BOARD OF DIRECTORS REGULAR MEETING

DATE :
FEBRUARY 19, 2025

TIME:
8:00 A.M.

1021 E. Miramar Avenue | Claremont, CA 91711
www.threevalleys.com
909.621.5568

The mission of Three Valleys Municipal Water District is to supplement and enhance local water supplies to meet our region's needs in a reliable and cost-effective manner.

THREE VALLEYS MUNICIPAL WATER DISTRICT
REGULAR BOARD MEETING AGENDA

1021 E. Miramar Avenue, Claremont, CA 91711
February 19, 2025 – 8:00 AM

The mission of Three Valleys Municipal Water District is to supplement and enhance local water supplies to meet our region's needs in a reliable and cost-effective manner.

NOTICE OF VIDEOCONFERENCE/TELECONFERENCE ACCESSIBILITY

Three Valleys MWD will hold this meeting of its Board of Directors on the date and time, and at the location set forth above. The public may participate in the meeting by physical attendance at the meeting or by videoconference or teleconference utilizing the following links:

Link to join webinar: https://tvmwd.zoom.us/j/84759196707

OR

Dial in: (669) 900-9128, Webinar ID: 847 5919 6707

Any member of the public wishing to participate in public comment may do so in any of the following manners: (1) by using the "Raise Hand" feature on the Zoom platform and when prompted by the Board President during the public comment period, (2) by filling out the electronic speaker's card at the following link https://arcg.is/0z5GqO prior to the close of public comment, (3) by sending an email to PublicComment@tvmwd.com prior to the close of public comment, or (4) those attending the meeting in person may complete a speaker's card and provide it to the Executive Board Secretary prior to the close of public comment.

1. CALL TO ORDER — TI
2. ROLL CALL — AGUIRRE

   Mike Ti, President
   Carlos Goytia, Vice President
   Jeff Hanlon, Secretary/Treasurer
   David De Jesus, Director
   Bob Kuhn, Director
   Jorge Marquez, Director
   Jody Roberto, Director

3. FLAG SALUTE — TI

4. DIRECTOR REMOTE PARTICIPATION PURSUANT TO AB 2449 [Government Code Section 54953(f)] TI

4.A NOTIFICATION DUE TO JUST CAUSE

4.B REQUEST DUE TO EMERGENCY CIRCUMSTANCES

BOARD ACTION REQUIRED ITEM 4.B

Staff Recommendation: None

5. AGENDA REORDER/ADDITIONS [Government Code Section 54954.2(b)(2)] TI

Additions to the agenda may be considered when two-thirds of the board members present determine a need for immediate action, and the need to act came to the attention of TVMWD after the agenda was posted; this exception requires a degree of urgency. If fewer than two-thirds of the board members are present, all must affirm the action to add an item to the agenda. The Board shall call for public comment prior to voting to add any item to the agenda after posting.

6. PUBLIC COMMENT (Government Code Section 54954.3) TI

Opportunity for members of the public to directly address the Board on items of public interest within its jurisdiction. The public may also address the Board on items being considered on this agenda. TVMWD requests that all public speakers complete a speaker's card and provide it to the Executive Board Secretary.

We request that remarks be limited to three minutes or less. Pursuant to Government Code Section 54954.3, if speaker is utilizing a translator, the total allotted time will be doubled.

7. CONSENT CALENDAR TI

The Board will consider consent calendar items 7.A – 7.F. Consent calendar items are routine in nature and approved by a single motion. Any member of the Board may request to pull a specific item from the consent calendar for further discussion.

7.A RECEIVE, APPROVE, AND FILE BOARD MEETING MINUTES

- January 15, 2025 – Regular Board Meeting

7.B RECEIVE, APPROVE, AND FILE FINANCIAL REPORTS AND INVESTMENT UPDATE, JANUARY 2025

- Change in Cash and Cash Equivalents Report
- Consolidated Listing of Investment Portfolio and Investment Report
- YTD District Budget Monthly Status Report
- Warrant List

7.C IMPORTED WATER SALES, JANUARY 2025

The Board will review the imported water sales report for January 2025.

7.D MIRAMAR OPERATIONS REPORT, JANUARY 2025

The Board will review the Miramar Operations report for January 2025.

7.E APPROVE DIRECTOR EXPENSE REPORTS, JANUARY 2025

The Board will consider approval of the January 2025 Director expense reports that include disclosure of per diem requests for meeting attendance and itemization of any expenses incurred by TVMWD.

7.F FY 2024-25 2ND QUARTER RESERVE SCHEDULE

The Board will be provided with a second quarter reserve schedule.

BOARD ACTION REQUIRED ITEM 7.A – 7.F

Staff Recommendation: Approve as Presented

8. ACTION AGENDA LITCHFIELD

The following items on the Action Agenda call for discussion and action by the Board. All items are placed on the agenda so that the Board may discuss and take action on the item if the Board is so inclined.

8.A APPROVAL OF RESOLUTION NO. 25-02-997 DEBT MANAGEMENT POLICY VELASQUEZ

The Board will consider approving the updated Debt Management Policy.

BOARD ACTION REQUIRED ITEM 8.A

Staff Recommendation: Approve as Presented

8.B APPROVAL OF RESOLUTION NO. 25-02-998 RESERVE POLICY — VELASQUEZ

The Board will consider approving the updated Reserve Policy.

BOARD ACTION REQUIRED ITEM 8.B

Staff Recommendation: Approve as Presented

9. REPORTS — LITCHFIELD

The Executive Leadership Team will provide brief updates on existing matters under their purview and will be available to respond to any questions thereof.

9.A WATER RESOURCES MASTERPLAN AND DROUGHT CONTINGENCY PLAN WORKSHOP — LEE

10. DIRECTORS'/GENERAL MANAGER'S ORAL REPORTS — TI

Directors may report on activities for meetings to which they are assigned to serve as the representative or alternate of TVMWD and on other areas of interest.

11. CLOSED SESSION — TI

11.A CONFERENCE WITH LEGAL COUNSEL – EXISTING LITIGATION [Government Code Section 54956.9(d)(1)]

Name of Case: Chino Basin Municipal Water District v. City of Chino, et al., San Bernardino County Superior Court Case No. RCV RS 51010

11.B CONFERENCE WITH LEGAL COUNSEL – EXISTING LITIGATION [Government Code Section 54956.9(d)(1)]

Name of Case: San Diego County Water Authority v. Metropolitan Water District of Southern California, et al., San Francisco County Superior Court Case No. CPF-14-514004 (Consolidated with Case Nos. CPF-16-515282 and CPF-18-516389)

12. FUTURE AGENDA ITEMS — TI

13. ADJOURNMENT AND NEXT MEETING — TI

The Board will adjourn to a regular Board of Directors meeting on March 5, 2025 at 8:00 AM.

In compliance with the Americans with Disabilities Act Government Code Section 54954.2(a), if special assistance is needed to participate in this public meeting, please contact the Executive Assistant at (909) 621-5568 at least 24 hours prior to the meeting.

Pursuant to Government Code Section 54957.5, materials related to an item on this agenda submitted after distribution of the agenda packet will be posted on the TVMWD website at.

Three Valleys MWD Board meeting packets and agendas are available for review at www.threevalleys.com

THREE VALLEYS MUNICIPAL WATER DISTRICT

THREE VALLEYS MUNICIPAL WATER DISTRICT
REGULAR BOARD MEETING MINUTES

Wednesday, January 15, 2025 | 8:00 a.m.

1. CALL TO ORDER

The Board meeting was called to order at 8:05 a.m. at the District office located at 1021 East Miramar Ave., Claremont, CA. The presiding officer was President Mike Ti.

2. ROLL CALL

Roll call was taken with a quorum of the Board present.

DIRECTORS PRESENT	STAFF PRESENT
Mike Ti, President	Matthew Litchfield, General Manager
Carlos Goytia, Vice President	Steve Kennedy, Legal Counsel
Jeff Hanlon, Secretary/Treasurer	Dominique Aguiar, Operations Supervisor
David De Jesus, Director	Brittany Aguilar, Finance Manager
Bob Kuhn, Director	Nadia Aguirre, Executive Board Secretary
Jorge Marquez, Director	David Dransfeldt, Water Resources Intern
Jody Roberto, Director	Freeman Ensign, Operations Supervisor
	Karen Harberson, Compliance Specialist
	Kirk Howie, Chief Administrative Officer
	Steve Lang, Chief Operations Officer
	Sylvie Lee, Chief Water Resources Officer
	Joshua Hernandez-Olivares, Finance Analyst
	Kevin Panzer, Engineer
	Brian Pen, Water Resources Analyst
	Robert Peng, I.T. Manager
	Alvin Ramos, I.T. Analyst
	Marissa Turner, Admin. Communications Assistant
	Jose Velasquez, Chief Finance Officer

Virtual Attendees: Ed Chavez, Upper San Gabriel Valley Municipal Water District; Kelly Gardner, Main San Gabriel Basin Watermaster; Cat Goytia; Ed Hilden, Walnut Valley Water District; Ben Lewis, Golden State Water Company; Myra Malner, Rowland Water District; Dave Michalko, Valenica Heights Water Company; Stephanie Moreno, Water Quality Authority; Dale Wert, City of Glendora

In person attendees: Russ Bryden, Main San Gabriel Basin Watermaster; Tom Coleman, Rowland Water District; Chris Diggs, City of Pomona; Kamille Hemsworth, Office of Assembly Member Michelle Rodriguez; Tony Lima, Rowland Water District; Dinny Rasmussen, Leage of Women Voters

3. FLAG SALUTE

President Ti led the flag salute.

4. DIRECTOR REMOTE PARTICIPATION PURSUANT TO AB 2449

A. NOTIFICATION DUE TO JUST CAUSE

B. REQUEST DUE TO EMERGENCY CIRCUMSTANCES

There were no requests submitted by any Directors for remote participation due to Emergency Circumstances, and therefore no motion was needed for this item.

5. AGENDA REORDER/ADDITIONS

No reorder or additions to the agenda were requested.

6. PUBLIC COMMENT

Kamille Hemsworth from Assemblymember Michelle Rodriguez's office invited the Board to Assemblymember Rodriguez's Community Swearing In event on February 8, 2025. Ms. Hemsworth welcomed Director Marquez to the Three Valleys Board of Directors and presented him with a certificate.

7. CONSENT CALENDAR

The Board considered consent calendar items 7.A – 7.F for the January 15, 2025 Board meeting that included: (7.A) Receive, Approve, and File Minutes – December 16 (Special Workshop) and 18, 2024; (7.B) Receive, Approve, and File Financial Reports and Investment Update, December 2024; (7.C) Imported Water Sales, December 2024; (7.D) Miramar Operations Report, December 2024; (7.E) Approve Director Expense Reports, December 2024; (7.F) Addition of Two New Holidays to the District Holiday Schedule

Moved: Director Kuhn	Second: Director Marquez
Ayes: De Jesus, Goytia, Hanlon, Kuhn, Marquez, Roberto, Ti	
Noes:	
Abstain:	
Absent:	
Motion No. 25-01-5507 Approval of Consent Calendar Items 7.A – 7.F	
Motion passed 7-0-0-0	

8. ACTION AGENDA

A. SOUTHERN CALIFORNIA WATER COALITION MEMBERSHIP

The Board of Directors approved a membership to the Southern California Water Coalition (SCWC) at the Advisory level of $2,500.

Moved: Director Roberto	Second: Director Goytia
Ayes: De Jesus, Goytia, Hanlon, Kuhn, Marquez, Roberto, Ti	
Noes:	
Abstain:	
Absent:	
Motion No. 25-01-5508 Approval of SCWC Advisory Membership $2,500	
Motion passed 7-0-0-0	

B. CALIFORNIA WATER FOR ALL EDUCATION CAMPAIGN

The Board of Directors approved a $10,000 contribution to the California Water for All education campaign for the 2025 legislative cycle.

Moved: Director Roberto	Second: Director Kuhn
Ayes: De Jesus, Goytia, Hanlon, Kuhn, Marquez, Roberto, Ti	
Noes:	
Abstain:	
Absent:	
Motion No. 25-01-5509 Approval of $10,000 contribution to the education campaign	
Motion passed 7-0-0-0	

9. REPORTS

A. ANNUAL SUNSHINE ORDINANCE REVIEW

Legal Counsel Kennedy reported on changes to the Brown Act as described in the memorandum included in the board packet. AB 2449 was enacted to allow directors to meet remotely under just cause or emergency purposes on a limited basis. On July 24, 2024, the Attorney General issued Opinion No. 23-1002, permitting board members with disabilities, under the American with Disabilities Act (ADA), to participate remotely in board meetings from a non-public location as a reasonable accommodation, without numerical limitation. AB 2302 revised the number of times per calendar year a board member may participate remotely in a board meeting. For Three Valleys, a board member may utilize remote attendance under AB 2449 for up to 5 (five) meetings per year. AB 2449 expires at

the end of 2025; however, staff is working with the district lobbyist for permanent legislation to the Brown Act.

Under AB 2715, board members may meet in closed session to discuss non-physical threats to critical infrastructure controls and critical infrastructure information relating to cyber security.

Changes to the Sunshine Ordinance will be brought back to a future board meeting for consideration of approval.

B. DISCUSS SCHEDULING AND NOTICING OF PUBLIC HEARING ON POSSIBLE ADJUSTMENT TO DIRECTOR COMPENSATION

The Board directed staff to set the Public Hearing date on February 5, 2025, for a proposed director compensation increase from $200 up to $275, with an effective increase date of July 1, 2025. The public hearing notice must be published in a newspaper once a week for two consecutive weeks prior to the public hearing date.

C. WATER SUPPLY UPDATE

Chief Water Resources Officer Lee reported that the State Water Project (SWP) allocation increased from 5% to 15%, with the potential for additional increases. The update reflected improved hydrologic conditions from late November and early December 2024 storm events. The Department of Water Resources continues to assess precipitation, snowpack, and storage levels as Water Year 2025 conditions develop.

10. DIRECTORS' / GENERAL MANAGER'S ORAL REPORTS

Director Kuhn did not have an update on WQA or Chino Basin Watermaster.

Director Roberto acknowledged Chief Operations Officer Lang for his assistance and support at Rubio Canyon during the wildfires in the area.

General Manager Litchfield thanked Chief Operations Officer Lang and Operator Burroughs for the generator fuel delivery to Rubio Canyon Water Company. General Manager Litchfield introduced the new IT Analyst, Alvin Ramos. The Leadership Breakfast will be held on February 27, 2025 with an update on the Delta Conveyance Project by Nina Hawk from MWD.

President Ti reported on the Rowland Water District board meeting he attended last night.

11. CLOSED SESSION

The Board convened into closed session at 9:30 a.m. to discuss the following items:

A. CONFERENCE WITH LEGAL COUNSEL – EXISTING LITIGATION [Government Code Section 54956.9(d)(1)]

Name of Case: Chino Basin Municipal Water District v. City of Chino, et al., San Bernardino County Superior Court Case No. RCV RS 51010

B. CONFERENCE WITH LEGAL COUNSEL – EXISTING LITIGATION [Government Code Section 54956.9(d)(1)]

Name of Case: San Diego County Water Authority v. Metropolitan Water District of Southern California, et al., San Francisco County Superior Court Case No. CPF-14-514004 (Consolidated with Case Nos. CPF-16-515282 and CPF-18-516389)

The Board convened out of closed session and back into open session at 10:29 a.m. Legal Counsel Kennedy stated no reportable action was taken.

12. FUTURE AGENDA ITEMS

There were no requests for future agenda items.

13. ADJOURNMENT AND NEXT MEETING

President Ti adjourned the meeting at 10:30 a.m. to the next regular board meeting scheduled for Wednesday, February 5, 2025.

Mike Ti
President, Board of Directors

Recorded by: Nadia Aguirre
Executive Board Secretary

THREE VALLEYS MUNICIPAL WATER DISTRICT

BOARD INFORMATION

BOARD OF DIRECTORS
STAFF REPORT

To: TVMWD Board of Directors

From: Matthew H. Litchfield, General Manager

Date: February 19, 2025

Subject: Change in Cash and Cash Equivalents Report

☐ Funds Budgeted: $ ☐ Fiscal Impact: $

Staff Recommendation
No Action Necessary – Informational Item Only

Discussion
Attached for review is the Change in Cash and Cash Equivalents Report for the period ending January 31, 2025.

The Change in Cash and Cash Equivalents reports cash receipts, cash payments, and net changes in cash resulting from operations, investing, and financing activities. This report demonstrates where the cash came from, how the cash was used, and how much the change in cash was during the month.

Environmental Impact
None

Strategic Plan Objective(s)
2.1 – Financial Stability

Attachment(s)
Exhibit A – Change in Cash and Cash Equivalents Report

Meeting History
None

NA/BA

THREE VALLEYS MUNICIPAL WATER DISTRICT

CHANGE IN CASH AND CASH EQUIVALENTS REPORT

January 1 through January 31, 2025

		CASH	CASH EQUIVALENTS
SUMMARY 01/31/25			
Petty Cash		6,000.00	
Local Agency Investment Fund			2,231,899.56
California Asset Management Program (CAMP)			2,750,097.08
General Checking		428,653.53	
TOTAL CASH IN BANKS & ON HAND		**$ 434,653.53**	**$ 4,981,996.64**
TOTAL CASH IN BANKS & ON HAND	01/31/25	434,653.53	4,981,996.64
TOTAL CASH IN BANKS & ON HAND	12/31/24	580,344.46	1,910,914.17
PERIOD INCREASE/(DECREASE)		***$ (145,690.93)***	***$ 3,071,082.47***
CHANGE IN CASH POSITION DUE TO:			
Water Sales/Charges Revenue		6,979,668.23	
Interest Revenue			
Subvention/RTS Standby Charge Revenue		1,099,973.07	
Hydroelectric Revenue		7,477.65	
Other Revenue		99,398.67	
Investment Xfer From Chandler Asset Mgt			
LAIF Quarterly Interest			13,102.69
California Asset Mgmt Program Interest			7,979.78
Transfer to/from CAMP		-	1,000,000.00
Transfer to/from LAIF		-	2,050,000.00
	INFLOWS	8,186,517.62	3,071,082.47
Expenditures		(5,276,660.48)	
Current Month Outstanding Payables		184,968.24	
Prior Month Cleared Payables		(185,117.27)	
Bank/FSA Svc Fees		(116.57)	
HRA/HSA/FSA/Dependent Care Payment		(5,282.47)	
CalPERS Unfunded Liability /1959 Survivor Ben			
PARS Pension Trust			
Investment Xfer to Chandler Asset Mgt			
Transfer to/from CAMP		(1,000,000.00)	-
Transfer to/from LAIF		(2,050,000.00)	-
	OUTFLOWS	(8,332,208.55)	-
PERIOD INCREASE/(DECREASE)		***(145,690.93)***	***3,071,082.47***
		$ -	$ -

THREE VALLEYS MUNICIPAL WATER DISTRICT

CONSOLIDATED LISTING OF INVESTMENT PORTFOLIO

January 31, 2025

ITEM	BOOK YIELD	BOOK VALUE	PAR VALUE	MARKET VALUE
Chandler Asset Management				
ABS - Asset Backed Securities	3.76%	140,584.62	140,592.76	140,509.10
Bonds - Agency	3.94%	593,453.94	590,000.00	592,573.63
Cash	0.00%	72.21	72.21	72.21
CMO - Collateralized Mortgage Obligation	4.63%	182,040.90	190,000.00	182,177.14
Money Market Fund	4.02%	13,683.05	13,683.05	13,683.05
Supranational	3.72%	278,130.56	280,000.00	274,378.23
US Corporate	3.97%	1,228,402.62	1,240,000.00	1,218,101.04
US Treasury	2.99%	2,348,739.80	2,365,000.00	2,299,029.34
	3.50%	**4,785,107.70**	**4,819,348.02**	**4,720,523.74**
Local Agency Invest Fund TVMWD	4.37%	2,231,899.56	2,231,899.56	2,231,899.56
California Asset Management Program	4.55%	2,750,097.08	2,750,097.08	2,750,097.08
Reserve Fund		**$ 9,767,104.34**	**$ 9,801,344.66**	**$ 9,702,520.38**
Checking (Citizens)	0.55%	428,653.53	428,653.53	428,653.53
Petty Cash Fund	0.00%	6,000.00	6,000.00	6,000.00
Working Cash		**$ 434,653.53**	**$ 434,653.53**	**$ 434,653.53**
TOTAL PORTFOLIO	**3.85%**	**$ 10,201,757.87**	**$ 10,235,998.19**	**$ 10,137,173.91**

I certify that this report accurately reflects all investments of Three Valleys Municipal Water District and that all investments and this report are in conformity with Sections 53600 et seq of the California Government Code and the District's annual statement of investment policy (Resolution 21-05-895). The District's investment program herein shown provides sufficient cash flow and liquidity to meet all budgeted expenditures for the next six months.

