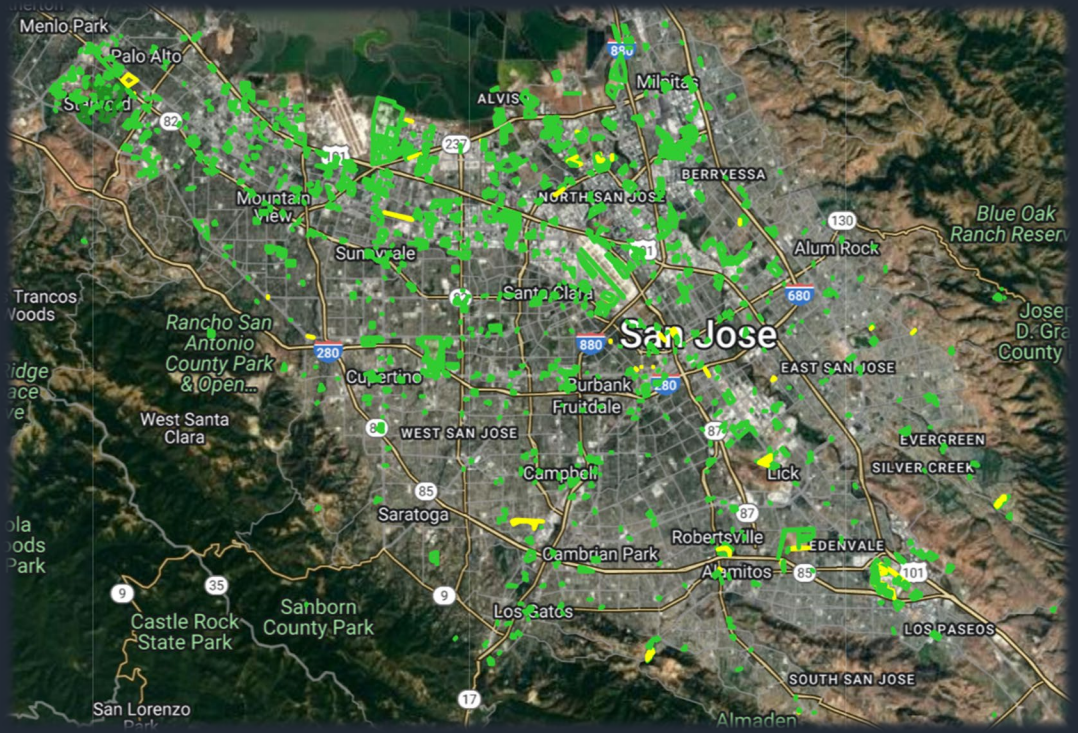
Bad

Good

Santa Clara County Stormwater Plans

Santa Clara Basin (North County) and South Santa Clara County Stormwater Resources Plans

- Valley Water led development of GSI-focused plans using B2 funds
- Collaborative effort with other agencies, non-profits
- Map opportunity areas, prioritize projects
- Required for State funding of stormwater projects



GSI projects from the Santa Clara Basin Plan. Green areas are GSI sites, yellow areas are green streets.

Valley Water

Opportunities and Constraints

Opportunities

- Environmental justice
- Water quality
- Decentralized
- New supply
- Grant funding
- Environmental sustainability
- Flood reduction
- One Water
- Collaboration

Constraints

- Limited supply
- Potentially limited control
- Wet year supply
- Not drought resilient
- Limited land options for groundwater storage
- Water quality
- Land use jurisdiction

Next Steps

- Continue Flood-MAR feasibility study
- Continue rain barrel, cistern, garden programs
- Evaluate centralized capture options
- Support partner efforts

Santa Clara Valley Water District

File No.: 24-0578

Agenda Date: 6/24/2024
Item No.: 4.7.

COMMITTEE AGENDA MEMORANDUM
Water Supply and Demand Management Committee

Government Code § 84308 Applies: Yes ☐ No ☒
(If "YES" Complete Attachment A - Gov. Code § 84308)

SUBJECT:
Review and Discuss the Water Supply and Demand Management Committee (WSDMC) Work Plan and Approve 2024 Regular Meeting Schedule.

RECOMMENDATION:
Review and discuss the WSDMC Work Plan and approve 2024 regular meeting schedule.

SUMMARY:
Under direction of the Clerk, Work Plans are used by Board Committees to increase Committee efficiency, provide increased public notice of intended Committee discussions, and enable improved follow-up by staff. Work Plans are dynamic documents managed by Committee Chairs and are subject to change.

ENVIRONMENTAL JUSTICE AND EQUITY IMPACT:
The Committee's Work Plan and Meeting Schedule are not subject to environmental justice analysis.

ATTACHMENTS:
Attachment 1: 2024 WSDMC Work Plan
Attachment 2: WSDM 2024 Schedule

UNCLASSIFIED MANAGER:
Candice Kwok-Smith, 408-630-3193.

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PROPOSED Water Supply and Demand Management Committee 2024 WORKPLAN

Task	Agenda Item	January	February	March	April	May	June	July	August	September	October	November	December
FY 24 Drought Preparation													
1.1	Drought Response Plan						X						
FY 23 WSMP Strategy 1: Secure Existing Supplies - 99,000 AF Conservation by 2030													
2.1	Water Conservation Savings Model/Annual Water Conservation Savings					X							
2.2	Water Conservation as a Way of Life recommendations (including water waste restrictions)								X				
2.3	New Programs (Lawn Busters, Pilot programs, landscape design assistance, demonstration garden)					X			X				
2.4	Outreach (including to Renters/Landlords)									X			
2.5	SCW funding								X				
2.6	affordability discussion/supporting underserved communities					X				X			
2.7	Collaboration with retailers								X				
FY 24 WSMP Strategy 2: Increase Water Conservation (109,000 AF) and Stormwater Capture (1,000 AF) by 2040													
3.1	Investments in no-regrets package, including stormwater resource plan						X						
3.2	Stormwater Capture/ FloodMAR						X						
3.3	Find opportunities to ensure new development has improved water wise features (MWENDO, land use coordination)									X			
3.4	Resource Needs										X		
3.5	Review long-term goals as part of WSMP update	X				X							
FY 24 WSMP Strategy 3 Optimize the Use of Existing Supplies and Infrastructure (SGMA/groundwater management and storage projects)													
4.1	Sustainable Groundwater Management Act (SGMA) - annual update										X		
4.2	South County Recharge										X		
4.3	Los Vaqueros Reservoir Expansion Project						X				X	X	
4.4	Sites Reservoir Expansion						X		X				
4.5	BF Sisk Dam Raise						X		X				X
4.6	Groundwater Banking Opportunities										X		
4.7	Semitropic Groundwater bank										X		
4.8	Pacheco Reservoir Expansion Project					X			X			X	

*Red item added.

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Water Supply and Demand Management Committee

Meeting Schedule for remainder of 2024

(Meetings typically occur on the fourth Monday's monthly at 11:00 a.m., unless otherwise noted)

Monday July 22

Monday August 26

Monday September 23

Monday October 28

Monday November 25

Monday December 23

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