MATTHEW H. LITCHFIELD, General Manager/Assistant Treasurer

CHANDLER ASSET MANAGEMENT

MONTHLY ACCOUNT STATEMENT

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

CHANDLER ASSET MANAGEMENT | chandlerasset.com

Chandler Team:

For questions about your account, please call (800) 317-4747,
or contact clientservice@chandlerasset.com

Custodian:

US Bank

PORTFOLIO SUMMARY

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Portfolio Characteristics

Average Modified Duration	2.62
Average Coupon	3.14%
Average Purchase YTM	3.50%
Average Market YTM	4.39%
Average Quality*	AA+
Average Final Maturity	2.97
Average Life	2.68

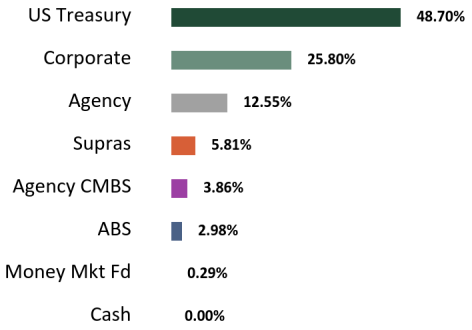
Account Summary

	End Values as of 12/31/2024	End Values as of 01/31/2025
Market Value	4,696,265.65	4,720,523.74
Accrued Interest	30,515.09	31,302.34
Total Market Value	**4,726,780.74**	**4,751,826.09**
Income Earned	18,522.11	13,717.60
Cont/WD	0.00	0.00
Par	4,810,111.72	4,819,348.02
Book Value	4,774,339.15	4,785,107.70
Cost Value	4,742,252.29	4,756,299.02

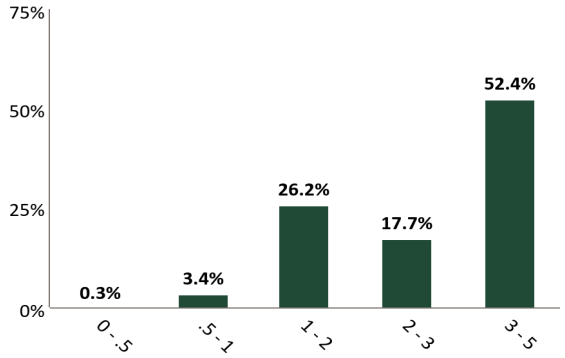
Top Issuers

Government of The United States	48.70%
Federal Home Loan Banks	6.30%
Farm Credit System	4.91%
FHLMC	3.86%
International Bank for Recon and Dev	2.48%
Inter-American Development Bank	2.48%
State Street Corporation	1.91%
Berkshire Hathaway Inc.	1.83%

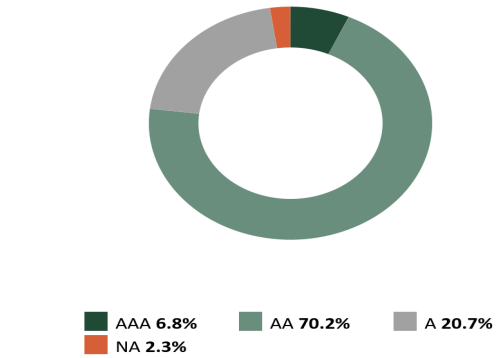
Sector Allocation



Maturity Distribution



Credit Quality (S&P)



Performance Review

Total Rate of Return**	1M	3M	YTD	1YR	2YRS	3YRS	5YRS	10YRS	Since Inception (05/01/09)
Three Valleys Municipal WD	0.54%	0.83%	0.54%	3.85%	3.96%	1.68%	1.33%	1.63%	1.84%
Benchmark Return	0.49%	0.80%	0.49%	3.56%	3.58%	1.20%	0.98%	1.32%	1.51%

*The credit quality is a weighted average calculation of the highest of S&P, Moody's and Fitch
**Periods over 1 year are annualized.
Benchmark: ICE BofA 1-5 Year Unsubordinated US Treasury & Agency Index Secondary Benchmark:

STATEMENT OF COMPLIANCE

CHANDLER ASSET MANAGEMENT

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Rules Name	Limit	Actual	Compliance Status	Notes
AGENCY MORTGAGE SECURITIES (CMOS)				
Max % (MV)	20.0	3.9	Compliant	
Max Maturity (Years)	5.0	3.6	Compliant	
Min Rating (AA- by 1)	0.0	0.0	Compliant	
ASSET-BACKED SECURITIES (ABS)				
Max % (MV; Non Agency ABS & MBS)	20.0	3.0	Compliant	
Max % Issuer (MV)	5.0	0.6	Compliant	
Max Maturity (Years)	5	4	Compliant	
Min Rating (AA- by 1)	0.0	0.0	Compliant	
BANKERS' ACCEPTANCES				
Max % (MV)	40.0	0.0	Compliant	
Max % Issuer (MV)	5.0	0.0	Compliant	
Max Maturity (Days)	180	0.0	Compliant	
Min Rating (A- by 1)	0.0	0.0	Compliant	
COMMERCIAL PAPER				
Max % (MV)	25.0	0.0	Compliant	
Max % Issuer (MV)	5.0	0.0	Compliant	
Max Maturity (Days)	270	0.0	Compliant	
Min Rating (A-1 by 1)	0.0	0.0	Compliant	
CORPORATE MEDIUM TERM NOTES				
Max % (MV)	30.0	25.8	Compliant	
Max % Issuer (MV)	5.0	1.9	Compliant	
Max Maturity (Years)	5	4	Compliant	
Min Rating (A- by 1)	0.0	0.0	Compliant	
FEDERAL AGENCIES				
Max % (MV)	100.0	12.6	Compliant	
Max Maturity (Years)	5	4	Compliant	
LOCAL AGENCY INVESTMENT FUND (LAIF)				
Max Concentration (MV)	75.0	0.0	Compliant	
MONEY MARKET MUTUAL FUNDS				
Max % (MV)	20.0	0.3	Compliant	
Max % Issuer (MV)	20.0	0.3	Compliant	
Min Rating (AAA by 2)	0.0	0.0	Compliant	
MORTGAGE-BACKED SECURITIES (NON-AGENCY)				

STATEMENT OF COMPLIANCE

CHANDLER ASSET MANAGEMENT

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Rules Name	Limit	Actual	Compliance Status	Notes
Max % (MV)	20.0	0.0	Compliant	
Max % Issuer (MV)	5.0	0.0	Compliant	
Max Maturity (Years)	5.0	0.0	Compliant	
Min Rating (AA- by 1)	0.0	0.0	Compliant	
MUNICIPAL SECURITIES (CA, LOCAL AGENCY)				
Max % (MV)	100.0	0.0	Compliant	
Max % Issuer (MV)	5.0	0.0	Compliant	
Max Maturity (Years)	5.0	0.0	Compliant	
NEGOTIABLE CERTIFICATES OF DEPOSIT (NCD)				
Max % (MV)	30.0	0.0	Compliant	
Max % Issuer (MV)	5.0	0.0	Compliant	
Max Maturity (Years)	5	0.0	Compliant	
Min Rating (A- by 1)	0.0	0.0	Compliant	
SUPRANATIONAL OBLIGATIONS				
Max % (MV)	30.0	5.8	Compliant	
Max % Issuer (MV)	10.0	2.5	Compliant	
Max Maturity (Years)	5	4	Compliant	
Min Rating (AA- by 1)	0.0	0.0	Compliant	
TIME DEPOSITS/CERTIFICATES OF DEPOSIT				
Max % Issuer (MV)	5.0	0.0	Compliant	
Max Maturity (Years)	5.0	0.0	Compliant	
U.S. TREASURIES				
Max % (MV)	100.0	48.7	Compliant	
Max Maturity (Years)	5	4	Compliant	

RECONCILIATION SUMMARY

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Maturities / Calls

Month to Date	**0.00**
Fiscal Year to Date	**(5,000.00)**

Principal Paydowns

Month to Date	**(7,308.36)**
Fiscal Year to Date	**(50,842.44)**

Purchases

Month to Date	**127,468.29**
Fiscal Year to Date	**1,241,042.53**

Sales

Month to Date	**(109,125.41)**
Fiscal Year to Date	**(1,108,510.90)**

Interest Received

Month to Date	**12,092.74**
Fiscal Year to Date	**79,309.26**

Purchased / Sold Interest

Month to Date	**(480.98)**
Fiscal Year to Date	**1,396.92**

Accrual Activity Summary

	Month to Date	Fiscal Year to Date (07/01/2024)
Beginning Book Value	4,774,339.15	4,726,290.24
Maturities/Calls	0.00	(5,000.00)
Principal Paydowns	(7,308.36)	(50,842.44)
Purchases	127,468.29	1,241,042.53
Sales	(109,125.41)	(1,108,510.90)
Change in Cash, Payables, Receivables	2.18	(2,648.76)
Amortization/Accretion	1,318.59	8,878.12
Realized Gain (Loss)	(1,586.74)	(24,101.09)
Ending Book Value	4,785,107.70	4,785,107.70

Fair Market Activity Summary

	Month to Date	Fiscal Year to Date (07/01/2024)
Beginning Market Value	4,696,265.65	4,580,050.79
Maturities/Calls	0.00	(5,000.00)
Principal Paydowns	(7,308.36)	(50,842.44)
Purchases	127,468.29	1,241,042.53
Sales	(109,125.41)	(1,108,510.90)
Change in Cash, Payables, Receivables	2.18	(2,648.76)
Amortization/Accretion	1,318.59	8,878.12
Change in Net Unrealized Gain (Loss)	13,489.54	81,655.50
Realized Gain (Loss)	(1,586.74)	(24,101.09)
Ending Market Value	4,720,523.74	4,720,523.74

HOLDINGS REPORT

CHANDLER ASSET MANAGEMENT

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Cusip	Security Description	Par Value/ Units	Purchase Date Purchase Yield	Cost Value Book Value	Mkt Price Mkt YTM	Market Value Accrued Int.	% of Port. Gain/Loss	Moody's/ S&P/ Fitch	Maturity Duration
ABS									
43815GAC3	HAROT 2021-4 A3 0.88 01/21/2026	1,811.04	11/16/2021 0.42%	1,810.66 1,810.98	99.37 4.91%	1,799.63 0.44	0.04% (11.36)	Aaa/NA AAA	0.97 0.16
47789QAC4	JDOT 2021-B A3 0.52 03/16/2026	1,415.91	07/13/2021 0.52%	1,415.78 1,415.89	99.66 3.58%	1,411.12 0.33	0.03% (4.76)	Aaa/NA AAA	1.12 0.11
89238JAC9	TAOT 2021-D A3 0.71 04/15/2026	1,959.68	11/09/2021 0.95%	1,959.64 1,959.67	99.42 5.04%	1,948.29 0.62	0.04% (11.39)	NA/AAA AAA	1.20 0.13
43815BAC4	HAROT 2022-1 A3 1.88 05/15/2026	6,748.47	02/15/2022 0.28%	6,747.46 6,748.25	99.26 4.76%	6,698.29 5.64	0.14% (49.96)	Aaa/AAA NA	1.28 0.26
47787JAC2	JDOT 2022 A3 0.36 09/15/2026	3,831.24	03/10/2022 2.34%	3,830.39 3,831.01	99.24 4.28%	3,802.21 3.95	0.08% (28.80)	Aaa/NA AAA	1.62 0.39
89238FAD5	TAOT 2022-B A3 2.93 09/15/2026	7,181.48	04/07/2022 3.09%	7,181.31 7,181.43	99.45 4.65%	7,142.14 9.35	0.15% (39.29)	Aaa/AAA NA	1.62 0.32
47800AAC4	JDOT 2022-B A3 3.74 02/16/2027	14,017.50	07/12/2022 3.77%	14,016.16 14,016.97	99.55 4.53%	13,954.84 23.30	0.30% (62.13)	Aaa/NA AAA	2.04 0.58
47800BAC2	JDOT 2022-C A3 5.09 06/15/2027	28,627.44	10/12/2022 3.29%	28,625.22 28,626.38	100.30 4.72%	28,713.51 64.76	0.61% 87.13	Aaa/NA AAA	2.37 0.71
43813YAC6	HAROT 2024-3 A3 4.57 03/21/2029	30,000.00	08/09/2024 4.62%	29,995.29 29,995.75	100.10 4.56%	30,030.17 38.08	0.64% 34.42	Aaa/NA AAA	4.13 1.76
89239TAD4	TAOT 2024-D A3 4.4 06/15/2029	15,000.00	10/10/2024 4.44%	14,999.16 14,999.21	99.70 4.60%	14,955.73 29.33	0.32% (43.49)	Aaa/AAA NA	4.37 1.80
34535VAD6	FORDO 2024-D A3 4.61 08/15/2029	30,000.00	11/19/2024 4.66%	29,999.04 29,999.08	100.18 4.57%	30,053.18 61.47	0.64% 54.10	Aaa/NA AAA	4.54 2.14
Total ABS		**140,592.76**	**3.76%**	**140,580.11 140,584.62**	**99.94 4.60%**	**140,509.10 237.27**	**2.98% (75.53)**	**Aaa/AAA AAA**	**3.23 1.27**
AGENCY									
3135G06G3	FEDERAL NATIONAL MORTGAGE ASSOCIATION 0.5 11/07/2025	65,000.00	11/09/2020 0.57%	64,767.30 64,964.35	97.21 4.26%	63,188.07 75.83	1.34% (1,776.28)	Aaa/AA+ AA+	0.77 0.74
3130ATS57	FEDERAL HOME LOAN BANKS 4.5 03/10/2028	60,000.00	04/06/2023 3.51%	62,670.00 61,684.36	100.60 4.29%	60,361.15 1,057.50	1.28% (1,323.21)	Aaa/AA+ AA+	3.11 2.82
3130AWTR1	FEDERAL HOME LOAN BANKS 4.375 09/08/2028	100,000.00	09/12/2023 4.49%	99,493.50 99,634.24	100.32 4.28%	100,320.90 1,737.85	2.13% 686.66	Aaa/AA+ AA+	3.61 3.24
3133EPWK7	FEDERAL FARM CREDIT BANKS FUNDING CORP 4.5 09/22/2028	130,000.00	09/27/2023 4.76%	128,515.40 128,916.51	100.64 4.31%	130,829.63 2,096.25	2.77% 1,913.12	Aaa/AA+ AA+	3.64 3.27

HOLDINGS REPORT

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Cusip	Security Description	Par Value/ Units	Purchase Date Purchase Yield	Cost Value Book Value	Mkt Price Mkt YTM	Market Value Accrued Int.	% of Port. Gain/Loss	Moody's/ S&P/ Fitch	Maturity Duration
3133EPC45	FEDERAL FARM CREDIT BANKS FUNDING CORP 4.625 11/13/2028	100,000.00	11/27/2023 4.46%	100,716.00 100,545.69	101.06 4.31%	101,064.36 1,002.08	2.14% 518.66	Aaa/AA+ AA+	3.79 3.40
3130AXQK7	FEDERAL HOME LOAN BANKS 4.75 12/08/2028	80,000.00	-- 4.03%	82,524.30 81,988.50	101.54 4.31%	81,233.68 559.44	1.72% (754.82)	Aaa/AA+ AA+	3.85 3.47
3130B1BC0	FEDERAL HOME LOAN BANKS 4.625 06/08/2029	55,000.00	06/18/2024 4.29%	55,822.80 55,720.29	101.05 4.36%	55,575.85 374.50	1.18% (144.44)	Aaa/AA+ AA+	4.35 3.88
Total Agency		**590,000.00**	**3.94%**	**594,509.30** **593,453.94**	**100.45** **4.30%**	**592,573.63** **6,903.45**	**12.55%** **(880.31)**	**Aaa/AA+** **AA+**	**3.39** **3.06**
AGENCY CMBS									
3137FETN0	FHMS K-073 A2 3.35 01/25/2028	50,000.00	07/10/2023 4.67%	47,339.84 48,266.74	96.80 4.50%	48,398.35 139.58	1.03% 131.61	Aaa/AA+ AAA	2.98 2.68
3137FG6X8	FHMS K-077 A2 3.85 05/25/2028	90,000.00	05/24/2023 4.24%	88,347.66 88,911.00	97.82 4.54%	88,034.54 288.75	1.86% (876.46)	Aaa/AA+ AAA	3.31 2.97
3137H4BY5	FHMS K-746 A2 2.031 09/25/2028	50,000.00	10/26/2023 5.31%	43,060.55 44,863.16	91.49 4.61%	45,744.25 84.63	0.97% 881.09	Aaa/AA+ AAA	3.65 3.39
Total Agency CMBS		**190,000.00**	**4.63%**	**178,748.05** **182,040.90**	**95.96** **4.55%**	**182,177.14** **512.96**	**3.86%** **136.24**	**Aaa/AA+** **AAA**	**3.31** **3.00**
CASH									
CCYUSD	Receivable	72.21	-- 0.00%	72.21 72.21	1.00 0.00%	72.21 0.00	0.00% 0.00	Aaa/AAA AAA	0.00 0.00
Total Cash		**72.21**	**0.00%**	**72.21** **72.21**	**1.00** **0.00%**	**72.21** **0.00**	**0.00%** **0.00**	**Aaa/AAA** **AAA**	**0.00** **0.00**
CORPORATE									
857477BR3	STATE STREET CORP 1.746 02/06/2026	90,000.00	-- 3.29%	86,597.25 89,981.84	99.97 4.93%	89,975.82 763.88	1.91% (6.02)	Aa3/A AA-	1.02 0.01
00440EAV9	CHUBB INA HOLDINGS LLC 3.35 05/03/2026	60,000.00	08/24/2023 5.19%	57,274.20 58,730.37	98.61 4.51%	59,163.10 491.33	1.25% 432.73	A2/A A	1.25 1.20
023135BX3	AMAZON.COM INC 1.0 05/12/2026	25,000.00	05/26/2021 0.97%	25,040.25 25,009.84	95.99 4.26%	23,998.46 54.86	0.51% (1,011.38)	A1/AA AA-	1.28 1.24
89236TJK2	TOYOTA MOTOR CREDIT CORP 1.125 06/18/2026	90,000.00	-- 2.27%	85,879.40 88,663.63	95.66 4.41%	86,094.91 120.94	1.82% (2,568.72)	A1/A+ A+	1.38 1.34

HOLDINGS REPORT

CHANDLER ASSET MANAGEMENT

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Cusip	Security Description	Par Value/ Units	Purchase Date Purchase Yield	Cost Value Book Value	Mkt Price Mkt YTM	Market Value Accrued Int.	% of Port. Gain/Loss	Moody's/ S&P/ Fitch	Maturity Duration
61747YET8	MORGAN STANLEY 4.679 07/17/2026	30,000.00	07/18/2022 4.68%	30,000.00 30,000.00	99.95 5.65%	29,986.34 54.59	0.64% (13.66)	A1/A- A+	1.46 0.45
931142ER0	WALMART INC 1.05 09/17/2026	10,000.00	09/08/2021 1.09%	9,981.10 9,993.86	95.03 4.25%	9,503.46 39.08	0.20% (490.41)	Aa2/AA AA	1.63 1.57
437076CV2	HOME DEPOT INC 4.95 09/30/2026	55,000.00	12/21/2023 4.41%	55,747.45 55,439.45	100.85 4.41%	55,467.37 915.06	1.18% 27.92	A2/A A	1.66 1.48
24422EVW6	JOHN DEERE CAPITAL CORP 1.3 10/13/2026	90,000.00	04/21/2022 3.29%	82,534.50 87,168.42	95.06 4.35%	85,557.44 351.00	1.81% (1,610.98)	A1/A A+	1.70 1.64
87612EBM7	TARGET CORP 1.95 01/15/2027	25,000.00	01/19/2022 1.99%	24,957.50 24,983.32	95.44 4.42%	23,860.25 21.67	0.51% (1,123.07)	A2/A A	1.96 1.88
084664CZ2	BERKSHIRE HATHAWAY FINANCE CORP 2.3 03/15/2027	90,000.00	-- 2.70%	88,360.10 89,291.49	96.06 4.27%	86,450.08 782.00	1.83% (2,841.41)	Aa2/AA A+	2.12 2.02
09247XAN1	BLACKROCK FINANCE INC 3.2 03/15/2027	85,000.00	04/25/2022 3.40%	84,219.70 84,662.15	97.64 4.38%	82,996.89 1,027.56	1.76% (1,665.26)	Aa3/AA- NA	2.12 1.99
023135CF1	AMAZON.COM INC 3.3 04/13/2027	30,000.00	04/11/2022 3.34%	29,938.20 29,972.89	97.83 4.34%	29,349.52 297.00	0.62% (623.37)	A1/AA AA-	2.20 2.07
665859AW4	NORTHERN TRUST CORP 4.0 05/10/2027	70,000.00	09/28/2022 4.70%	67,975.60 69,004.04	98.85 4.54%	69,196.91 630.00	1.47% 192.87	A2/A+ A+	2.27 2.12
037833ET3	APPLE INC 4.0 05/10/2028	10,000.00	05/08/2023 4.04%	9,980.70 9,987.39	98.95 4.35%	9,894.89 90.00	0.21% (92.49)	Aaa/AA+ NA	3.27 3.00
341081GN1	FLORIDA POWER & LIGHT CO 4.4 05/15/2028	60,000.00	06/15/2023 4.69%	59,248.80 59,497.10	99.27 4.64%	59,563.14 557.33	1.26% 66.04	Aa2/A+ AA-	3.29 2.99
58933YBH7	MERCK & CO INC 4.05 05/17/2028	15,000.00	05/08/2023 4.07%	14,987.85 14,992.01	98.93 4.40%	14,839.85 124.88	0.31% (152.17)	A1/A+ NA	3.29 3.02
74340XCG4	PROLOGIS LP 4.875 06/15/2028	60,000.00	09/27/2023 5.59%	58,248.00 58,747.84	100.50 4.71%	60,298.37 373.75	1.28% 1,550.53	A3/A NA	3.37 2.98
438516CL8	HONEYWELL INTERNATIONAL INC 4.25 01/15/2029	55,000.00	01/17/2024 4.43%	54,556.15 54,648.43	98.79 4.59%	54,333.35 103.89	1.15% (315.08)	A2/A A	3.96 3.59
69371RS80	PACCAR FINANCIAL CORP 4.6 01/31/2029	60,000.00	01/24/2024 4.64%	59,902.20 59,921.85	99.83 4.65%	59,895.50 7.67	1.27% (26.34)	A1/A+ NA	4.00 3.61
06051GHG7	BANK OF AMERICA CORP 3.97 03/05/2029	45,000.00	03/25/2024 5.20%	43,054.64 43,475.08	97.34 5.08%	43,804.86 724.53	0.93% 329.79	A1/A- AA-	4.09 2.82
89115A2Y7	TORONTO-DOMINION BANK 4.994 04/05/2029	55,000.00	07/08/2024 4.99%	54,997.80 54,998.06	100.09 4.97%	55,049.26 885.05	1.17% 51.20	A2/A- AA-	4.18 3.67
46647PAX4	JPMORGAN CHASE & CO 4.452 12/05/2029	70,000.00	12/09/2024 4.72%	69,325.20 69,349.76	98.46 5.09%	68,919.84 484.77	1.46% (429.92)	A1/A AA-	4.84 3.46

HOLDINGS REPORT

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Cusip	Security Description	Par Value/ Units	Purchase Date Purchase Yield	Cost Value Book Value	Mkt Price Mkt YTM	Market Value Accrued Int.	% of Port. Gain/Loss	Moody's/ S&P/ Fitch	Maturity Duration
91324PFG2	UNITEDHEALTH GROUP INC 4.8 01/15/2030	60,000.00	01/28/2025 4.84%	59,883.60 59,883.79	99.84 4.84%	59,901.42 128.00	1.27% 17.63	A2/A+ A	4.96 4.35
Total Corporate		**1,240,000.00**	**3.97%**	**1,212,690.19** **1,228,402.62**	**98.27** **4.62%**	**1,218,101.04** **9,028.82**	**25.80%** **(10,301.59)**	**A1/A+** **A+**	**2.64** **2.24**
MONEY MARKET FUND									
31846V203	FIRST AMER:GVT OBLG Y	13,683.05	-- 4.02%	13,683.05 13,683.05	1.00 4.02%	13,683.05 0.00	0.29% 0.00	Aaa/ AAAm AAA	0.00 0.00
Total Money Market Fund		**13,683.05**	**4.02%**	**13,683.05** **13,683.05**	**1.00** **4.02%**	**13,683.05** **0.00**	**0.29%** **0.00**	**Aaa/ AAAm** **AAA**	**0.00** **0.00**
SUPRANATIONAL									
4581X0DV7	INTER-AMERICAN DEVELOPMENT BANK 0.875 04/20/2026	60,000.00	04/13/2021 0.97%	59,725.20 59,933.33	95.98 4.31%	57,585.64 147.29	1.22% (2,347.70)	Aaa/AAA NA	1.22 1.18
459058KT9	INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPM 3.5 07/12/2028	35,000.00	08/25/2023 4.56%	33,397.70 33,867.85	97.30 4.35%	34,055.60 64.65	0.72% 187.75	Aaa/AAA NA	3.45 3.19
45950KDD9	INTERNATIONAL FINANCE CORP 4.5 07/13/2028	40,000.00	07/06/2023 4.53%	39,955.60 39,969.43	100.57 4.32%	40,227.48 90.00	0.85% 258.05	Aaa/AAA NA	3.45 3.15
4581X0EN4	INTER-AMERICAN DEVELOPMENT BANK 4.125 02/15/2029	60,000.00	02/15/2024 4.32%	59,467.20 59,568.67	99.04 4.39%	59,421.44 1,141.25	1.26% (147.23)	Aaa/AAA NA	4.04 3.60
459058LN1	INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPM 3.875 10/16/2029	85,000.00	10/08/2024 4.47%	84,778.15 84,791.27	97.75 4.41%	83,088.08 960.68	1.76% (1,703.20)	Aaa/AAA NA	4.71 4.20
Total Supranational		**280,000.00**	**3.72%**	**277,323.85** **278,130.56**	**98.01** **4.36%**	**274,378.23** **2,403.87**	**5.81%** **(3,752.33)**	**Aaa/AAA** **NA**	**3.49** **3.16**
US TREASURY									
91282CBH3	UNITED STATES TREASURY 0.375 01/31/2026	100,000.00	-- 0.78%	98,076.64 99,603.40	96.26 4.27%	96,256.30 1.04	2.04% (3,347.10)	Aaa/AA+ AA+	1.00 0.97

HOLDINGS REPORT

CHANDLER ASSET MANAGEMENT

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Cusip	Security Description	Par Value/ Units	Purchase Date Purchase Yield	Cost Value Book Value	Mkt Price Mkt YTM	Market Value Accrued Int.	% of Port. Gain/Loss	Moody's/ S&P/ Fitch	Maturity Duration
91282CBQ3	UNITED STATES TREASURY 0.5 02/28/2026	100,000.00	-- 0.81%	98,480.86 99,667.94	96.11 4.26%	96,105.47 212.71	2.04% (3,562.48)	Aaa/AA+ AA+	1.08 1.04
91282CBT7	UNITED STATES TREASURY 0.75 03/31/2026	100,000.00	-- 0.85%	99,523.24 99,887.67	96.11 4.24%	96,109.37 255.49	2.04% (3,778.30)	Aaa/AA+ AA+	1.16 1.12
91282CCF6	UNITED STATES TREASURY 0.75 05/31/2026	125,000.00	08/25/2021 0.80%	124,702.15 124,917.10	95.57 4.23%	119,462.89 162.26	2.53% (5,454.21)	Aaa/AA+ AA+	1.33 1.29
91282CCP4	UNITED STATES TREASURY 0.625 07/31/2026	125,000.00	08/25/2021 0.82%	123,813.48 124,640.75	94.87 4.21%	118,588.87 2.16	2.51% (6,051.88)	Aaa/AA+ AA+	1.50 1.46
9128282A7	UNITED STATES TREASURY 1.5 08/15/2026	125,000.00	09/16/2021 0.83%	129,057.62 126,267.30	96.00 4.22%	120,004.88 866.17	2.54% (6,262.42)	Aaa/AA+ AA+	1.54 1.48
91282CDG3	UNITED STATES TREASURY 1.125 10/31/2026	150,000.00	-- 1.84%	145,220.70 148,203.04	94.88 4.21%	142,318.36 433.53	3.01% (5,884.68)	Aaa/AA+ AA+	1.75 1.68
91282CEF4	UNITED STATES TREASURY 2.5 03/31/2027	90,000.00	05/25/2022 4.27%	89,050.78 89,577.41	96.53 4.20%	86,874.61 766.48	1.84% (2,702.80)	Aaa/AA+ AA+	2.16 2.05
91282CET4	UNITED STATES TREASURY 2.625 05/31/2027	150,000.00	06/21/2022 3.38%	144,855.47 147,578.87	96.50 4.22%	144,750.00 681.49	3.07% (2,828.87)	Aaa/AA+ AA+	2.33 2.21
91282CFB2	UNITED STATES TREASURY 2.75 07/31/2027	125,000.00	08/30/2022 3.29%	121,923.83 123,440.49	96.54 4.23%	120,673.83 9.50	2.56% (2,766.67)	Aaa/AA+ AA+	2.50 2.37
91282CGC9	UNITED STATES TREASURY 3.875 12/31/2027	125,000.00	01/30/2023 3.69%	126,049.80 125,621.69	99.04 4.23%	123,798.83 428.18	2.62% (1,822.86)	Aaa/AA+ AA+	2.91 2.71
91282CHE4	UNITED STATES TREASURY 3.625 05/31/2028	70,000.00	06/15/2023 3.93%	69,042.97 69,357.93	98.02 4.27%	68,610.94 439.18	1.45% (746.99)	Aaa/AA+ AA+	3.33 3.07
91282CJW2	UNITED STATES TREASURY 4.0 01/31/2029	90,000.00	02/26/2024 4.31%	88,751.95 88,987.69	98.88 4.31%	88,991.02 9.94	1.89% 3.32	Aaa/AA+ AA+	4.00 3.65
91282CKD2	UNITED STATES TREASURY 4.25 02/28/2029	70,000.00	04/22/2024 4.67%	68,747.66 68,948.37	99.76 4.31%	69,830.47 1,265.61	1.48% 882.09	Aaa/AA+ AA+	4.08 3.63
91282CKG5	UNITED STATES TREASURY 4.125 03/31/2029	75,000.00	-- 4.48%	73,827.15 74,007.79	99.26 4.32%	74,443.36 1,053.91	1.58% 435.57	Aaa/AA+ AA+	4.16 3.72
91282CKP5	UNITED STATES TREASURY 4.625 04/30/2029	80,000.00	-- 4.64%	79,950.78 79,958.79	101.17 4.32%	80,934.38 950.55	1.71% 975.58	Aaa/AA+ AA+	4.24 3.77
91282CKT7	UNITED STATES TREASURY 4.5 05/31/2029	60,000.00	06/27/2024 4.30%	60,532.03 60,467.52	100.70 4.32%	60,417.19 467.31	1.28% (50.34)	Aaa/AA+ AA+	4.33 3.86
91282CKX8	UNITED STATES TREASURY 4.25 06/30/2029	55,000.00	07/08/2024 4.23%	55,051.56 55,045.69	99.69 4.33%	54,830.27 206.63	1.16% (215.41)	Aaa/AA+ AA+	4.41 3.96
91282CEV9	UNITED STATES TREASURY 3.25 06/30/2029	75,000.00	07/29/2024 4.10%	72,175.78 72,468.27	95.70 4.33%	71,777.34 215.47	1.52% (690.92)	Aaa/AA+ AA+	4.41 4.03

HOLDINGS REPORT

CHANDLER ASSET MANAGEMENT

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Cusip	Security Description	Par Value/ Units	Purchase Date Purchase Yield	Cost Value Book Value	Mkt Price Mkt YTM	Market Value Accrued Int.	% of Port. Gain/Loss	Moody's/ S&P/ Fitch	Maturity Duration
91282CLC3	UNITED STATES TREASURY 4.0 07/31/2029	95,000.00	07/29/2024 4.30%	94,654.88 94,689.85	98.69 4.32%	93,753.13 10.50	1.99% (936.72)	Aaa/AA+ AA+	4.50 4.06
91282CFJ5	UNITED STATES TREASURY 3.125 08/31/2029	135,000.00	-- 3.50%	132,698.44 132,873.48	95.01 4.34%	128,265.82 1,794.72	2.72% (4,607.66)	Aaa/AA+ AA+	4.58 4.14
91282CLN9	UNITED STATES TREASURY 3.5 09/30/2029	50,000.00	01/28/2025 4.37%	48,183.59 48,186.79	96.52 4.33%	48,259.77 596.15	1.02% 72.98	Aaa/AA+ AA+	4.66 4.18
91282CLR0	UNITED STATES TREASURY 4.125 10/31/2029	60,000.00	11/19/2024 4.38%	59,707.03 59,718.87	99.11 4.33%	59,467.97 635.84	1.26% (250.90)	Aaa/AA+ AA+	4.75 4.21
91282CMA6	UNITED STATES TREASURY 4.125 11/30/2029	70,000.00	12/18/2024 4.24%	69,641.80 69,650.52	99.13 4.33%	69,387.50 499.76	1.47% (263.02)	Aaa/AA+ AA+	4.83 4.30
91282CMD0	UNITED STATES TREASURY 4.375 12/31/2029	65,000.00	12/30/2024 4.38%	64,972.07 64,972.56	100.18 4.33%	65,116.80 251.38	1.38% 144.24	Aaa/AA+ AA+	4.91 4.36
Total US Treasury		**2,365,000.00**	**2.99%**	**2,338,692.26** **2,348,739.80**	**97.25** **4.27%**	**2,299,029.34** **12,215.96**	**48.70%** **(49,710.45)**	**Aaa/AA+** **AA+**	**2.95** **2.71**
Total Portfolio		**4,819,348.02**	**3.50%**	**4,756,299.02** **4,785,107.70**	**97.71** **4.39%**	**4,720,523.74** **31,302.34**	**100.00%** **(64,583.96)**	**Aa1/AA** **AA**	**2.97** **2.62**
Total Market Value + Accrued						**4,751,826.09**			

TRANSACTION LEDGER

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Transaction Type	Settlement Date	CUSIP	Quantity	Security Description	Price	Acq/Disp Yield	Amount	Interest Pur/ Sold	Total Amount	Gain/Loss
ACQUISITIONS										
Purchase	01/03/2025	31846V203	70.03	FIRST AMER:GVT OBLG Y	1.000	4.09%	(70.03)	0.00	(70.03)	0.00
Purchase	01/13/2025	31846V203	900.00	FIRST AMER:GVT OBLG Y	1.000	4.09%	(900.00)	0.00	(900.00)	0.00
Purchase	01/13/2025	31846V203	612.50	FIRST AMER:GVT OBLG Y	1.000	4.09%	(612.50)	0.00	(612.50)	0.00
Purchase	01/15/2025	31846V203	8,568.86	FIRST AMER:GVT OBLG Y	1.000	4.09%	(8,568.86)	0.00	(8,568.86)	0.00
Purchase	01/17/2025	31846V203	701.85	FIRST AMER:GVT OBLG Y	1.000	4.09%	(701.85)	0.00	(701.85)	0.00
Purchase	01/21/2025	31846V203	658.02	FIRST AMER:GVT OBLG Y	1.000	4.09%	(658.02)	0.00	(658.02)	0.00
Purchase	01/27/2025	31846V203	139.58	FIRST AMER:GVT OBLG Y	1.000	4.09%	(139.58)	0.00	(139.58)	0.00
Purchase	01/27/2025	31846V203	373.38	FIRST AMER:GVT OBLG Y	1.000	4.09%	(373.38)	0.00	(373.38)	0.00
Purchase	01/29/2025	91282CLN9	50,000.00	UNITED STATES TREASURY 3.5 09/30/2029	96.367	4.37%	(48,183.59)	(581.73)	(48,765.32)	0.00
Purchase	01/29/2025	91324PFG2	60,000.00	UNITEDHEALTH GROUP INC 4.8 01/15/2030	99.806	4.84%	(59,883.60)	(112.00)	(59,995.60)	0.00
Purchase	01/31/2025	31846V203	7,376.88	FIRST AMER:GVT OBLG Y	1.000	4.02%	(7,376.88)	0.00	(7,376.88)	0.00
Total Purchase			**129,401.10**				**(127,468.29)**	**(693.73)**	**(128,162.02)**	**0.00**
TOTAL ACQUISITIONS			**129,401.10**				**(127,468.29)**	**(693.73)**	**(128,162.02)**	**0.00**
OTHER										
Sale	01/10/2025	31846V203	(473.07)	FIRST AMER:GVT OBLG Y	1.000	4.09%	473.07	0.00	473.07	0.00
Sale	01/24/2025	31846V203	(104.17)	FIRST AMER:GVT OBLG Y	1.000	4.09%	104.17	0.00	104.17	0.00
Sale	01/29/2025	91324PEC2	(90,000.00)	UNITEDHEALTH GROUP INC 1.15 05/15/2026	95.852	3.37%	86,266.80	(212.75)	86,479.55	(1,586.73)
Sale	01/29/2025	31846V203	(22,281.37)	FIRST AMER:GVT OBLG Y	1.000	4.09%	22,281.37	0.00	22,281.37	0.00
Total Sale			**(112,858.61)**				**109,125.41**	**(212.75)**	**109,338.16**	**(1,586.73)**
TOTAL OTHER TRANSACTIONS			**(112,858.61)**				**109,125.41**	**(212.75)**	**109,338.16**	**(1,586.73)**
OTHER										
Coupon	01/01/2025	3137FG6X8	0.00	FHMS K-077 A2 3.85 05/25/2028		4.21%	288.75	0.00	288.75	0.00
Coupon	01/01/2025	3137FETN0	0.00	FHMS K-073 A2 3.35 01/25/2028		4.61%	139.58	0.00	139.58	0.00

TRANSACTION LEDGER

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Transaction Type	Settlement Date	CUSIP	Quantity	Security Description	Price	Acq/Disp Yield	Amount	Interest Pur/ Sold	Total Amount	Gain/Loss
Coupon	01/01/2025	3137H4BY5	0.00	FHMS K-746 A2 2.031 09/25/2028		5.20%	84.63	0.00	84.63	0.00
Coupon	01/12/2025	459058KT9	0.00	INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPM 3.5 07/12/2028		4.56%	612.50	0.00	612.50	0.00
Coupon	01/13/2025	45950KDD9	0.00	INTERNATIONAL FINANCE CORP 4.5 07/13/2028		4.53%	900.00	0.00	900.00	0.00
Coupon	01/15/2025	47789QAC4	0.00	JDOT 2021-B A3 0.52 03/16/2026		0.53%	0.82	0.00	0.82	0.00
Coupon	01/15/2025	89238JAC9	0.00	TAOT 2021-D A3 0.71 04/15/2026		0.71%	1.50	0.00	1.50	0.00
Coupon	01/15/2025	43815BAC4	0.00	HAROT 2022-1 A3 1.88 05/15/2026		1.90%	12.35	0.00	12.35	0.00
Coupon	01/15/2025	87612EBM7	0.00	TARGET CORP 1.95 01/15/2027		1.99%	243.75	0.00	243.75	0.00
Coupon	01/15/2025	47787JAC2	0.00	JDOT 2022 A3 0.36 09/15/2026		2.35%	8.49	0.00	8.49	0.00
Coupon	01/15/2025	89238FAD5	0.00	TAOT 2022-B A3 2.93 09/15/2026		2.95%	19.75	0.00	19.75	0.00
Coupon	01/15/2025	47800AAC4	0.00	JDOT 2022-B A3 3.74 02/16/2027		3.78%	47.56	0.00	47.56	0.00
Coupon	01/15/2025	438516CL8	0.00	HONEYWELL INTERNATIONAL INC 4.25 01/15/2029		4.43%	1,168.75	0.00	1,168.75	0.00
Coupon	01/15/2025	89239TAD4	0.00	TAOT 2024-D A3 4.4 06/15/2029		4.44%	55.00	0.00	55.00	0.00
Coupon	01/15/2025	34535VAD6	0.00	FORDO 2024-D A3 4.61 08/15/2029		4.66%	115.25	0.00	115.25	0.00
Coupon	01/15/2025	47800BAC2	0.00	JDOT 2022-C A3 5.09 06/15/2027		5.15%	129.32	0.00	129.32	0.00
Coupon	01/17/2025	61747YET8	0.00	MORGAN STANLEY 4.679 07/17/2026		4.68%	701.85	0.00	701.85	0.00
Coupon	01/21/2025	43815GAC3	0.00	HAROT 2021-4 A3 0.88 01/21/2026		0.90%	1.73	0.00	1.73	0.00

TRANSACTION LEDGER

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Transaction Type	Settlement Date	CUSIP	Quantity	Security Description	Price	Acq/Disp Yield	Amount	Interest Pur/ Sold	Total Amount	Gain/Loss
Coupon	01/21/2025	43813YAC6	0.00	HAROT 2024-3 A3 4.57 03/21/2029		4.62%	114.25	0.00	114.25	0.00
Coupon	01/31/2025	91282CBH3	0.00	UNITED STATES TREASURY 0.375 01/31/2026		0.78%	187.50	0.00	187.50	0.00
Coupon	01/31/2025	91282CCP4	0.00	UNITED STATES TREASURY 0.625 07/31/2026		0.82%	390.63	0.00	390.63	0.00
Coupon	01/31/2025	91282CFB2	0.00	UNITED STATES TREASURY 2.75 07/31/2027		3.29%	1,718.75	0.00	1,718.75	0.00
Coupon	01/31/2025	91282CLC3	0.00	UNITED STATES TREASURY 4.0 07/31/2029		4.08%	1,900.00	0.00	1,900.00	0.00
Coupon	01/31/2025	91282CJW2	0.00	UNITED STATES TREASURY 4.0 01/31/2029		4.31%	1,800.00	0.00	1,800.00	0.00
Coupon	01/31/2025	69371RS80	0.00	PACCAR FINANCIAL CORP 4.6 01/31/2029		4.64%	1,380.00	0.00	1,380.00	0.00
Total Coupon			**0.00**				**12,022.71**	**0.00**	**12,022.71**	**0.00**
Custody Fee	01/24/2025	CCYUSD	(104.17)	Cash		0.00%	(104.17)	0.00	(104.17)	0.00
Total Custody Fee			**(104.17)**				**(104.17)**	**0.00**	**(104.17)**	**0.00**
Dividend	01/31/2025	31846V203	0.00	FIRST AMER:GVT OBLG Y		4.07%	72.21	0.00	72.21	0.00
Total Dividend			**0.00**				**72.21**	**0.00**	**72.21**	**0.00**
Management Fee	01/10/2025	CCYUSD	(473.07)	Cash		0.00%	(473.07)	0.00	(473.07)	0.00
Total Management Fee			**(473.07)**				**(473.07)**	**0.00**	**(473.07)**	**0.00**
Principal Paydown	01/15/2025	47789QAC4	485.07	JDOT 2021-B A3 0.52 03/16/2026		0.53%	485.07	--	485.07	(0.00)
Principal Paydown	01/15/2025	89238JAC9	571.27	TAOT 2021-D A3 0.71 04/15/2026		0.71%	571.27	--	571.27	0.00
Principal Paydown	01/15/2025	43815BAC4	1,136.93	HAROT 2022-1 A3 1.88 05/15/2026		1.90%	1,136.93	--	1,136.93	0.00
Principal Paydown	01/15/2025	47787JAC2	560.19	JDOT 2022 A3 0.36 09/15/2026		2.35%	560.19	--	560.19	(0.00)

TRANSACTION LEDGER

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Transaction Type	Settlement Date	CUSIP	Quantity	Security Description	Price	Acq/Disp Yield	Amount	Interest Pur/ Sold	Total Amount	Gain/Loss
Principal Paydown	01/15/2025	89238FAD5	907.82	TAOT 2022-B A3 2.93 09/15/2026		2.95%	907.82	--	907.82	(0.00)
Principal Paydown	01/15/2025	47800AAC4	1,243.91	JDOT 2022-B A3 3.74 02/16/2027		3.78%	1,243.91	--	1,243.91	(0.00)
Principal Paydown	01/15/2025	47800BAC2	1,861.13	JDOT 2022-C A3 5.09 06/15/2027		5.15%	1,861.13	--	1,861.13	(0.00)
Principal Paydown	01/21/2025	43815GAC3	542.04	HAROT 2021-4 A3 0.88 01/21/2026		0.90%	542.04	--	542.04	(0.00)
Total Principal Paydown			**7,308.36**				**7,308.36**	**--**	**7,308.36**	**(0.01)**
TOTAL OTHER TRANSACTIONS			**6,731.12**				**18,826.04**	**0.00**	**18,826.04**	**(0.01)**

INCOME EARNED

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Cusip	Security Description	Trade Date Settle Date Units	Book Value: Begin Book Value: Acq Book Value: Disp Book Value: End	Prior Accrued Inc. Received Ending Accrued Total Interest	Accr. Of Discount Amort. Of Premium Net Accret/Amort Income Earned	Total Income
CASH & EQUIVALENTS						
31846V203	FIRST AMER:GVT OBLG Y	13,683.05	17,140.56 19,401.10 (22,858.61) 13,683.05	0.00 70.03 0.00 70.03	0.00 0.00 0.00 70.03	70.03
CCYUSD	Receivable	72.21	70.03 0.00 0.00 72.21	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00
Total Cash & Equivalents		**13,755.26**	**17,210.59** **19,401.10** **(22,858.61)** **13,755.26**	**0.00** **70.03** **0.00** **70.03**	**0.00** **0.00** **0.00** **70.03**	**70.03**
FIXED INCOME						
00440EAV9	CHUBB INA HOLDINGS LLC 3.35 05/03/2026	08/24/2023 08/28/2023 60,000.00	58,644.06 0.00 0.00 58,730.37	323.83 0.00 491.33 167.50	86.31 0.00 86.31 253.81	253.81
023135BX3	AMAZON.COM INC 1.0 05/12/2026	05/26/2021 05/28/2021 25,000.00	25,010.54 0.00 0.00 25,009.84	34.03 0.00 54.86 20.83	0.00 (0.70) (0.70) 20.13	20.13
023135CF1	AMAZON.COM INC 3.3 04/13/2027	04/11/2022 04/13/2022 30,000.00	29,971.84 0.00 0.00 29,972.89	214.50 0.00 297.00 82.50	1.05 0.00 1.05 83.55	83.55
037833ET3	APPLE INC 4.0 05/10/2028	05/08/2023 05/10/2023 10,000.00	9,987.06 0.00 0.00 9,987.39	56.67 0.00 90.00 33.33	0.33 0.00 0.33 33.66	33.66
06051GHG7	BANK OF AMERICA CORP 3.97 03/05/2029	03/25/2024 03/27/2024 45,000.00	43,433.17 0.00 0.00 43,475.08	575.65 0.00 724.53 148.88	41.91 0.00 41.91 190.78	190.78

INCOME EARNED

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Cusip	Security Description	Trade Date Settle Date Units	Book Value: Begin Book Value: Acq Book Value: Disp Book Value: End	Prior Accrued Inc. Received Ending Accrued Total Interest	Accr. Of Discount Amort. Of Premium Net Accret/Amort Income Earned	Total Income
084664CZ2	BERKSHIRE HATHAWAY FINANCE CORP 2.3 03/15/2027	90,000.00	89,263.04 0.00 0.00 89,291.49	609.50 0.00 782.00 172.50	28.45 0.00 28.45 200.95	200.95
09247XAN1	BLACKROCK FINANCE INC 3.2 03/15/2027	04/25/2022 04/27/2022 85,000.00	84,648.58 0.00 0.00 84,662.15	800.89 0.00 1,027.56 226.67	13.57 0.00 13.57 240.23	240.23
24422EVW6	JOHN DEERE CAPITAL CORP 1.3 10/13/2026	04/21/2022 04/25/2022 90,000.00	87,026.61 0.00 0.00 87,168.42	253.50 0.00 351.00 97.50	141.81 0.00 141.81 239.31	239.31
3130ATS57	FEDERAL HOME LOAN BANKS 4.5 03/10/2028	04/06/2023 04/10/2023 60,000.00	61,730.45 0.00 0.00 61,684.36	832.50 0.00 1,057.50 225.00	0.00 (46.09) (46.09) 178.91	178.91
3130AWTR1	FEDERAL HOME LOAN BANKS 4.375 09/08/2028	09/12/2023 09/14/2023 100,000.00	99,625.62 0.00 0.00 99,634.24	1,373.26 0.00 1,737.85 364.58	8.62 0.00 8.62 373.21	373.21
3130AXQK7	FEDERAL HOME LOAN BANKS 4.75 12/08/2028	80,000.00	82,032.34 0.00 0.00 81,988.50	242.78 0.00 559.44 316.67	0.00 (43.84) (43.84) 272.82	272.82
3130B1BC0	FEDERAL HOME LOAN BANKS 4.625 06/08/2029	06/18/2024 06/20/2024 55,000.00	55,734.35 0.00 0.00 55,720.29	162.52 0.00 374.50 211.98	0.00 (14.06) (14.06) 197.92	197.92
3133EPC45	FEDERAL FARM CREDIT BANKS FUNDING CORP 4.625 11/13/2028	11/27/2023 11/28/2023 100,000.00	100,557.94 0.00 0.00 100,545.69	616.67 0.00 1,002.08 385.42	0.00 (12.25) (12.25) 373.17	373.17
3133EPWK7	FEDERAL FARM CREDIT BANKS FUNDING CORP 4.5 09/22/2028	09/27/2023 09/28/2023 130,000.00	128,891.24 0.00 0.00 128,916.51	1,608.75 0.00 2,096.25 487.50	25.27 0.00 25.27 512.77	512.77

INCOME EARNED

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Cusip	Security Description	Trade Date Settle Date Units	Book Value: Begin Book Value: Acq Book Value: Disp Book Value: End	Prior Accrued Inc. Received Ending Accrued Total Interest	Accr. Of Discount Amort. Of Premium Net Accret/Amort Income Earned	Total Income
3135G06G3	FEDERAL NATIONAL MORTGAGE ASSOCIATION 0.5 11/07/2025	11/09/2020 11/12/2020 65,000.00	64,960.38 0.00 0.00 64,964.35	48.75 0.00 75.83 27.08	3.96 0.00 3.96 31.04	31.04
3137FETN0	FHMS K-073 A2 3.35 01/25/2028	07/10/2023 07/13/2023 50,000.00	48,216.24 0.00 0.00 48,266.74	139.58 139.58 139.58 139.58	50.50 0.00 50.50 190.08	190.08
3137FG6X8	FHMS K-077 A2 3.85 05/25/2028	05/24/2023 05/30/2023 90,000.00	88,882.51 0.00 0.00 88,911.00	288.75 288.75 288.75 288.75	28.49 0.00 28.49 317.24	317.24
3137H4BY5	FHMS K-746 A2 2.031 09/25/2028	10/26/2023 10/31/2023 50,000.00	44,741.41 0.00 0.00 44,863.16	84.63 84.63 84.63 84.63	121.74 0.00 121.74 206.37	206.37
341081GN1	FLORIDA POWER & LIGHT CO 4.4 05/15/2028	06/15/2023 06/20/2023 60,000.00	59,484.10 0.00 0.00 59,497.10	337.33 0.00 557.33 220.00	13.00 0.00 13.00 233.00	233.00
34535VAD6	FORDO 2024-D A3 4.61 08/15/2029	11/19/2024 11/22/2024 30,000.00	29,999.06 0.00 0.00 29,999.08	61.47 115.25 61.47 115.25	0.02 0.00 0.02 115.27	115.27
437076CV2	HOME DEPOT INC 4.95 09/30/2026	12/21/2023 12/26/2023 55,000.00	55,463.14 0.00 0.00 55,439.45	688.19 0.00 915.06 226.88	0.00 (23.69) (23.69) 203.18	203.18
43813YAC6	HAROT 2024-3 A3 4.57 03/21/2029	08/09/2024 08/21/2024 30,000.00	29,995.66 0.00 0.00 29,995.75	38.08 114.25 38.08 114.25	0.09 0.00 0.09 114.34	114.34
43815BAC4	HAROT 2022-1 A3 1.88 05/15/2026	02/15/2022 02/23/2022 6,748.47	7,885.12 0.00 (1,136.93) 6,748.25	6.59 12.35 5.64 11.40	0.06 0.00 0.06 11.46	11.46

INCOME EARNED

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Cusip	Security Description	Trade Date Settle Date Units	Book Value: Begin Book Value: Acq Book Value: Disp Book Value: End	Prior Accrued Inc. Received Ending Accrued Total Interest	Accr. Of Discount Amort. Of Premium Net Accret/Amort Income Earned	Total Income
43815GAC3	HAROT 2021-4 A3 0.88 01/21/2026	11/16/2021 11/24/2021 1,811.04	2,353.01 0.00 (542.04) 1,810.98	0.58 1.73 0.44 1.60	0.02 0.00 0.02 1.62	1.62
438516CL8	HONEYWELL INTERNATIONAL INC 4.25 01/15/2029	01/17/2024 01/19/2024 55,000.00	54,640.88 0.00 0.00 54,648.43	1,077.85 1,168.75 103.89 194.79	7.55 0.00 7.55 202.34	202.34
4581X0DV7	INTER-AMERICAN DEVELOPMENT BANK 0.875 04/20/2026	04/13/2021 04/20/2021 60,000.00	59,928.67 0.00 0.00 59,933.33	103.54 0.00 147.29 43.75	4.67 0.00 4.67 48.42	48.42
4581X0EN4	INTER-AMERICAN DEVELOPMENT BANK 4.125 02/15/2029	02/15/2024 02/20/2024 60,000.00	59,559.61 0.00 0.00 59,568.67	935.00 0.00 1,141.25 206.25	9.07 0.00 9.07 215.32	215.32
459058KT9	INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPM 3.5 07/12/2028	08/25/2023 08/29/2023 35,000.00	33,839.93 0.00 0.00 33,867.85	575.07 612.50 64.65 102.08	27.92 0.00 27.92 130.00	130.00
459058LN1	INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPM 3.875 10/16/2029	10/08/2024 10/16/2024 85,000.00	84,787.51 0.00 0.00 84,791.27	686.20 0.00 960.68 274.48	3.77 0.00 3.77 278.25	278.25
45950KDD9	INTERNATIONAL FINANCE CORP 4.5 07/13/2028	07/06/2023 07/13/2023 40,000.00	39,968.67 0.00 0.00 39,969.43	840.00 900.00 90.00 150.00	0.75 0.00 0.75 150.75	150.75
46647PAX4	JPMORGAN CHASE & CO 4.452 12/05/2029	12/09/2024 12/10/2024 70,000.00	69,335.40 0.00 0.00 69,349.76	225.07 0.00 484.77 259.70	14.37 0.00 14.37 274.07	274.07
47787JAC2	JDOT 2022 A3 0.36 09/15/2026	03/10/2022 03/16/2022 3,831.24	4,391.15 0.00 (560.19) 3,831.01	4.53 8.49 3.95 7.91	0.05 0.00 0.05 7.96	7.96

INCOME EARNED

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Cusip	Security Description	Trade Date Settle Date Units	Book Value: Begin Book Value: Acq Book Value: Disp Book Value: End	Prior Accrued Inc. Received Ending Accrued Total Interest	Accr. Of Discount Amort. Of Premium Net Accret/Amort Income Earned	Total Income
47789QAC4	JDOT 2021-B A3 0.52 03/16/2026	07/13/2021 07/21/2021 1,415.91	1,900.95 0.00 (485.07) 1,415.89	0.44 0.82 0.33 0.71	0.01 0.00 0.01 0.72	0.72
47800AAC4	JDOT 2022-B A3 3.74 02/16/2027	07/12/2022 07/20/2022 14,017.50	15,260.82 0.00 (1,243.91) 14,016.97	25.37 47.56 23.30 45.49	0.07 0.00 0.07 45.56	45.56
47800BAC2	JDOT 2022-C A3 5.09 06/15/2027	10/12/2022 10/19/2022 28,627.44	30,487.40 0.00 (1,861.13) 28,626.38	68.97 129.32 64.76 125.11	0.11 0.00 0.11 125.22	125.22
58933YBH7	MERCK & CO INC 4.05 05/17/2028	05/08/2023 05/17/2023 15,000.00	14,991.81 0.00 0.00 14,992.01	74.25 0.00 124.88 50.63	0.21 0.00 0.21 50.83	50.83
61747YET8	MORGAN STANLEY 4.679 07/17/2026	07/18/2022 07/20/2022 30,000.00	30,000.00 0.00 0.00 30,000.00	639.46 701.85 54.59 116.98	0.00 0.00 0.00 116.98	116.98
665859AW4	NORTHERN TRUST CORP 4.0 05/10/2027	09/28/2022 09/30/2022 70,000.00	68,966.75 0.00 0.00 69,004.04	396.67 0.00 630.00 233.33	37.29 0.00 37.29 270.62	270.62
69371RS80	PACCAR FINANCIAL CORP 4.6 01/31/2029	01/24/2024 01/31/2024 60,000.00	59,920.19 0.00 0.00 59,921.85	1,157.67 1,380.00 7.67 230.00	1.66 0.00 1.66 231.66	231.66
74340XCG4	PROLOGIS LP 4.875 06/15/2028	09/27/2023 09/29/2023 60,000.00	58,716.29 0.00 0.00 58,747.84	130.00 0.00 373.75 243.75	31.56 0.00 31.56 275.31	275.31
857477BR3	STATE STREET CORP 1.746 02/06/2026	90,000.00	89,869.27 0.00 0.00 89,981.84	632.93 0.00 763.88 130.95	112.57 0.00 112.57 243.52	243.52

INCOME EARNED

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Cusip	Security Description	Trade Date Settle Date Units	Book Value: Begin Book Value: Acq Book Value: Disp Book Value: End	Prior Accrued Inc. Received Ending Accrued Total Interest	Accr. Of Discount Amort. Of Premium Net Accret/Amort Income Earned	Total Income
87612EBM7	TARGET CORP 1.95 01/15/2027	01/19/2022 01/24/2022 25,000.00	24,982.60 0.00 0.00 24,983.32	224.79 243.75 21.67 40.63	0.73 0.00 0.73 41.35	41.35
89115A2Y7	TORONTO-DOMINION BANK 4.994 04/05/2029	07/08/2024 07/09/2024 55,000.00	54,998.02 0.00 0.00 54,998.06	656.16 0.00 885.05 228.89	0.04 0.00 0.04 228.93	228.93
89236TJK2	TOYOTA MOTOR CREDIT CORP 1.125 06/18/2026	90,000.00	88,581.11 0.00 0.00 88,663.63	36.56 0.00 120.94 84.38	82.52 0.00 82.52 166.90	166.90
89238FAD5	TAOT 2022-B A3 2.93 09/15/2026	04/07/2022 04/13/2022 7,181.48	8,089.25 0.00 (907.82) 7,181.43	10.53 19.75 9.35 18.57	0.01 0.00 0.01 18.58	18.58
89238JAC9	TAOT 2021-D A3 0.71 04/15/2026	11/09/2021 11/15/2021 1,959.68	2,530.93 0.00 (571.27) 1,959.67	0.80 1.50 0.62 1.32	0.00 0.00 0.00 1.32	1.32
89239TAD4	TAOT 2024-D A3 4.4 06/15/2029	10/10/2024 10/17/2024 15,000.00	14,999.20 0.00 0.00 14,999.21	29.33 55.00 29.33 55.00	0.02 0.00 0.02 55.02	55.02
9128282A7	UNITED STATES TREASURY 1.5 08/15/2026	09/16/2021 09/17/2021 125,000.00	126,337.45 0.00 0.00 126,267.30	708.22 0.00 866.17 157.95	0.00 (70.15) (70.15) 87.79	87.79
91282CBH3	UNITED STATES TREASURY 0.375 01/31/2026	100,000.00	99,569.63 0.00 0.00 99,603.40	156.93 187.50 1.04 31.61	33.78 0.00 33.78 65.38	65.38
91282CBQ3	UNITED STATES TREASURY 0.5 02/28/2026	100,000.00	99,641.69 0.00 0.00 99,667.94	169.89 0.00 212.71 42.82	26.26 0.00 26.26 69.08	69.08

INCOME EARNED

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Cusip	Security Description	Trade Date Settle Date Units	Book Value: Begin Book Value: Acq Book Value: Disp Book Value: End	Prior Accrued Inc. Received Ending Accrued Total Interest	Accr. Of Discount Amort. Of Premium Net Accret/Amort Income Earned	Total Income
91282CBT7	UNITED STATES TREASURY 0.75 03/31/2026	 100,000.00	99,879.44 0.00 0.00 99,887.67	191.62 0.00 255.49 63.87	8.23 0.00 8.23 72.11	72.11
91282CCF6	UNITED STATES TREASURY 0.75 05/31/2026	08/25/2021 08/26/2021 125,000.00	124,911.79 0.00 0.00 124,917.10	82.42 0.00 162.26 79.84	5.31 0.00 5.31 85.15	85.15
91282CCP4	UNITED STATES TREASURY 0.625 07/31/2026	08/25/2021 08/26/2021 125,000.00	124,620.31 0.00 0.00 124,640.75	326.94 390.63 2.16 65.85	20.43 0.00 20.43 86.29	86.29
91282CDG3	UNITED STATES TREASURY 1.125 10/31/2026	 150,000.00	148,115.59 0.00 0.00 148,203.04	289.02 0.00 433.53 144.51	87.45 0.00 87.45 231.96	231.96
91282CEF4	UNITED STATES TREASURY 2.5 03/31/2027	05/25/2022 05/26/2022 90,000.00	89,560.78 0.00 0.00 89,577.41	574.86 0.00 766.48 191.62	16.62 0.00 16.62 208.25	208.25
91282CET4	UNITED STATES TREASURY 2.625 05/31/2027	06/21/2022 06/22/2022 150,000.00	147,490.47 0.00 0.00 147,578.87	346.15 0.00 681.49 335.34	88.40 0.00 88.40 423.74	423.74
91282CEV9	UNITED STATES TREASURY 3.25 06/30/2029	07/29/2024 07/30/2024 75,000.00	72,419.52 0.00 0.00 72,468.27	6.73 0.00 215.47 208.74	48.75 0.00 48.75 257.48	257.48
91282CFB2	UNITED STATES TREASURY 2.75 07/31/2027	08/30/2022 08/31/2022 125,000.00	123,387.37 0.00 0.00 123,440.49	1,438.52 1,718.75 9.50 289.73	53.13 0.00 53.13 342.85	342.85
91282CFJ5	UNITED STATES TREASURY 3.125 08/31/2029	 135,000.00	132,834.05 0.00 0.00 132,873.48	1,433.44 0.00 1,794.72 361.27	39.43 0.00 39.43 400.70	400.70

INCOME EARNED

CHANDLER ASSET MANAGEMENT

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Cusip	Security Description	Trade Date Settle Date Units	Book Value: Begin Book Value: Acq Book Value: Disp Book Value: End	Prior Accrued Inc. Received Ending Accrued Total Interest	Accr. Of Discount Amort. Of Premium Net Accret/Amort Income Earned	Total Income
91282CGC9	UNITED STATES TREASURY 3.875 12/31/2027	01/30/2023 01/31/2023 125,000.00	125,639.82 0.00 0.00 125,621.69	13.38 0.00 428.18 414.80	0.00 (18.13) (18.13) 396.67	396.67
91282CHE4	UNITED STATES TREASURY 3.625 05/31/2028	06/15/2023 06/16/2023 70,000.00	69,341.55 0.00 0.00 69,357.93	223.08 0.00 439.18 216.11	16.38 0.00 16.38 232.49	232.49
91282CJW2	UNITED STATES TREASURY 4.0 01/31/2029	02/26/2024 02/27/2024 90,000.00	88,966.20 0.00 0.00 88,987.69	1,506.52 1,800.00 9.94 303.42	21.49 0.00 21.49 324.92	324.92
91282CKD2	UNITED STATES TREASURY 4.25 02/28/2029	04/22/2024 04/23/2024 70,000.00	68,926.46 0.00 0.00 68,948.37	1,010.84 0.00 1,265.61 254.77	21.91 0.00 21.91 276.67	276.67
91282CKG5	UNITED STATES TREASURY 4.125 03/31/2029	75,000.00	73,987.54 0.00 0.00 74,007.79	790.44 0.00 1,053.91 263.48	20.25 0.00 20.25 283.73	283.73
91282CKP5	UNITED STATES TREASURY 4.625 04/30/2029	80,000.00	79,957.97 0.00 0.00 79,958.79	633.70 0.00 950.55 316.85	1.51 (0.69) 0.82 317.68	317.68
91282CKT7	UNITED STATES TREASURY 4.5 05/31/2029	06/27/2024 06/28/2024 60,000.00	60,476.70 0.00 0.00 60,467.52	237.36 0.00 467.31 229.95	0.00 (9.17) (9.17) 220.77	220.77
91282CKX8	UNITED STATES TREASURY 4.25 06/30/2029	07/08/2024 07/09/2024 55,000.00	55,046.57 0.00 0.00 55,045.69	6.46 0.00 206.63 200.17	0.00 (0.88) (0.88) 199.29	199.29
91282CLC3	UNITED STATES TREASURY 4.0 07/31/2029	07/29/2024 07/31/2024 95,000.00	94,683.99 0.00 0.00 94,689.85	1,590.22 1,900.00 10.50 320.28	5.86 0.00 5.86 326.14	326.14

INCOME EARNED

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Cusip	Security Description	Trade Date Settle Date Units	Book Value: Begin Book Value: Acq Book Value: Disp Book Value: End	Prior Accrued Inc. Received Ending Accrued Total Interest	Accr. Of Discount Amort. Of Premium Net Accret/Amort Income Earned	Total Income
91282CLN9	UNITED STATES TREASURY 3.5 09/30/2029	01/28/2025 01/29/2025 50,000.00	0.00 48,183.59 0.00 48,186.79	0.00 (581.73) 596.15 14.42	3.20 0.00 3.20 17.62	17.62
91282CLR0	UNITED STATES TREASURY 4.125 10/31/2029	11/19/2024 11/20/2024 60,000.00	59,713.84 0.00 0.00 59,718.87	423.90 0.00 635.84 211.95	5.03 0.00 5.03 216.98	216.98
91282CMA6	UNITED STATES TREASURY 4.125 11/30/2029	12/18/2024 12/19/2024 70,000.00	69,644.38 0.00 0.00 69,650.52	253.85 0.00 499.76 245.91	6.15 0.00 6.15 252.06	252.06
91282CMD0	UNITED STATES TREASURY 4.375 12/31/2029	12/30/2024 12/31/2024 65,000.00	64,972.09 0.00 0.00 64,972.56	7.86 0.00 251.38 243.53	0.47 0.00 0.47 244.00	244.00
91324PEC2	UNITEDHEALTH GROUP INC 1.15 05/15/2026	0.00	87,725.96 0.00 (87,853.53) 0.00	132.25 212.75 0.00 80.50	128.08 (0.51) 127.57 208.07	208.07
91324PFG2	UNITEDHEALTH GROUP INC 4.8 01/15/2030	01/28/2025 01/29/2025 60,000.00	0.00 59,883.60 0.00 59,883.79	0.00 (112.00) 128.00 16.00	0.19 0.00 0.19 16.19	16.19
931142ER0	WALMART INC 1.05 09/17/2026	09/08/2021 09/17/2021 10,000.00	9,993.54 0.00 0.00 9,993.86	30.33 0.00 39.08 8.75	0.32 0.00 0.32 9.07	9.07
Total Fixed Income		**4,805,592.76**	**4,757,128.56 108,067.19 (95,161.90) 4,771,352.44**	**30,515.09 11,541.73 31,302.34 12,328.98**	**1,558.75 (240.16) 1,318.59 13,647.57**	**13,647.57**
TOTAL PORTFOLIO		**4,819,348.02**	**4,774,339.15 127,468.29 (118,020.51) 4,785,107.70**	**30,515.09 11,611.76 31,302.34 12,399.01**	**1,558.75 (240.16) 1,318.59 13,717.60**	**13,717.60**

CASH FLOW REPORT

CHANDLER ASSET MANAGEMENT

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Payment Date	Transaction Type	CUSIP	Quantity	Security Description	Principal Amount	Income	Total Amount
FEBRUARY 2025							
02/06/2025	Coupon	857477BR3	90,000.00	STATE STREET CORP 1.746 02/06/2026		785.70	785.70
02/06/2025	Effective Maturity	857477BR3	90,000.00	STATE STREET CORP 1.746 02/06/2026	90,000.00		90,000.00
02/17/2025	Coupon	34535VAD6	30,000.00	FORDO 2024-D A3 4.61 08/15/2029		115.25	115.25
02/17/2025	Coupon	43815BAC4	6,748.47	HAROT 2022-1 A3 1.88 05/15/2026		10.57	10.57
02/17/2025	Principal Paydown	43815BAC4	6,748.47	HAROT 2022-1 A3 1.88 05/15/2026	1,025.05		1,025.05
02/17/2025	Coupon	47787JAC2	3,831.24	JDOT 2022 A3 0.36 09/15/2026		7.41	7.41
02/17/2025	Principal Paydown	47787JAC2	3,831.24	JDOT 2022 A3 0.36 09/15/2026	486.94		486.94
02/17/2025	Coupon	47789QAC4	1,415.91	JDOT 2021-B A3 0.52 03/16/2026		0.61	0.61
02/17/2025	Principal Paydown	47789QAC4	1,415.91	JDOT 2021-B A3 0.52 03/16/2026	554.21		554.21
02/17/2025	Coupon	47800AAC4	14,017.50	JDOT 2022-B A3 3.74 02/16/2027		43.69	43.69
02/17/2025	Principal Paydown	47800AAC4	14,017.50	JDOT 2022-B A3 3.74 02/16/2027	1,298.11		1,298.11
02/17/2025	Coupon	47800BAC2	28,627.44	JDOT 2022-C A3 5.09 06/15/2027		121.43	121.43
02/17/2025	Principal Paydown	47800BAC2	28,627.44	JDOT 2022-C A3 5.09 06/15/2027	2,050.94		2,050.94
02/17/2025	Coupon	89238FAD5	7,181.48	TAOT 2022-B A3 2.93 09/15/2026		17.53	17.53
02/17/2025	Principal Paydown	89238FAD5	7,181.48	TAOT 2022-B A3 2.93 09/15/2026	850.09		850.09
02/17/2025	Coupon	89238JAC9	1,959.68	TAOT 2021-D A3 0.71 04/15/2026		1.16	1.16
02/17/2025	Principal Paydown	89238JAC9	1,959.68	TAOT 2021-D A3 0.71 04/15/2026	549.69		549.69
02/17/2025	Coupon	89239TAD4	15,000.00	TAOT 2024-D A3 4.4 06/15/2029		55.00	55.00
02/18/2025	Coupon	4581X0EN4	60,000.00	INTER-AMERICAN DEVELOPMENT BANK 4.125 02/15/2029		1,237.50	1,237.50
02/18/2025	Coupon	9128282A7	125,000.00	UNITED STATES TREASURY 1.5 08/15/2026		937.50	937.50
02/21/2025	Coupon	43813YAC6	30,000.00	HAROT 2024-3 A3 4.57 03/21/2029		114.25	114.25
02/21/2025	Coupon	43815GAC3	1,811.04	HAROT 2021-4 A3 0.88 01/21/2026		1.33	1.33
02/21/2025	Principal Paydown	43815GAC3	1,811.04	HAROT 2021-4 A3 0.88 01/21/2026	482.73		482.73
02/25/2025	Coupon	3137FETN0	50,000.00	FHMS K-073 A2 3.35 01/25/2028		139.58	139.58
02/25/2025	Coupon	3137FG6X8	90,000.00	FHMS K-077 A2 3.85 05/25/2028		288.75	288.75
02/25/2025	Coupon	3137H4BY5	50,000.00	FHMS K-746 A2 2.031 09/25/2028		84.63	84.63
02/28/2025	Coupon	91282CBQ3	100,000.00	UNITED STATES TREASURY 0.5 02/28/2026		250.00	250.00
02/28/2025	Coupon	91282CFJ5	135,000.00	UNITED STATES TREASURY 3.125 08/31/2029		2,109.38	2,109.38
02/28/2025	Coupon	91282CKD2	70,000.00	UNITED STATES TREASURY 4.25 02/28/2029		1,487.50	1,487.50

CASH FLOW REPORT

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Payment Date	Transaction Type	CUSIP	Quantity	Security Description	Principal Amount	Income	Total Amount
February 2025 Total					**97,297.76**	**7,808.77**	**105,106.53**
MARCH 2025							
03/05/2025	Coupon	06051GHG7	45,000.00	BANK OF AMERICA CORP 3.97 03/05/2029		893.25	893.25
03/10/2025	Coupon	3130ATS57	60,000.00	FEDERAL HOME LOAN BANKS 4.5 03/10/2028		1,350.00	1,350.00
03/10/2025	Coupon	3130AWTR1	100,000.00	FEDERAL HOME LOAN BANKS 4.375 09/08/2028		2,187.50	2,187.50
03/17/2025	Coupon	084664CZ2	90,000.00	BERKSHIRE HATHAWAY FINANCE CORP 2.3 03/15/2027		1,035.00	1,035.00
03/17/2025	Coupon	09247XAN1	85,000.00	BLACKROCK FINANCE INC 3.2 03/15/2027		1,360.00	1,360.00
03/17/2025	Coupon	34535VAD6	30,000.00	FORDO 2024-D A3 4.61 08/15/2029		115.25	115.25
03/17/2025	Coupon	43815BAC4	6,748.47	HAROT 2022-1 A3 1.88 05/15/2026		8.97	8.97
03/17/2025	Principal Paydown	43815BAC4	6,748.47	HAROT 2022-1 A3 1.88 05/15/2026	995.72		995.72
03/17/2025	Coupon	47787JAC2	3,831.24	JDOT 2022 A3 0.36 09/15/2026		6.47	6.47
03/17/2025	Principal Paydown	47787JAC2	3,831.24	JDOT 2022 A3 0.36 09/15/2026	402.34		402.34
03/17/2025	Coupon	47789QAC4	1,415.91	JDOT 2021-B A3 0.52 03/16/2026		0.37	0.37
03/17/2025	Principal Paydown	47789QAC4	1,415.91	JDOT 2021-B A3 0.52 03/16/2026	477.09		477.09
03/17/2025	Coupon	47800AAC4	14,017.50	JDOT 2022-B A3 3.74 02/16/2027		39.64	39.64
03/17/2025	Principal Paydown	47800AAC4	14,017.50	JDOT 2022-B A3 3.74 02/16/2027	1,146.30		1,146.30
03/17/2025	Coupon	47800BAC2	28,627.44	JDOT 2022-C A3 5.09 06/15/2027		112.73	112.73
03/17/2025	Principal Paydown	47800BAC2	28,627.44	JDOT 2022-C A3 5.09 06/15/2027	1,908.33		1,908.33
03/17/2025	Coupon	89238FAD5	7,181.48	TAOT 2022-B A3 2.93 09/15/2026		15.46	15.46
03/17/2025	Principal Paydown	89238FAD5	7,181.48	TAOT 2022-B A3 2.93 09/15/2026	827.53		827.53
03/17/2025	Coupon	89238JAC9	1,959.68	TAOT 2021-D A3 0.71 04/15/2026		0.83	0.83
03/17/2025	Principal Paydown	89238JAC9	1,959.68	TAOT 2021-D A3 0.71 04/15/2026	533.73		533.73
03/17/2025	Coupon	89239TAD4	15,000.00	TAOT 2024-D A3 4.4 06/15/2029		55.00	55.00
03/17/2025	Coupon	931142ER0	10,000.00	WALMART INC 1.05 09/17/2026		52.50	52.50
03/21/2025	Coupon	43813YAC6	30,000.00	HAROT 2024-3 A3 4.57 03/21/2029		114.25	114.25
03/21/2025	Coupon	43815GAC3	1,811.04	HAROT 2021-4 A3 0.88 01/21/2026		0.97	0.97
03/21/2025	Principal Paydown	43815GAC3	1,811.04	HAROT 2021-4 A3 0.88 01/21/2026	469.33		469.33
03/24/2025	Coupon	3133EPWK7	130,000.00	FEDERAL FARM CREDIT BANKS FUNDING CORP 4.5 09/22/2028		2,925.00	2,925.00

CASH FLOW REPORT

CHANDLER ASSET MANAGEMENT

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Payment Date	Transaction Type	CUSIP	Quantity	Security Description	Principal Amount	Income	Total Amount
03/25/2025	Coupon	3137FETN0	50,000.00	FHMS K-073 A2 3.35 01/25/2028		139.58	139.58
03/25/2025	Coupon	3137FG6X8	90,000.00	FHMS K-077 A2 3.85 05/25/2028		288.75	288.75
03/25/2025	Coupon	3137H4BY5	50,000.00	FHMS K-746 A2 2.031 09/25/2028		84.63	84.63
03/31/2025	Coupon	437076CV2	55,000.00	HOME DEPOT INC 4.95 09/30/2026		1,361.25	1,361.25
03/31/2025	Coupon	91282CBT7	100,000.00	UNITED STATES TREASURY 0.75 03/31/2026		375.00	375.00
03/31/2025	Coupon	91282CEF4	90,000.00	UNITED STATES TREASURY 2.5 03/31/2027		1,125.00	1,125.00
03/31/2025	Coupon	91282CKG5	75,000.00	UNITED STATES TREASURY 4.125 03/31/2029		1,546.88	1,546.88
03/31/2025	Coupon	91282CLN9	50,000.00	UNITED STATES TREASURY 3.5 09/30/2029		875.00	875.00
March 2025 Total					**6,760.36**	**16,069.28**	**22,829.64**
APRIL 2025							
04/07/2025	Coupon	89115A2Y7	55,000.00	TORONTO-DOMINION BANK 4.994 04/05/2029		1,373.35	1,373.35
04/14/2025	Coupon	023135CF1	30,000.00	AMAZON.COM INC 3.3 04/13/2027		495.00	495.00
04/14/2025	Coupon	24422EVW6	90,000.00	JOHN DEERE CAPITAL CORP 1.3 10/13/2026		585.00	585.00
04/15/2025	Coupon	34535VAD6	30,000.00	FORDO 2024-D A3 4.61 08/15/2029		115.25	115.25
04/15/2025	Coupon	43815BAC4	6,748.47	HAROT 2022-1 A3 1.88 05/15/2026		7.41	7.41
04/15/2025	Principal Paydown	43815BAC4	6,748.47	HAROT 2022-1 A3 1.88 05/15/2026	1,007.91		1,007.91
04/15/2025	Coupon	47787JAC2	3,831.24	JDOT 2022 A3 0.36 09/15/2026		5.69	5.69
04/15/2025	Principal Paydown	47787JAC2	3,831.24	JDOT 2022 A3 0.36 09/15/2026	514.86		514.86
04/15/2025	Coupon	47789QAC4	1,415.91	JDOT 2021-B A3 0.52 03/16/2026		0.17	0.17
04/15/2025	Effective Maturity	47789QAC4	1,415.91	JDOT 2021-B A3 0.52 03/16/2026	384.60		384.60
04/15/2025	Coupon	47800AAC4	14,017.50	JDOT 2022-B A3 3.74 02/16/2027		36.07	36.07
04/15/2025	Principal Paydown	47800AAC4	14,017.50	JDOT 2022-B A3 3.74 02/16/2027	1,545.97		1,545.97
04/15/2025	Coupon	47800BAC2	28,627.44	JDOT 2022-C A3 5.09 06/15/2027		104.63	104.63
04/15/2025	Principal Paydown	47800BAC2	28,627.44	JDOT 2022-C A3 5.09 06/15/2027	2,270.64		2,270.64
04/15/2025	Coupon	89238FAD5	7,181.48	TAOT 2022-B A3 2.93 09/15/2026		13.44	13.44
04/15/2025	Principal Paydown	89238FAD5	7,181.48	TAOT 2022-B A3 2.93 09/15/2026	847.28		847.28
04/15/2025	Coupon	89238JAC9	1,959.68	TAOT 2021-D A3 0.71 04/15/2026		0.52	0.52
04/15/2025	Principal Paydown	89238JAC9	1,959.68	TAOT 2021-D A3 0.71 04/15/2026	536.91		536.91
04/15/2025	Coupon	89239TAD4	15,000.00	TAOT 2024-D A3 4.4 06/15/2029		55.00	55.00
04/16/2025	Coupon	459058LN1	85,000.00	INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPM 3.875 10/16/2029		1,646.88	1,646.88
04/21/2025	Coupon	43813YAC6	30,000.00	HAROT 2024-3 A3 4.57 03/21/2029		114.25	114.25

CASH FLOW REPORT

CHANDLER ASSET MANAGEMENT

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Payment Date	Transaction Type	CUSIP	Quantity	Security Description	Principal Amount	Income	Total Amount
04/21/2025	Coupon	43815GAC3	1,811.04	HAROT 2021-4 A3 0.88 01/21/2026		0.63	0.63
04/21/2025	Principal Paydown	43815GAC3	1,811.04	HAROT 2021-4 A3 0.88 01/21/2026	471.86		471.86
04/21/2025	Coupon	4581X0DV7	60,000.00	INTER-AMERICAN DEVELOPMENT BANK 0.875 04/20/2026		262.50	262.50
04/25/2025	Coupon	3137FETN0	50,000.00	FHMS K-073 A2 3.35 01/25/2028		139.58	139.58
04/25/2025	Coupon	3137FG6X8	90,000.00	FHMS K-077 A2 3.85 05/25/2028		288.75	288.75
04/25/2025	Coupon	3137H4BY5	50,000.00	FHMS K-746 A2 2.031 09/25/2028		84.63	84.63
04/30/2025	Coupon	91282CDG3	150,000.00	UNITED STATES TREASURY 1.125 10/31/2026		843.75	843.75
04/30/2025	Coupon	91282CKP5	80,000.00	UNITED STATES TREASURY 4.625 04/30/2029		1,850.00	1,850.00
04/30/2025	Coupon	91282CLR0	60,000.00	UNITED STATES TREASURY 4.125 10/31/2029		1,237.50	1,237.50
April 2025 Total					**7,580.05**	**9,259.99**	**16,840.03**
MAY 2025							
05/05/2025	Coupon	00440EAV9	60,000.00	CHUBB INA HOLDINGS LLC 3.35 05/03/2026		1,005.00	1,005.00
05/07/2025	Coupon	3135G06G3	65,000.00	FEDERAL NATIONAL MORTGAGE ASSOCIATION 0.5 11/07/2025		162.50	162.50
05/12/2025	Coupon	023135BX3	25,000.00	AMAZON.COM INC 1.0 05/12/2026		125.00	125.00
05/12/2025	Coupon	037833ET3	10,000.00	APPLE INC 4.0 05/10/2028		200.00	200.00
05/12/2025	Coupon	665859AW4	70,000.00	NORTHERN TRUST CORP 4.0 05/10/2027		1,400.00	1,400.00
05/13/2025	Coupon	3133EPC45	100,000.00	FEDERAL FARM CREDIT BANKS FUNDING CORP 4.625 11/13/2028		2,312.50	2,312.50
05/15/2025	Coupon	341081GN1	60,000.00	FLORIDA POWER & LIGHT CO 4.4 05/15/2028		1,320.00	1,320.00
05/15/2025	Coupon	34535VAD6	30,000.00	FORDO 2024-D A3 4.61 08/15/2029		115.25	115.25
05/15/2025	Coupon	43815BAC4	6,748.47	HAROT 2022-1 A3 1.88 05/15/2026		5.83	5.83
05/15/2025	Principal Paydown	43815BAC4	6,748.47	HAROT 2022-1 A3 1.88 05/15/2026	971.15		971.15
05/15/2025	Coupon	47787JAC2	3,831.24	JDOT 2022 A3 0.36 09/15/2026		4.69	4.69
05/15/2025	Principal Paydown	47787JAC2	3,831.24	JDOT 2022 A3 0.36 09/15/2026	475.20		475.20
05/15/2025	Coupon	47800AAC4	14,017.50	JDOT 2022-B A3 3.74 02/16/2027		31.25	31.25
05/15/2025	Principal Paydown	47800AAC4	14,017.50	JDOT 2022-B A3 3.74 02/16/2027	1,356.34		1,356.34
05/15/2025	Coupon	47800BAC2	28,627.44	JDOT 2022-C A3 5.09 06/15/2027		95.00	95.00
05/15/2025	Principal Paydown	47800BAC2	28,627.44	JDOT 2022-C A3 5.09 06/15/2027	1,979.86		1,979.86
05/15/2025	Coupon	89238FAD5	7,181.48	TAOT 2022-B A3 2.93 09/15/2026		11.37	11.37
05/15/2025	Principal Paydown	89238FAD5	7,181.48	TAOT 2022-B A3 2.93 09/15/2026	818.74		818.74

CASH FLOW REPORT

CHANDLER ASSET MANAGEMENT

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Payment Date	Transaction Type	CUSIP	Quantity	Security Description	Principal Amount	Income	Total Amount
05/15/2025	Coupon	89238JAC9	1,959.68	TAOT 2021-D A3 0.71 04/15/2026		0.20	0.20
05/15/2025	Effective Maturity	89238JAC9	1,959.68	TAOT 2021-D A3 0.71 04/15/2026	339.35		339.35
05/15/2025	Coupon	89239TAD4	15,000.00	TAOT 2024-D A3 4.4 06/15/2029		55.00	55.00
05/19/2025	Coupon	58933YBH7	15,000.00	MERCK & CO INC 4.05 05/17/2028		303.75	303.75
05/21/2025	Coupon	43813YAC6	30,000.00	HAROT 2024-3 A3 4.57 03/21/2029		114.25	114.25
05/21/2025	Coupon	43815GAC3	1,811.04	HAROT 2021-4 A3 0.88 01/21/2026		0.28	0.28
05/21/2025	Effective Maturity	43815GAC3	1,811.04	HAROT 2021-4 A3 0.88 01/21/2026	387.13		387.13
05/26/2025	Coupon	3137FETN0	50,000.00	FHMS K-073 A2 3.35 01/25/2028		139.58	139.58
05/26/2025	Coupon	3137FG6X8	90,000.00	FHMS K-077 A2 3.85 05/25/2028		288.75	288.75
05/26/2025	Coupon	3137H4BY5	50,000.00	FHMS K-746 A2 2.031 09/25/2028		84.63	84.63
May 2025 Total					**6,327.77**	**7,774.84**	**14,102.61**
JUNE 2025							
06/02/2025	Coupon	91282CCF6	125,000.00	UNITED STATES TREASURY 0.75 05/31/2026		468.75	468.75
06/02/2025	Coupon	91282CET4	150,000.00	UNITED STATES TREASURY 2.625 05/31/2027		1,968.75	1,968.75
06/02/2025	Coupon	91282CHE4	70,000.00	UNITED STATES TREASURY 3.625 05/31/2028		1,268.75	1,268.75
06/02/2025	Coupon	91282CKT7	60,000.00	UNITED STATES TREASURY 4.5 05/31/2029		1,350.00	1,350.00
06/02/2025	Coupon	91282CMA6	70,000.00	UNITED STATES TREASURY 4.125 11/30/2029		1,443.75	1,443.75
06/05/2025	Coupon	46647PAX4	70,000.00	JPMORGAN CHASE & CO 4.452 12/05/2029		1,558.20	1,558.20
06/09/2025	Coupon	3130AXQK7	80,000.00	FEDERAL HOME LOAN BANKS 4.75 12/08/2028		1,900.00	1,900.00
06/09/2025	Coupon	3130B1BC0	55,000.00	FEDERAL HOME LOAN BANKS 4.625 06/08/2029		1,271.88	1,271.88
06/16/2025	Coupon	34535VAD6	30,000.00	FORDO 2024-D A3 4.61 08/15/2029		115.25	115.25
06/16/2025	Coupon	43815BAC4	6,748.47	HAROT 2022-1 A3 1.88 05/15/2026		4.31	4.31
06/16/2025	Principal Paydown	43815BAC4	6,748.47	HAROT 2022-1 A3 1.88 05/15/2026	947.35		947.35
06/16/2025	Coupon	47787JAC2	3,831.24	JDOT 2022 A3 0.36 09/15/2026		3.77	3.77
06/16/2025	Principal Paydown	47787JAC2	3,831.24	JDOT 2022 A3 0.36 09/15/2026	384.54		384.54
06/16/2025	Coupon	47800AAC4	14,017.50	JDOT 2022-B A3 3.74 02/16/2027		27.02	27.02
06/16/2025	Principal Paydown	47800AAC4	14,017.50	JDOT 2022-B A3 3.74 02/16/2027	858.85		858.85
06/16/2025	Coupon	47800BAC2	28,627.44	JDOT 2022-C A3 5.09 06/15/2027		86.60	86.60
06/16/2025	Principal Paydown	47800BAC2	28,627.44	JDOT 2022-C A3 5.09 06/15/2027	1,710.66		1,710.66
06/16/2025	Coupon	74340XCG4	60,000.00	PROLOGIS LP 4.875 06/15/2028		1,462.50	1,462.50
06/16/2025	Coupon	89238FAD5	7,181.48	TAOT 2022-B A3 2.93 09/15/2026		9.37	9.37

CASH FLOW REPORT

CHANDLER ASSET MANAGEMENT

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Payment Date	Transaction Type	CUSIP	Quantity	Security Description	Principal Amount	Income	Total Amount
06/16/2025	Principal Paydown	89238FAD5	7,181.48	TAOT 2022-B A3 2.93 09/15/2026	803.14		803.14
06/16/2025	Coupon	89239TAD4	15,000.00	TAOT 2024-D A3 4.4 06/15/2029		55.00	55.00
06/18/2025	Coupon	89236TJK2	90,000.00	TOYOTA MOTOR CREDIT CORP 1.125 06/18/2026		506.25	506.25
06/23/2025	Coupon	43813YAC6	30,000.00	HAROT 2024-3 A3 4.57 03/21/2029		114.25	114.25
06/25/2025	Coupon	3137FETN0	50,000.00	FHMS K-073 A2 3.35 01/25/2028		139.58	139.58
06/25/2025	Coupon	3137FG6X8	90,000.00	FHMS K-077 A2 3.85 05/25/2028		288.75	288.75
06/25/2025	Coupon	3137H4BY5	50,000.00	FHMS K-746 A2 2.031 09/25/2028		84.63	84.63
06/30/2025	Coupon	91282CEV9	75,000.00	UNITED STATES TREASURY 3.25 06/30/2029		1,218.75	1,218.75
06/30/2025	Coupon	91282CGC9	125,000.00	UNITED STATES TREASURY 3.875 12/31/2027		2,421.88	2,421.88
06/30/2025	Coupon	91282CKX8	55,000.00	UNITED STATES TREASURY 4.25 06/30/2029		1,168.75	1,168.75
06/30/2025	Coupon	91282CMD0	65,000.00	UNITED STATES TREASURY 4.375 12/31/2029		1,421.88	1,421.88
June 2025 Total					**4,704.54**	**20,358.61**	**25,063.15**
JULY 2025							
07/14/2025	Coupon	459058KT9	35,000.00	INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPM 3.5 07/12/2028		612.50	612.50
07/14/2025	Coupon	45950KDD9	40,000.00	INTERNATIONAL FINANCE CORP 4.5 07/13/2028		900.00	900.00
07/15/2025	Coupon	34535VAD6	30,000.00	FORDO 2024-D A3 4.61 08/15/2029		115.25	115.25
07/15/2025	Coupon	43815BAC4	6,748.47	HAROT 2022-1 A3 1.88 05/15/2026		2.82	2.82
07/15/2025	Principal Paydown	43815BAC4	6,748.47	HAROT 2022-1 A3 1.88 05/15/2026	922.67		922.67
07/15/2025	Coupon	438516CL8	55,000.00	HONEYWELL INTERNATIONAL INC 4.25 01/15/2029		1,168.75	1,168.75
07/15/2025	Coupon	47787JAC2	3,831.24	JDOT 2022 A3 0.36 09/15/2026		3.03	3.03
07/15/2025	Principal Paydown	47787JAC2	3,831.24	JDOT 2022 A3 0.36 09/15/2026	455.37		455.37
07/15/2025	Coupon	47800AAC4	14,017.50	JDOT 2022-B A3 3.74 02/16/2027		24.35	24.35
07/15/2025	Principal Paydown	47800AAC4	14,017.50	JDOT 2022-B A3 3.74 02/16/2027	727.44		727.44
07/15/2025	Coupon	47800BAC2	28,627.44	JDOT 2022-C A3 5.09 06/15/2027		79.35	79.35
07/15/2025	Principal Paydown	47800BAC2	28,627.44	JDOT 2022-C A3 5.09 06/15/2027	1,867.36		1,867.36
07/15/2025	Coupon	87612EBM7	25,000.00	TARGET CORP 1.95 01/15/2027		243.75	243.75
07/15/2025	Coupon	89238FAD5	7,181.48	TAOT 2022-B A3 2.93 09/15/2026		7.41	7.41
07/15/2025	Principal Paydown	89238FAD5	7,181.48	TAOT 2022-B A3 2.93 09/15/2026	745.69		745.69

CASH FLOW REPORT

CHANDLER ASSET MANAGEMENT

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Payment Date	Transaction Type	CUSIP	Quantity	Security Description	Principal Amount	Income	Total Amount
07/15/2025	Coupon	89239TAD4	15,000.00	TAOT 2024-D A3 4.4 06/15/2029		55.00	55.00
07/15/2025	Coupon	91324PFG2	60,000.00	UNITEDHEALTH GROUP INC 4.8 01/15/2030		1,440.00	1,440.00
07/17/2025	Coupon	61747YET8	30,000.00	MORGAN STANLEY 4.679 07/17/2026		701.85	701.85
07/17/2025	Effective Maturity	61747YET8	30,000.00	MORGAN STANLEY 4.679 07/17/2026	30,000.00		30,000.00
07/21/2025	Coupon	43813YAC6	30,000.00	HAROT 2024-3 A3 4.57 03/21/2029		114.25	114.25
07/25/2025	Coupon	3137FETN0	50,000.00	FHMS K-073 A2 3.35 01/25/2028		139.58	139.58
07/25/2025	Coupon	3137FG6X8	90,000.00	FHMS K-077 A2 3.85 05/25/2028		288.75	288.75
07/25/2025	Coupon	3137H4BY5	50,000.00	FHMS K-746 A2 2.031 09/25/2028		84.63	84.63
07/31/2025	Coupon	69371RS80	60,000.00	PACCAR FINANCIAL CORP 4.6 01/31/2029		1,380.00	1,380.00
07/31/2025	Coupon	91282CBH3	100,000.00	UNITED STATES TREASURY 0.375 01/31/2026		187.50	187.50
07/31/2025	Coupon	91282CCP4	125,000.00	UNITED STATES TREASURY 0.625 07/31/2026		390.63	390.63
07/31/2025	Coupon	91282CFB2	125,000.00	UNITED STATES TREASURY 2.75 07/31/2027		1,718.75	1,718.75
07/31/2025	Coupon	91282CJW2	90,000.00	UNITED STATES TREASURY 4.0 01/31/2029		1,800.00	1,800.00
07/31/2025	Coupon	91282CLC3	95,000.00	UNITED STATES TREASURY 4.0 07/31/2029		1,900.00	1,900.00
July 2025 Total					**34,718.53**	**13,358.14**	**48,076.67**
AUGUST 2025							
08/15/2025	Coupon	34535VAD6	30,000.00	FORDO 2024-D A3 4.61 08/15/2029		115.25	115.25
08/15/2025	Coupon	43815BAC4	6,748.47	HAROT 2022-1 A3 1.88 05/15/2026		1.38	1.38
08/15/2025	Effective Maturity	43815BAC4	6,748.47	HAROT 2022-1 A3 1.88 05/15/2026	878.63		878.63
08/15/2025	Coupon	4581X0EN4	60,000.00	INTER-AMERICAN DEVELOPMENT BANK 4.125 02/15/2029		1,237.50	1,237.50
08/15/2025	Coupon	47787JAC2	3,831.24	JDOT 2022 A3 0.36 09/15/2026		2.15	2.15
08/15/2025	Principal Paydown	47787JAC2	3,831.24	JDOT 2022 A3 0.36 09/15/2026	412.59		412.59
08/15/2025	Coupon	47800AAC4	14,017.50	JDOT 2022-B A3 3.74 02/16/2027		22.08	22.08
08/15/2025	Principal Paydown	47800AAC4	14,017.50	JDOT 2022-B A3 3.74 02/16/2027	682.63		682.63
08/15/2025	Coupon	47800BAC2	28,627.44	JDOT 2022-C A3 5.09 06/15/2027		71.43	71.43
08/15/2025	Principal Paydown	47800BAC2	28,627.44	JDOT 2022-C A3 5.09 06/15/2027	1,803.29		1,803.29
08/15/2025	Coupon	89238FAD5	7,181.48	TAOT 2022-B A3 2.93 09/15/2026		5.59	5.59
08/15/2025	Principal Paydown	89238FAD5	7,181.48	TAOT 2022-B A3 2.93 09/15/2026	720.47		720.47
08/15/2025	Coupon	89239TAD4	15,000.00	TAOT 2024-D A3 4.4 06/15/2029		55.00	55.00
08/15/2025	Coupon	9128282A7	125,000.00	UNITED STATES TREASURY 1.5 08/15/2026		937.50	937.50
08/21/2025	Coupon	43813YAC6	30,000.00	HAROT 2024-3 A3 4.57 03/21/2029		114.25	114.25

CASH FLOW REPORT

CHANDLER ASSET MANAGEMENT

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Payment Date	Transaction Type	CUSIP	Quantity	Security Description	Principal Amount	Income	Total Amount
08/25/2025	Coupon	3137FETN0	50,000.00	FHMS K-073 A2 3.35 01/25/2028		139.58	139.58
08/25/2025	Coupon	3137FG6X8	90,000.00	FHMS K-077 A2 3.85 05/25/2028		288.75	288.75
08/25/2025	Coupon	3137H4BY5	50,000.00	FHMS K-746 A2 2.031 09/25/2028		84.63	84.63
August 2025 Total					**4,497.60**	**3,075.08**	**7,572.68**
SEPTEMBER 2025							
09/02/2025	Coupon	91282CBQ3	100,000.00	UNITED STATES TREASURY 0.5 02/28/2026		250.00	250.00
09/02/2025	Coupon	91282CFJ5	135,000.00	UNITED STATES TREASURY 3.125 08/31/2029		2,109.38	2,109.38
09/02/2025	Coupon	91282CKD2	70,000.00	UNITED STATES TREASURY 4.25 02/28/2029		1,487.50	1,487.50
09/05/2025	Coupon	06051GHG7	45,000.00	BANK OF AMERICA CORP 3.97 03/05/2029		893.25	893.25
09/08/2025	Coupon	3130AWTR1	100,000.00	FEDERAL HOME LOAN BANKS 4.375 09/08/2028		2,187.50	2,187.50
09/10/2025	Coupon	3130ATS57	60,000.00	FEDERAL HOME LOAN BANKS 4.5 03/10/2028		1,350.00	1,350.00
09/15/2025	Coupon	084664CZ2	90,000.00	BERKSHIRE HATHAWAY FINANCE CORP 2.3 03/15/2027		1,035.00	1,035.00
09/15/2025	Coupon	09247XAN1	85,000.00	BLACKROCK FINANCE INC 3.2 03/15/2027		1,360.00	1,360.00
09/15/2025	Coupon	34535VAD6	30,000.00	FORDO 2024-D A3 4.61 08/15/2029		115.25	115.25
09/15/2025	Coupon	47787JAC2	3,831.24	JDOT 2022 A3 0.36 09/15/2026		1.35	1.35
09/15/2025	Principal Paydown	47787JAC2	3,831.24	JDOT 2022 A3 0.36 09/15/2026	401.85		401.85
09/15/2025	Coupon	47800AAC4	14,017.50	JDOT 2022-B A3 3.74 02/16/2027		19.95	19.95
09/15/2025	Principal Paydown	47800AAC4	14,017.50	JDOT 2022-B A3 3.74 02/16/2027	711.03		711.03
09/15/2025	Coupon	47800BAC2	28,627.44	JDOT 2022-C A3 5.09 06/15/2027		63.78	63.78
09/15/2025	Principal Paydown	47800BAC2	28,627.44	JDOT 2022-C A3 5.09 06/15/2027	1,550.88		1,550.88
09/15/2025	Coupon	89238FAD5	7,181.48	TAOT 2022-B A3 2.93 09/15/2026		3.83	3.83
09/15/2025	Principal Paydown	89238FAD5	7,181.48	TAOT 2022-B A3 2.93 09/15/2026	706.38		706.38
09/15/2025	Coupon	89239TAD4	15,000.00	TAOT 2024-D A3 4.4 06/15/2029		55.00	55.00
09/17/2025	Coupon	931142ER0	10,000.00	WALMART INC 1.05 09/17/2026		52.50	52.50
09/22/2025	Coupon	3133EPWK7	130,000.00	FEDERAL FARM CREDIT BANKS FUNDING CORP 4.5 09/22/2028		2,925.00	2,925.00
09/22/2025	Coupon	43813YAC6	30,000.00	HAROT 2024-3 A3 4.57 03/21/2029		114.25	114.25
09/25/2025	Coupon	3137FETN0	50,000.00	FHMS K-073 A2 3.35 01/25/2028		139.58	139.58
09/25/2025	Coupon	3137FG6X8	90,000.00	FHMS K-077 A2 3.85 05/25/2028		288.75	288.75
09/25/2025	Coupon	3137H4BY5	50,000.00	FHMS K-746 A2 2.031 09/25/2028		84.63	84.63

CASH FLOW REPORT

CHANDLER ASSET MANAGEMENT

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Payment Date	Transaction Type	CUSIP	Quantity	Security Description	Principal Amount	Income	Total Amount
09/30/2025	Coupon	437076CV2	55,000.00	HOME DEPOT INC 4.95 09/30/2026		1,361.25	1,361.25
09/30/2025	Coupon	91282CBT7	100,000.00	UNITED STATES TREASURY 0.75 03/31/2026		375.00	375.00
09/30/2025	Coupon	91282CEF4	90,000.00	UNITED STATES TREASURY 2.5 03/31/2027		1,125.00	1,125.00
09/30/2025	Coupon	91282CKG5	75,000.00	UNITED STATES TREASURY 4.125 03/31/2029		1,546.88	1,546.88
09/30/2025	Coupon	91282CLN9	50,000.00	UNITED STATES TREASURY 3.5 09/30/2029		875.00	875.00
September 2025 Total					**3,370.15**	**19,819.62**	**23,189.77**
OCTOBER 2025							
10/06/2025	Coupon	89115A2Y7	55,000.00	TORONTO-DOMINION BANK 4.994 04/05/2029		1,373.35	1,373.35
10/14/2025	Coupon	023135CF1	30,000.00	AMAZON.COM INC 3.3 04/13/2027		495.00	495.00
10/14/2025	Coupon	24422EVW6	90,000.00	JOHN DEERE CAPITAL CORP 1.3 10/13/2026		585.00	585.00
10/15/2025	Coupon	34535VAD6	30,000.00	FORDO 2024-D A3 4.61 08/15/2029		115.25	115.25
10/15/2025	Coupon	47787JAC2	3,831.24	JDOT 2022 A3 0.36 09/15/2026		0.58	0.58
10/15/2025	Effective Maturity	47787JAC2	3,831.24	JDOT 2022 A3 0.36 09/15/2026	297.55		297.55
10/15/2025	Coupon	47800AAC4	14,017.50	JDOT 2022-B A3 3.74 02/16/2027		17.74	17.74
10/15/2025	Principal Paydown	47800AAC4	14,017.50	JDOT 2022-B A3 3.74 02/16/2027	832.28		832.28
10/15/2025	Coupon	47800BAC2	28,627.44	JDOT 2022-C A3 5.09 06/15/2027		57.20	57.20
10/15/2025	Principal Paydown	47800BAC2	28,627.44	JDOT 2022-C A3 5.09 06/15/2027	1,157.95		1,157.95
10/15/2025	Coupon	89238FAD5	7,181.48	TAOT 2022-B A3 2.93 09/15/2026		2.11	2.11
10/15/2025	Principal Paydown	89238FAD5	7,181.48	TAOT 2022-B A3 2.93 09/15/2026	685.10		685.10
10/15/2025	Coupon	89239TAD4	15,000.00	TAOT 2024-D A3 4.4 06/15/2029		55.00	55.00
10/16/2025	Coupon	459058LN1	85,000.00	INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPM 3.875 10/16/2029		1,646.88	1,646.88
10/20/2025	Coupon	4581X0DV7	60,000.00	INTER-AMERICAN DEVELOPMENT BANK 0.875 04/20/2026		262.50	262.50
10/21/2025	Coupon	43813YAC6	30,000.00	HAROT 2024-3 A3 4.57 03/21/2029		114.25	114.25
10/27/2025	Coupon	3137FETN0	50,000.00	FHMS K-073 A2 3.35 01/25/2028		139.58	139.58
10/27/2025	Coupon	3137FG6X8	90,000.00	FHMS K-077 A2 3.85 05/25/2028		288.75	288.75
10/27/2025	Coupon	3137H4BY5	50,000.00	FHMS K-746 A2 2.031 09/25/2028		84.63	84.63
10/31/2025	Coupon	91282CDG3	150,000.00	UNITED STATES TREASURY 1.125 10/31/2026		843.75	843.75
10/31/2025	Coupon	91282CKP5	80,000.00	UNITED STATES TREASURY 4.625 04/30/2029		1,850.00	1,850.00
10/31/2025	Coupon	91282CLR0	60,000.00	UNITED STATES TREASURY 4.125 10/31/2029		1,237.50	1,237.50

CASH FLOW REPORT

CHANDLER ASSET MANAGEMENT

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Payment Date	Transaction Type	CUSIP	Quantity	Security Description	Principal Amount	Income	Total Amount
October 2025 Total					**2,972.88**	**9,169.05**	**12,141.93**
NOVEMBER 2025							
11/03/2025	Coupon	00440EAV9	60,000.00	CHUBB INA HOLDINGS LLC 3.35 05/03/2026		1,005.00	1,005.00
11/07/2025	Coupon	3135G06G3	65,000.00	FEDERAL NATIONAL MORTGAGE ASSOCIATION 0.5 11/07/2025		162.50	162.50
11/07/2025	Final Maturity	3135G06G3	65,000.00	FEDERAL NATIONAL MORTGAGE ASSOCIATION 0.5 11/07/2025	65,000.00		65,000.00
11/10/2025	Coupon	037833ET3	10,000.00	APPLE INC 4.0 05/10/2028		200.00	200.00
11/10/2025	Coupon	665859AW4	70,000.00	NORTHERN TRUST CORP 4.0 05/10/2027		1,400.00	1,400.00
11/12/2025	Coupon	023135BX3	25,000.00	AMAZON.COM INC 1.0 05/12/2026		125.00	125.00
11/13/2025	Coupon	3133EPC45	100,000.00	FEDERAL FARM CREDIT BANKS FUNDING CORP 4.625 11/13/2028		2,312.50	2,312.50
11/17/2025	Coupon	341081GN1	60,000.00	FLORIDA POWER & LIGHT CO 4.4 05/15/2028		1,320.00	1,320.00
11/17/2025	Coupon	34535VAD6	30,000.00	FORDO 2024-D A3 4.61 08/15/2029		115.25	115.25
11/17/2025	Coupon	47800AAC4	14,017.50	JDOT 2022-B A3 3.74 02/16/2027		15.14	15.14
11/17/2025	Principal Paydown	47800AAC4	14,017.50	JDOT 2022-B A3 3.74 02/16/2027	886.30		886.30
11/17/2025	Coupon	47800BAC2	28,627.44	JDOT 2022-C A3 5.09 06/15/2027		52.29	52.29
11/17/2025	Principal Paydown	47800BAC2	28,627.44	JDOT 2022-C A3 5.09 06/15/2027	1,268.94		1,268.94
11/17/2025	Coupon	58933YBH7	15,000.00	MERCK & CO INC 4.05 05/17/2028		303.75	303.75
11/17/2025	Coupon	89238FAD5	7,181.48	TAOT 2022-B A3 2.93 09/15/2026		0.43	0.43
11/17/2025	Effective Maturity	89238FAD5	7,181.48	TAOT 2022-B A3 2.93 09/15/2026	177.05		177.05
11/17/2025	Coupon	89239TAD4	15,000.00	TAOT 2024-D A3 4.4 06/15/2029		55.00	55.00
11/21/2025	Coupon	43813YAC6	30,000.00	HAROT 2024-3 A3 4.57 03/21/2029		114.25	114.25
11/25/2025	Coupon	3137FETN0	50,000.00	FHMS K-073 A2 3.35 01/25/2028		139.58	139.58
11/25/2025	Coupon	3137FG6X8	90,000.00	FHMS K-077 A2 3.85 05/25/2028		288.75	288.75
11/25/2025	Coupon	3137H4BY5	50,000.00	FHMS K-746 A2 2.031 09/25/2028		84.63	84.63
November 2025 Total					**67,332.29**	**7,694.07**	**75,026.36**
DECEMBER 2025							
12/01/2025	Coupon	91282CCF6	125,000.00	UNITED STATES TREASURY 0.75 05/31/2026		468.75	468.75
12/01/2025	Coupon	91282CET4	150,000.00	UNITED STATES TREASURY 2.625 05/31/2027		1,968.75	1,968.75
12/01/2025	Coupon	91282CHE4	70,000.00	UNITED STATES TREASURY 3.625 05/31/2028		1,268.75	1,268.75

CASH FLOW REPORT

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Payment Date	Transaction Type	CUSIP	Quantity	Security Description	Principal Amount	Income	Total Amount
12/01/2025	Coupon	91282CKT7	60,000.00	UNITED STATES TREASURY 4.5 05/31/2029		1,350.00	1,350.00
12/01/2025	Coupon	91282CMA6	70,000.00	UNITED STATES TREASURY 4.125 11/30/2029		1,443.75	1,443.75
12/05/2025	Coupon	46647PAX4	70,000.00	JPMORGAN CHASE & CO 4.452 12/05/2029		1,558.20	1,558.20
12/08/2025	Coupon	3130AXQK7	80,000.00	FEDERAL HOME LOAN BANKS 4.75 12/08/2028		1,900.00	1,900.00
12/08/2025	Coupon	3130B1BC0	55,000.00	FEDERAL HOME LOAN BANKS 4.625 06/08/2029		1,271.88	1,271.88
12/15/2025	Coupon	34535VAD6	30,000.00	FORDO 2024-D A3 4.61 08/15/2029		115.25	115.25
12/15/2025	Coupon	47800AAC4	14,017.50	JDOT 2022-B A3 3.74 02/16/2027		12.38	12.38
12/15/2025	Principal Paydown	47800AAC4	14,017.50	JDOT 2022-B A3 3.74 02/16/2027	661.32		661.32
12/15/2025	Coupon	47800BAC2	28,627.44	JDOT 2022-C A3 5.09 06/15/2027		46.91	46.91
12/15/2025	Principal Paydown	47800BAC2	28,627.44	JDOT 2022-C A3 5.09 06/15/2027	1,032.32		1,032.32
12/15/2025	Coupon	74340XCG4	60,000.00	PROLOGIS LP 4.875 06/15/2028		1,462.50	1,462.50
12/15/2025	Coupon	89239TAD4	15,000.00	TAOT 2024-D A3 4.4 06/15/2029		55.00	55.00
12/18/2025	Coupon	89236TJK2	90,000.00	TOYOTA MOTOR CREDIT CORP 1.125 06/18/2026		506.25	506.25
12/22/2025	Coupon	43813YAC6	30,000.00	HAROT 2024-3 A3 4.57 03/21/2029		114.25	114.25
12/25/2025	Coupon	3137FETN0	50,000.00	FHMS K-073 A2 3.35 01/25/2028		139.58	139.58
12/25/2025	Coupon	3137FG6X8	90,000.00	FHMS K-077 A2 3.85 05/25/2028		288.75	288.75
12/25/2025	Coupon	3137H4BY5	50,000.00	FHMS K-746 A2 2.031 09/25/2028		84.63	84.63
12/31/2025	Coupon	91282CEV9	75,000.00	UNITED STATES TREASURY 3.25 06/30/2029		1,218.75	1,218.75
12/31/2025	Coupon	91282CGC9	125,000.00	UNITED STATES TREASURY 3.875 12/31/2027		2,421.88	2,421.88
12/31/2025	Coupon	91282CKX8	55,000.00	UNITED STATES TREASURY 4.25 06/30/2029		1,168.75	1,168.75
12/31/2025	Coupon	91282CMD0	65,000.00	UNITED STATES TREASURY 4.375 12/31/2029		1,421.88	1,421.88
December 2025 Total					**1,693.64**	**20,286.82**	**21,980.46**
Grand Total			**12,403,920.46**		**237,255.57**	**134,674.27**	**371,929.83**

IMPORTANT DISCLOSURES

Chandler Asset Management, Inc. (“Chandler”) is an SEC registered investment adviser. For additional information about our firm, please see our current disclosures (Form ADV). To obtain a copy of our current disclosures, you may contact your client service representative by calling the number on the front of this statement or you may visit our website at www.chandlerasset.com.

Information contained in this monthly statement is confidential and is provided for informational purposes only and should not be construed as specific investment or legal advice. The information contained herein was obtained from sources believed to be reliable as of the date of this statement, but may become outdated or superseded at any time without notice.

Custody: Your qualified custodian bank maintains control of all assets reflected in this statement and we urge you to compare this statement to the one you receive from your qualified custodian. Chandler does not have any authority to withdraw or deposit funds from/to the custodian account.

Valuation: Prices are provided by IDC, an independent pricing source. In the event IDC does not provide a price or if the price provided is not reflective of fair market value, Chandler will obtain pricing from an alternative approved third party pricing source in accordance with our written valuation policy and procedures. Our valuation procedures are also disclosed in Item 5 of our Form ADV Part 2A.

Performance: Performance results are presented gross-of-advisory fees and represent the client’s Total Return. The deduction of advisory fees lowers performance results. These results include the reinvestment of dividends and other earnings. Past performance may not be indicative of future results. Therefore, clients should not assume that future performance of any specific investment or investment strategy will be profitable or equal to past performance levels. All investment strategies have the potential for profit or loss. Economic factors, market conditions or changes in investment strategies, contributions or withdrawals may materially alter the performance and results of your portfolio.

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Index returns assume reinvestment of all distributions. Historical performance results for investment indexes generally do not reflect the deduction of transaction and/or custodial charges or the deduction of an investment management fee, the incurrence of which would have the effect of decreasing historical performance results. It is not possible to invest directly in an index.

Ratings: Ratings information have been provided by Moody’s, S&P and Fitch through data feeds we believe to be reliable as of the date of this statement, however we cannot guarantee its accuracy.

Security level ratings for U.S. Agency issued mortgage-backed securities (“MBS”) reflect the issuer rating because the securities themselves are not rated. The issuing U.S. Agency guarantees the full and timely payment of both principal and interest and carries a high rating by S&P, Moody’s and Fitch respectively.

BENCHMARK INDEX & DISCLOSURES

Three Valleys Municipal Water District | Account #10065 | As of January 31, 2025

Benchmark	Disclosure
ICE BofA 1-5 Yr US Treasury & Agency Index	The ICE BofA 1-5 Year US Treasury & Agency Index tracks the performance of US dollar denominated US Treasury and nonsubordinated US agency debt issued in the US domestic market. Qualifying securities must have an investment grade rating (based on an average of Moody's, S&P and Fitch). Qualifying securities must have at least one year remaining term to final maturity and less than five years remaining term to final maturity, at least 18 months to maturity at time of issuance, a fixed coupon schedule, and a minimum amount outstanding of $1 billion for sovereigns and $250 million for agencies.

THREE VALLEYS MUNICIPAL WATER DISTRICT

BOARD INFORMATION

BOARD OF DIRECTORS
STAFF REPORT

To: TVMWD Board of Directors

From: Matthew H. Litchfield, General Manager

Date: February 19, 2025

Subject: YTD District Budget Status Report

☐ Funds Budgeted: $ ☐ Fiscal Impact: $

Staff Recommendation
No Action Necessary – Informational Item Only

Discussion
Attached for review is the YTD District Budget Status Report for the period ending January 31, 2025.

Water Sales YTD actuals are performing better than expected by 6.3% as of January of the fiscal year. The total expenditures are trending on target at 58.2% percent of the total budget.

Grants and Other Revenue are earning $85,000 more than budget due to a reimbursement request from the USBR WaterSmart Grant.

Environmental Impact
None

Strategic Plan Objective(s)
2.1 – Financial Stability

Attachment(s)
Exhibit A – YTD District Budget Status Report

Meeting History
None

NA/BA

THREE VALLEYS MUNICIPAL WATER DISTRICT
DISTRICT BUDGET - FISCAL YEAR 2023-2024
Month Ending January 31, 2025

	2024-2025 YTD Actuals	Annual Budget All Funds	2024-2025 Percent of Budget	2024-2025 Balance Remaining
REVENUES				
OPERATING REVENUES				
Water Sales	43,348,440	67,409,065	64.3%	24,060,625
MWD RTS Standby Charge	3,094,109	6,186,637	50.0%	3,092,528
MWD Capacity Charge Assessment	924,305	1,673,430	55.2%	749,125
TVMWD Fixed Charges	548,229	987,458	55.5%	439,229
Hydroelectric Revenue	104,576	240,000	43.6%	135,424
NON-OPERATING REVENUES				
Property Taxes	1,749,858	3,100,478	56.4%	1,350,620
Interest Income	291,660	215,000	135.7%	(76,660)
Pumpback O&M Reimbursement	1,015	10,000	10.2%	8,985
Grants and Other Revenue	90,991	5,844	1557.0%	(85,147)
TOTAL REVENUES	**50,153,183**	**79,827,912**	**62.8%**	**29,674,729**
EXPENSES				
OPERATING EXPENSES				
MWD Water Purchases	33,757,372	58,021,969	58.2%	24,264,597
MWD RTS Standby Charge	2,877,669	6,186,637	46.5%	3,308,968
Staff Compensation	3,728,725	5,934,749	62.8%	2,206,024
MWD Capacity Charge	774,480	1,673,430	46.3%	898,950
Operations and Maintenance	1,544,394	2,416,019	63.9%	871,625
Professional Services	552,724	781,492	70.7%	228,768
Directors Compensation	139,009	325,165	42.8%	186,156
Communication and Conservation Programs	73,588	166,000	44.3%	92,412
Planning & Resources	322,212	620,000	52.0%	297,788
Membership Dues and Fees	74,307	101,100	73.5%	26,793
Hydroelectric Facilities	26,880	60,000	44.8%	33,120
Board Elections	-	-	0.0%	-
NON OPERATING EXPENSES				
Pumpback O&M Expenses	2,003	10,000	20.0%	7,997
RESERVE EXPENSES				
Reserve Replenishment	-	390,000	0.0%	390,000
CAPITAL INVESTMENT				
Capital Repair & Replacement	380,988	1,614,928	23.6%	1,233,940
Capital Investment Program	221,924	2,541,697	8.7%	2,319,773
TOTAL EXPENSES	**44,476,274**	**80,843,185**	**55.0%**	**36,366,911**
NET INCOME (LOSS) BEFORE TRANSFERS		(1,015,273)		
TRANSFER FROM/(TO) CAPITAL RESERVES		(659,078)		
TRANSFER IN FROM BOARD ELECTION RESERVES				
TRANSFER IN FROM ENCUMBERED RESERVES		2,024,878		
NET INCOME (LOSS) AFTER TRANSFERS		$ 350,527		

***This budget is prepared on a modified cash-basis of accounting, which is a basis of accounting other than generally accepted accounting principles (GAAP).*

THREE VALLEYS MUNICIPAL WATER DISTRICT

BOARD ACTION

BOARD OF DIRECTORS
STAFF REPORT

To: TVMWD Board of Directors

From: Matthew H. Litchfield, General Manager

Date: February 19, 2025

Subject: Warrant List

☐ Funds Budgeted: $ ☒ Fiscal Impact: $ 5,261,176.39

Staff Recommendation
Receive and file the Warrant List for the period ending January 31, 2025, as presented.

Discussion
The monthly warrant list is provided for your information.

General checks 54553 through 54654 totaling $736,099.91 are listed on pages 1 to 6.

MWD November 2024 water invoice totaling $4,089,532.29 are listed on page 6.

Wire transfers for taxing agencies, benefit payments and PERS totaling $216,023.45 are listed on page 6 and 7.

Total payroll checks 16730 through 16787 totaling $219,520.74 are listed on page 7.

Environmental Impact
None

Strategic Plan Objective(s)
2.1 – Financial Stability

Attachment(s)
Exhibit A – Warrant List

Meeting History
None

NA/BA

THREE VALLEYS MUNICIPAL WATER DISTRICT

January 2025
General Checks 54553 through 54654
Payroll Wire Transfer 3838 through 3851
Payroll Checks 16730 through 16787

Check Number	Vendor	Description	Paid Amount
54553	APPLIED TECHNOLOGY GROUP, INC	MONTHLY CHARGE PWAG ASSIGNED RADIO JANUARY	30.00
54554	CHARLES P. CROWLEY COMPANY	SUPPLIES	479.35
54555	CHARTER COMMUNICATNS HOLDINGS, LLC	BROADBAND SERVICES-WILLIAMS/PLANT 2/FULTON	126.23
54556	DISCOUNTCELL LLC	OUTDOOR ADAPTER	1,682.75
54557	FRONTIER	HQ INTERNET 12/25/2024-1/24/2025	1,110.00
54558	FUERTEZ TRACTOR SERVICE, INC.	MOBILIZATION FEE/ CAT LOADER RENTAL FEE	30,000.00
54559	GOLDEN STATE WATER COMPANY	MIRAGRAND WATER PURCHASE - SERVICE PERIOD NOV 14- DEC 16	180.75
54560	HACH COMPANY	LAB SUPPLIES	1,015.31
54561	HIGHROAD INFORMATION TECH, LLC	GRAND AVE WELL CONNECTIVITY PROJECT	8,868.00
54562	IDEXX DISTRIBUTION CORP	LABORATORY SUPPLIES	4,682.95
54563	LAREZ, MARY PAT	RETIREE HEALTH BENEFITS - JANUARY	157.88
54564	MERCER, DUSTIN	JANITORIAL SERVICES FOR JANUARY	916.66
54565	PREMIER FAMILY MEDICINE ASSOC	PRE-EMPLOYMENT PHYSICAL - JOSHUA OLIVARES HERNANDEZ	142.00
54566	PRIME SYSTEMS IND AUTOMATION	GENERAL SCADA PROGRAMMING - NOVEMBER & DECEMBER	16,350.00
54567	SGV WATER ASSOCIATION	2025 MEMBERSHIP DUES	100.00
54568	SOUTHERN CALIFORNIA EDISON	19 W BASELINE	8,447.92
54569	SYNAGRO WEST, LLC	SLUDGE REMOVAL NOVEMBER	26,646.43

THREE VALLEYS MUNICIPAL WATER DISTRICT

January 2025
General Checks 54553 through 54654
Payroll Wire Transfer 3838 through 3851
Payroll Checks 16730 through 16787

Check Number	Vendor	Description	Paid Amount
54570	TK CONSTRUCTION	PAVEMENT REPAIR 1021 E MIRAMAR	11,900.00
54571	TRUSSEL TECHNOLOGIES, INC.	GROUNDWATER WELL TREATMENT DESKTOP STUDY	12,990.00
54572	ULINE	BROOM	585.68
54573	UNDERGROUND SERVICE ALERT	NEW TICKET CHARGES/MONTHLY DATABASE MAINTENANCE FEE	61.80
54574	VERIZON WIRELESS	CELLULAR & IPAD SERVICES/MOBILE BROADBAND 12/26-01/25	1,070.90
54575	WATER EDUCATION LATINO LEADERS	WELL UNTAPPED FELLOWSHIP PROGRAM JAN 2025-MAY 2025	4,000.00
54576	WATTS REGULATOR COMPANY	LAB SUPPLIES	2,791.33
54577	WESTERN AV	EXTENDED SERVICE AGREEMENT 12/13/2024-12/12/2025	7,895.00
54578	ACWA	2025 MEMBERSHIP DUES	27,150.00
54579	AIRGAS SPECIALTY PRODUCTS	AMMONIA REFRIGERANT BULK	5,841.78
54580	AT&T MOBILITY LLC	FIRSTNET MOBILE/MIFI - DECEMBER	743.84
54581	AZUSA LIGHT & WATER	ELECTRICITY - SAN GABRIEL CANYON DECEMBER	25.34
54582	BASIC	MONTHLY FSA & HRA BUNDLED ADMIN FEES	145.83
54583	CALLTOWER INC.	TELEPHONE LICENSES/SERVICES 12/26/2024-01/25/2025	611.20
54584	CHARTER COMMUNICATNS HOLDINGS, LLC	BROADBAND SERVICES-WILLIAMS/PLANT 2/FULTON	389.96
54585	CITY OF CLAREMONT	REFUSE PICKUP/STREET SWEEPING DECEMBER	190.02
54586	CITY OF POMONA	MWD CONSERVATION PROGRAM- HYDRATION STATION	19,000.00
54587	CLAREMONT PRINT & COPY	BUSINESS CARDS- DIRECTOR MARQUEZ	144.54

THREE VALLEYS MUNICIPAL WATER DISTRICT

January 2025
General Checks 54553 through 54654
Payroll Wire Transfer 3838 through 3851
Payroll Checks 16730 through 16787

Check Number	Vendor	Description	Paid Amount
54588	CLS LANDSCAPE MANAGEMENT	LANDSCAPE MAINTENANCE - JANUARY	3,276.00
54589	DATA BUSINESS SYSTEMS INC	W-2/1099-NEC FORMS & ENVELOPES	208.84
54590	FORD OF UPLAND, LLC	VEHICLE MAINTENANCE	1,837.75
54591	JCI JONES CHEMICALS, INC.	CHLORINE	16,774.59
54592	LEWIS ENGRAVING, INC	4X6 TENT SIGN RESERVED	62.59
54593	LOWE'S	MISCELLANEOUS OPERATIONS/SAFETY SUPPLIES	72.48
54594	MICHAEL J ARNOLD & ASSOC, INC.	DECEMBER EXPENSES	6,084.00
54595	PALM, JAMES	RETIREE HEALTH BENEFITS - JANUARY	157.88
54596	PC CONSULTING SERVICES INC.	STRATEGIC COUNSEL: BOARD FACILITATION	4,000.00
54597	PILLSBURY WINTHROP SHAW, PITTMAN LLP	EMPLOYEE BENEFITS ADVICE	4,392.00
54598	PUBLIC WATER AGENCIES GROUP	QUARTERLY PWAG ASSESMENT	2,193.96
54599	RAYMOND R PATCHETT, PATCHETT & ASSOCIATES	EXECUTIVE MANAGEMENT TEAM WORKSHOP	4,542.98
54600	RINCON CONSULTANTS INC	TVMWD GRANTS ASSISTANCE	5,231.00
54601	ROBERT HALF	LABOR- ACCOUNTING TEMP	2,349.00
54602	ROWLAND WATER DISTRICT	MWD CONSERVATION PROGRAM- GMC CUSOMER LEARNING	4,716.71
54603	SAN ANTONIO WATER COMPANY	WATER AVAILABILITY CHARGE 10/31/2024-12/31/2024	189,004.00
54604	SOCALGAS	FULTON SERVICE 12/05/2024-01/06/2025	15.78
54605	SWRCB	DRINKING WATER TREATMENT OPERATOR CERT RENEWAL	105.00

THREE VALLEYS MUNICIPAL WATER DISTRICT

January 2025
General Checks 54553 through 54654
Payroll Wire Transfer 3838 through 3851
Payroll Checks 16730 through 16787

Check Number	Vendor	Description	Paid Amount
54606	UNIVAR SOLUTIONS USA INC.	EARTHTEC ALGAECIDE	73,682.17
54607	VIA PROMOTIONALS	LEATHER DOUBLE SIZE BADGE HOLDER	317.00
54608	AAA OIL, INC.	FUEL DELIVERED TO RUBIO CANON THROUGH	611.58
54609	AFLAC	AFLAC SUPP. INS: JANUARY 2025	1,021.82
54610	CA DEPT OF TAX & FEE ADMIN	2024 USE TAX QUARTER 4	32.00
54611	CAMMACK, MARK	RETIREE HEALTH BENEFITS - JANUARY	185.00
54612	CARBOLINE COMPANY	CARBOTHANE	799.62
54613	CONCUR TECHNOLOGIES, INC.	EXPENSE MANAGEMENT APP SET UP	108.20
54614	DECHAINE, CYNTHIA	RETIREE HEALTH BENEFITS - JANUARY	305.80
54615	DISTRIBUTOR OPERATIONS INC.	BATTERIES	150.58
54616	EUROFINS EATON ANALYTICAL, LLC	LABORATORY TESTING	397.00
54617	GOLDEN STATE WATER COMPANY	MIRAGRAND WATER PURCHASE - SERVICE PERIOD DEC 16 TO JAN 16	291.30
54618	HARRINGTON IND PLASTICS, LLC	ACCESSORIES AND SUPPLIES	2,268.90
54619	HAYES AUTOMATION INC	SERVICE RENEWAL (CQ124453)	1,008.00
54620	HD SUPPLY FACILITIES MAINT LTD	LABORATORY SUPPLIES	537.36
54621	IDEXX DISTRIBUTION CORP	LABORATORY SUPPLIES	2,325.91
54622	KEMIRA WATER SOLUTIONS, INC.	PAX-XL 19	25,371.16
54623	LA REGISTRAR-RECORDER/CO CLERK	NOTARY REGISTRATION AND BOND RECORDING FEE - TURNER	43.00

THREE VALLEYS MUNICIPAL WATER DISTRICT

January 2025
General Checks 54553 through 54654
Payroll Wire Transfer 3838 through 3851
Payroll Checks 16730 through 16787

Check Number	Vendor	Description	Paid Amount
54624	LEIGHTON CONSULTING, INC.	MIRAMAR GEOTECHNICA REPORT	2,795.00
54625	MACLEOD WATTS INC.	2024 ANALYSIS REPORT FOR OPEB CHANGE SCENARIOS	4,975.00
54626	MADDOX ELECTRIC INC.	MIRAMAR GENERATOR CONNECTIONS	4,701.01
54627	PACIFIC STAR CHEMICAL, LLC	SODIUM HYDROXIDE	9,313.00
54628	POLYDYNE, INC	CLARIFLOC	15,664.84
54629	SWRCB-DWOCP	D5 RENEWAL- SONNENBERG	105.00
54630	TOM DODSON & ASSOCIATES	LAFCO BOUNDARY RECONCILIATION	960.00
54631	TRUSSEL TECHNOLOGIES, INC.	CHLORINE DISINFECTION JWL	960.00
54632	UNDERGROUND SERVICE ALERT	NEW TICKET CHARGES/MONTHLY DATABASE MAINTENANCE FEE	48.85
54633	ACWA/JPIA	DIRECTOR BEN: FEBRUARY 2025	52,769.19
54634	RELIANCE STANDARD LIFE INS CO.	GROUP LIFE INSURANCE: JANUARY 2025	1,574.09
54635	RELIANCE STANDARD LIFE INS.	ST/LT DISAB: JANUARY 2025	1,179.33
54636	CANON FINANCIAL SERVICES,INC.	COPY MACHINE LEASE - DECEMBER	5,058.77
54637	CLS LANDSCAPE MANAGEMENT	REPAR 1 LEAKING VALVE	476.57
54638	EMPOWER RETIREMENT, LLC	10/01/2024 - 12/31/2024 QUARTERLY FEE	500.00
54639	ENVIRONMENTAL RESOURCE ASSOC.	POTABLE WATER COLIFORM MICROB	1,589.84
54640	FOOTHILL MUNICIPAL WATER DIST.	ACEQUIA CONSULTING BILLING # 9	5,000.00
54641	GRAINGER	POND 3 MIXER PARTS	232.00

THREE VALLEYS MUNICIPAL WATER DISTRICT

January 2025
General Checks 54553 through 54654
Payroll Wire Transfer 3838 through 3851
Payroll Checks 16730 through 16787

Check Number	Vendor	Description	Paid Amount
54642	INLAND VALLEY DAILY BULLETIN	PUBLIC HEARING DIRECTOR COMPENSATION	1,028.66
54643	L.G. HOLDINGS INC, GJR ELECTRIC	GRIP ELECTRICAL SERVICES	1,408.00
54644	MYRON ZUCKER, INC.	WILLIAMS/FULTON HYRDO CAPACITOR CELL	3,610.60
54645	PREMIER FAMILY MEDICINE ASSOC	PRE-EMPLOYMENT PHYSICAL - ALVIN RAMOS	142.00
54646	QUINTERO, RICHARD	WORK BOOTS	159.53
54647	ROBERT HALF	CONVERSION FEE-JOSHUA OLIVARES HERNANDEZ	15,000.00
54648	SIX BASINS WATERMASTER	FIRST INSTALLMENT PAYMENT - CY 2025	10,783.32
54649	SOUTHERN CALIFORNIA EDISON	19 W BASELINE	414.48
54650	SYNAGRO WEST, LLC	SLUDGE REMOVAL DECEMBER	34,452.90
54651	TRANSCAT, INC.	LIGHTMETER	182.52
54652	TRUSSEL TECHNOLOGIES, INC.	GROUNDWATER WELL TREATMENT DESKTOP STUDY	6,660.00
54653	VIA PROMOTIONALS	EMBROIDERY// PUFFER JACKETS	3,284.66
54654	VWR INTERNATIONAL INC.	BUFFER SOLUTION	116.34
		TOTAL AMOUNT OF CHECKS LISTED	**$ 736,099.91**
12867	METROPOLITAN WATER DISTRICT	NOVEMBER 2024 MWD WATER SALES	4,089,532.29
		TOTAL AMOUNT OF WIRE TRANSFERS	**$ 4,089,532.29**
3838	FEDERAL TAX PAYMENT	FED TAX: JANUARY 05 PAYROLL	47,046.10
3839	STATE TAX PAYMENT	STATE TAX: JANUARY 05 PAYROLL	19,503.15

THREE VALLEYS MUNICIPAL WATER DISTRICT

January 2025
General Checks 54553 through 54654
Payroll Wire Transfer 3838 through 3851
Payroll Checks 16730 through 16787

Check Number	Vendor	Description	Paid Amount
3840	EMPOWER RETIREMENT, LLC	401A & 457 DEFRD: JANUARY 05 PAYROLL	21,477.33
3841	BASIC	HEALTH SAVINGS ACCT: JANUARY 05 PAYROLL	8,646.11
3842	PUBLIC EMPLOYEES RETIREMENT SY	PERS CONTR: JANUARY 05 PAYROLL	29,947.57
3843	EMPOWER RETIREMENT, LLC	401A & 457 DEFRD: JANUARY 19 PAYROLL	20,974.33
3844	FEDERAL TAX PAYMENT	FED TAX: JANUARY 19 PAYROLL	23,428.02
3845	BASIC	HEALTH SAVINGS ACCT: JANUARY 19 PAYROLL	1,896.11
3846	PUBLIC EMPLOYEES RETIREMENT SY	PERS CONTR: JANUARY 19 PAYROLL	27,839.79
3847	STATE TAX PAYMENT	STATE TAX: JANUARY PAYROLL	9,346.85
3848	EMPOWER RETIREMENT, LLC	457 DEFRD: BOARD - DECEMBER 2024	4,429.43
3849	BASIC	HEALTH SAVINGS ACCT: BOARD - JANUARY 2024	645.83
3850	FEDERAL TAX PAYMENT	FED TAX: BOARD - JANUARY 2025	824.80
3851	STATE TAX PAYMENT	STATE TAX: BOARD - JANUARY 2025	18.03
		TOTAL AMOUNT OF PAYROLL WIRE TRANSFERS LISTED	**$ 216,023.45**

PAYROLL SUMMARY

Check# **16730 - 16787**	**TOTAL AMOUNT OF PAYROLL CHECKS LISTED**	**$ 219,520.74**
	TOTAL January 2025 CASH DISBURSEMENTS	**$ 5,261,176.39**

THREE VALLEYS MUNICIPAL WATER DISTRICT
Warrant List
January 2025
Umpqua Bank Credit Cards Invoice Detail Check 12868

Check Number	Vendor	Description	Paid Amount
12868	KASCO	KASCO VFX SERIES AERATING POND FOUNTAIN	4,025.22
12868	MISCELLANEOUS VENDORS	TREATMENT PLANT SUPPLIES, EVENT REGISTRATIONS AND RELATED EXPENSES	12,710.15
12868	SYNCB/AMAZON	JANITORIAL, OFFICE AND OTHER MISC. SUPPLIES	1,700.97
12868	PDQ	PREMIUM SUBSCRIPTION	2,800.00
		TOTAL AMOUNT OF UMPQUA BANK CARD SERVICES INVOICE	**$ 21,236.34**

THREE VALLEYS
MUNICIPAL WATER DISTRICT

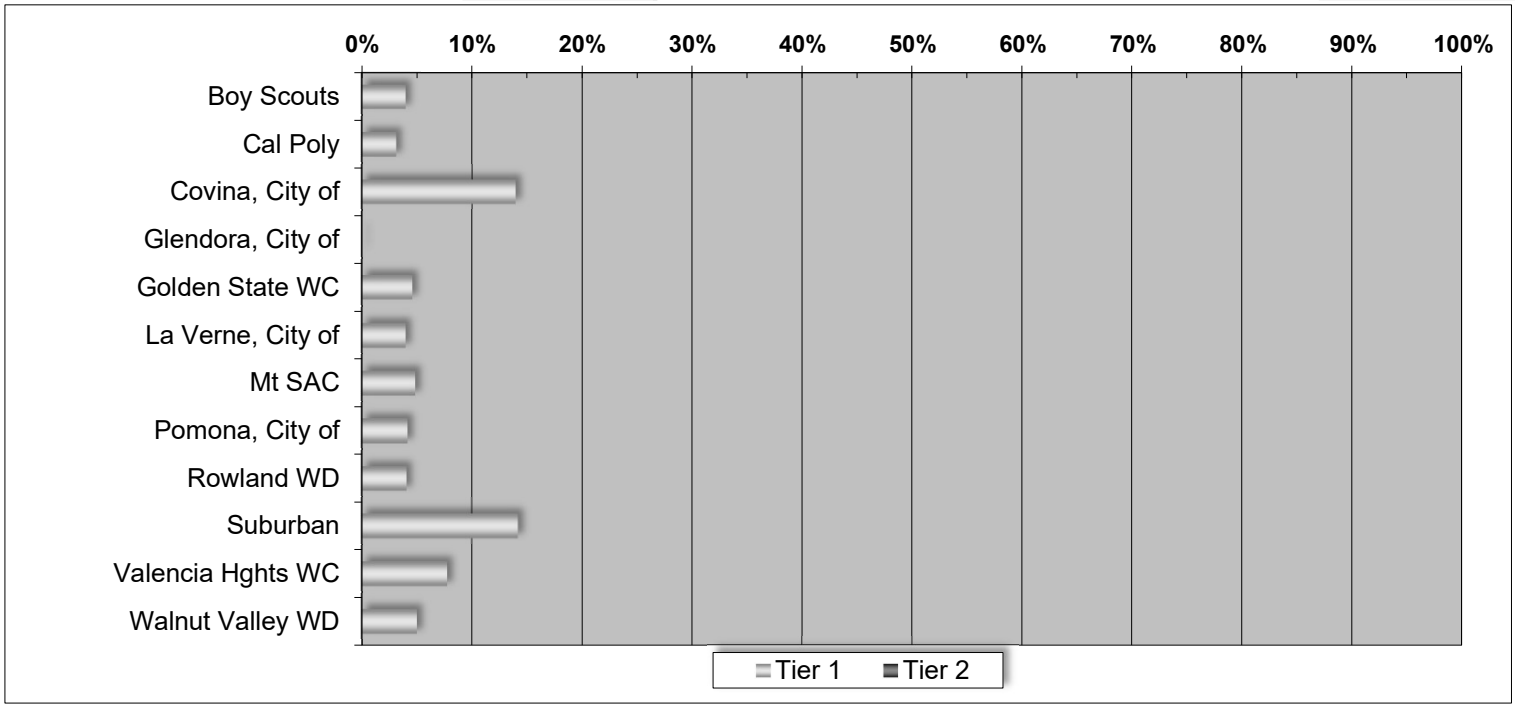
Tier 1 Balance (in Acre-Feet)
Calendar Year 2025
(through January 2025)

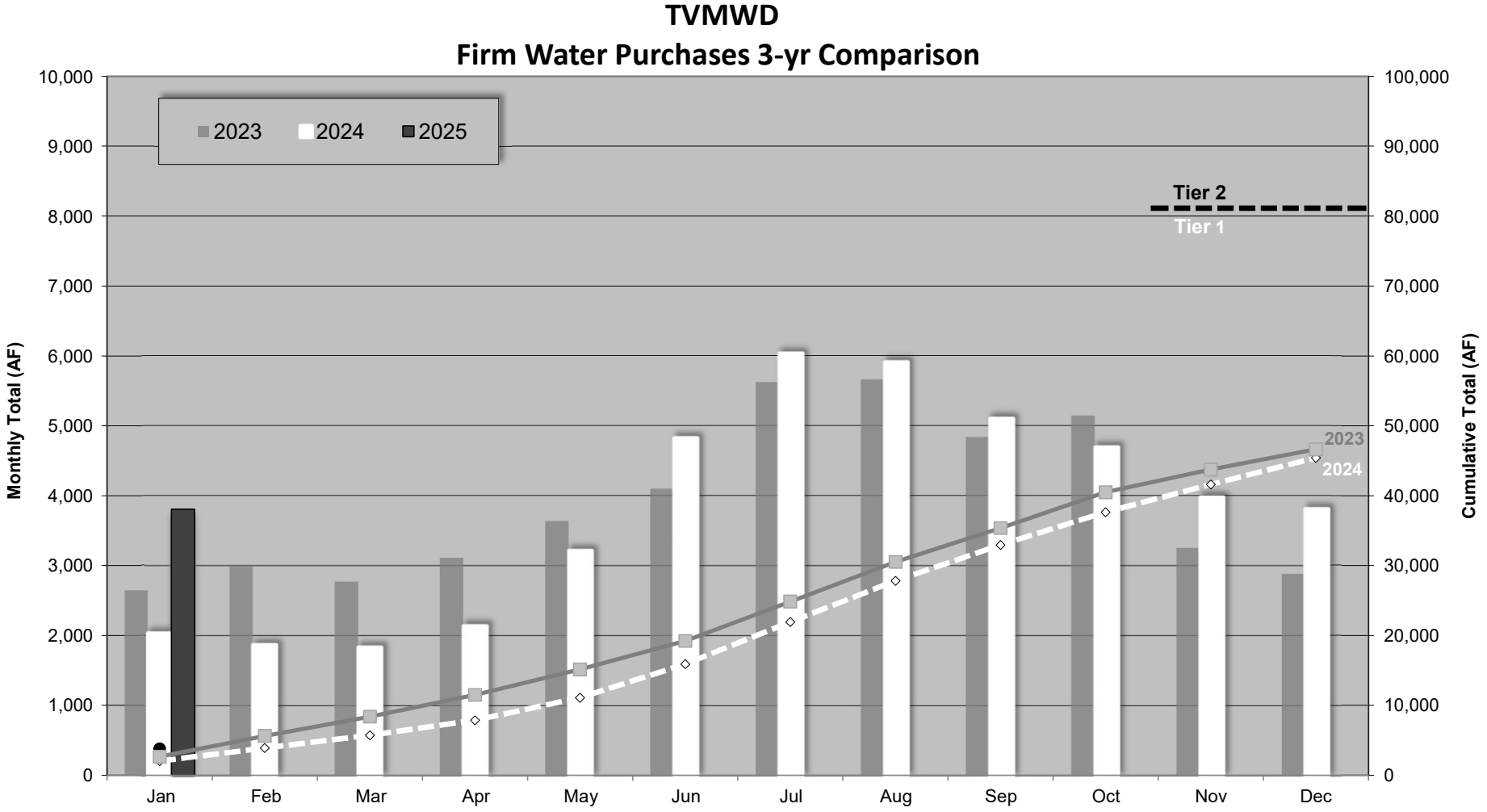
Agency	Tier 1 Allocation	Weymouth	Miramar	CIC	Spreading	Balance
Boy Scouts of America	36	1.4	0.0	0.0	0.0	34.2
Cal Poly Pomona	269	8.2	0.0	0.0	0.0	260.8
Covina, City of *	1,568	0.0	0.0	217.4	0.0	1,350.6
Glendora, City of *	4,101	0.0	0.0	0.0	0.0	4,101.3
Golden State Water Company *	15,714	427.7	258.0	30.1	0.0	14,998.1
La Verne, City of	8,026	0.0	316.2	0.0	0.0	7,710.1
Mt San Antonio College	699	33.5	0.0	0.0	0.0	665.5
Pomona, City of *	7,052	91.7	196.5	0.0	0.0	6,764.0
Rowland Water District *	14,741	352.4	238.8	0.0	0.0	14,149.7
Suburban Water Systems *	1,961	0.0	0.0	277.6	0.0	1,683.4
Three Valleys MWD	NA				0.0	NA
Valencia Heights Water Co *	464	0.0	0.0	35.5	0.0	428.5
Walnut Valley Water District *	26,057	658.5	622.7	0.0	0.0	24,775.6

* *Deliveries to JWL are assigned to Pomona, RWD, and WVWD.*
Deliveries to BGL are assigned to Suburban, VHWC, GSWC and WVWD.
Deliveries to CIC are assigned to Covina, Glendora, GSWC, SWS, and VHWC.
Quantities apportioned to above agencies are preliminary based on available data.

TVMWD Tier 1 Allowable = **80,688**
MWD Tier 1 Deliveries = **3,808**
TVMWD Tier 1 Balance = **76,881**

Overage by Individual Agencies 0.0





2025 Firm Water Usage (AF)													
Direct Delivery	3,807.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**3,807.5**
Spreading Delivery	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Total	**3,807.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**3,807.5**

Three Valleys Municipal Water District
Miramar Operations Report

JANUARY 2025

Water Quality

The treatment plant produced treated water that met or exceeded state and federal drinking water standards.

Water quality data for the month of January (unless otherwise noted)

	Location	Results		Limits	Water Quality Goals
Turbidity	Raw	**0.50**	NTU	N/A	
Turbidity	Reservoir Effluent	**0.05**	NTU	0.3	*0.04-0.08 NTU*
MIB	Lake Silverwood	**ND**	ng/L	N/A	*DWR results as of Jan 29, 2025*
Geosmin	Lake Silverwood	**2**	ng/L	N/A	*DWR results as of Jan 29, 2025*
Total Trihalomethanes	Distribution System	**39.1-48.5**	µg/l	80	*Ranges from 4 distribution locations (Dec 2024 results)*
Haloacetic Acids	Distribution System	**11.0-15.9**	µg/l	60	
Nitrate	Reservoir Effluent	**0.5**	mg/L	10	<2.0 mg/L
Nitrite	Reservoir Effluent	**0.007**	mg/L	1	<0.008 mg/L
PFAS	Raw	**ND**	µg/l	N/A	*September 2024 results*
Total Organic Carbon	RAA Ratio (Running Annual Average)	**1.04**		1.00	** RAA results should be greater than minimum limit to comply*

Reportable violations made to SWRCB: **NONE**

**RAA - Running Annual Average*

Monthly Plant Production

		Capacity	Monthly %
Potable water produced from Miramar Plant	**1626.0** AF	1844.6 AF	88.1%

Monthly Well Production

	Days in service		Same month prior year	Days in service
Well #1	**0**	**0.0** AF	**0.0** AF	**0**
Well #2	**0**	**0.0** AF	**75.5** AF	**26**
Grand Ave Well	**0**	**0.0** AF	**89.6** AF	**26**
Miragrand Well	**0**	**0.0** AF	**54.3** AF	**27**
Total Monthly Well Production		**0.0** AF	**219.4** AF	

Monthly Sales

La Verne	**316.2** AF	19.4%
GSWC (Claremont)	**249.0** AF	15.3%
GSWC (San Dimas)	**3.0** AF	0.2%
PWR-JWL	**1058.0** AF	65.1%
Pomona (Mills)	**0.0** AF	0.0%
TVMWD Admin	**-0.2** AF	0.0%
Total Potable Water Sold	**1626.0** AF	100.0%

Year To Date 2024-25

	Actual		Budget		% of Budget
Potable Water Sold from Miramar Plant (100%)	**13,762.8**	AF	**11,150.4**	AF	123.4%
Total Well Production (0%)	**0.0**	AF	**1,517.0**	AF	0.0%
Total Potable Water Sold (Plant & Wells)	**13,762.8**	AF	**12,667.4**	AF	108.6%
Average monthly water sold	**1,966.1**	AF			

Hydroelectric Generation (kwH) FY 2024-25

	Monthly kwH		YTD kwH		
Miramar	Actual	Budget	Actual	Budget	% of Budget
Hydro 1	**307,777**	**78,963**	**574,651**	**489,568**	117.4%
Hydro 2	**0**	**27,619**	**499**	**230,161**	0.2%
Hydro 3	**0**	**18,876**	**28,254**	**157,301**	18.0%
Williams	**0**	**62,322**	**1,088,080**	**507,482**	214.4%
Fulton	**124,920**	**39,573**	**531,520**	**245,355**	216.6%
	432,697	**227,353**	**2,223,004**	**1,629,867**	136.4%

Operations/Maintenance Review

Special Activities

- Received and repaired the power quality meter for Williams Hydro. Operations staff was able to program and install the meter.
- Bought materials needed to make a new control box for pond 3 mixer. Installed a new control box and worked with Prime Systems on adding controls to SCADA System. The pump for this project will be installed in February.
- Worked with Prime Systems on troubleshooting multiple issues with wells 1 & 2 not working properly since the well 1 PLC was changed out. Problems have since been corrected.
- Operations staff assisted with the taking of well samples for theGlendora Well 3 site
- Both north and south sedimentation basins were cleaned in preparation for the upcomng shutdown.
- The original contractor who built the traveling bridge conducted an inspection and took measurements for a report that will be submitted to the District and will outline potential upgrades to the bridge's components.
- All clearwell work in preparation for the upcoming pump back scheduled in February has been completed. Bacti samples from the clearwell were taken.
- Access control issues were repaired at the Miragrand Well site.
- Operations staff was able to troubleshoot and repaired the Miramar hydro exhaust fan by replacing the three phase motor.

Outages/Repairs

- None

Unbudgeted Activities

- Operations staff was able to assist Rubio Canyon by supplying them with diesel fuel delivery from our onsite diesel tank storage during the recent Eaton Fire event in Altadena.

Other

- The District hosted two full-day T5 training classes sponsored by Water Wise Pro at the Miramar Treatment Plant. Outside agencies were in attendance to receive this informational training in preparation for taking the T5 treatment exam.

Submitted by: Steve Lang

Steve Lang
Chief Operations Officer

Expense Report

Report Name : JAN 2025 TVMWD

Employee Name : David De Jesus
Employee ID : 303

Report Header

Report ID : 97C130EAAEA24ADF89B1
Receipts Received : No
Report Date : 01/12/2025
Approval Status : Submitted & Pending Approval
Payment Status : Not Paid
Currency : US, Dollar

Meetings

Transaction Date	Expense Type	Vendor Description	City	Payment Type	Amount	Meeting Name	Cost Center
01/28/2025	Meetings		Walnut	Out-of-Pocket	$200.00	Meeting with CFO on Reserve Policy	David De Jesus
	Comment :	David De Jesus (02/01/2025): Scheduled meeting to discuss and review 3Vs proposed draft reserve policy resulted in greater clarity and understanding along with the need to further review and discuss with the full board and staff in February.					
01/24/2025	Meetings		Walnut	Out-of-Pocket	$200.00	So Cal Water Coalition	David De Jesus
	Comment :	David De Jesus (01/25/2025): Attended the event with Director Jody Roberto and Board President Mike Ti where we and an audience of over 300 heard post-election opinions and what we might expect in 2025 offered by former state senator Jim Brulte and political strategist Juan Rodriguez.					

01/20/2025	Meetings		Walnut	Out-of-Pocket	$200.00	Foll Pure Water Advocacy Meeting with GM	David De Jesus
	Comment :	David De Jesus (01/21/2025): Follow-up meeting with the GM to discuss and revised certain talking points regarding the upcoming Pure Water Meeting this Wednesday at MWD.					
01/17/2025	Meetings		Walnut	Out-of-Pocket	$200.00	Pure Water Advocacy Meeting with member agencies	David De Jesus
	Comment :	David De Jesus (01/16/2025): Meeting was called by member agency managers to discuss the Pure Water issue in advance of the MWD committee meeting next week.					
01/16/2025	Meetings		Walnut	Out-of-Pocket	$200.00	Chino Basin Advisory Committee Meeting	David De Jesus
	Comment :	David De Jesus (01/16/2025): Annual meeting of the Advisory Group with new leadership appointments. Typical staff reports made to the committee on several items.					
01/15/2025	Meetings		Claremont	Out-of-Pocket	$200.00	Board Meeting	David De Jesus
	Comment :	David De Jesus (01/25/2025): Attended the board meeting which included two closed session items as identified in the posted addenda. Information regarding MWD activities were provided to the board.					
01/09/2025	Meetings		Walnut	Out-of-Pocket	$200.00	Northern Caucus Group Meeting	David De Jesus
	Comment :	David De Jesus (01/12/2025): Met with MWD management staff and other MWD directors to obtain updates on a number of issues and discuss agenda items.					
01/08/2025	Meetings		Walnut	Out-of-Pocket	$200.00	MWD Matters Meeting	David De Jesus
	Comment :	David De Jesus (01/12/2025): Met with the GM and staff along with board President to review issues discussed with Foothill MWD Directors.					
01/07/2025	Meetings		Arcadia	Out-of-Pocket	$200.00	San Gabriel Valley MWD Director Meeting	David De Jesus
	Comment :	David De Jesus (01/12/2025): Meeting held to discuss expected items set for discussion and action for the month of January					
01/06/2025	Meetings		Glendora	Out-of-Pocket	$200.00	Meeting with the GM	David De Jesus
	Comment :	David De Jesus (01/12/2025): Met with the GM regarding MWD issues to be discussed at the MWD Member agency managers meeting					

Personal Car Mileage

Transaction Date	Expense Type	Vendor Description	City	Payment Type	Amount	Meeting Name	Cost Center

01/15/2025	Personal Car Mileage	Out-of-Pocket	$26.60	Board Meeting	David De Jesus
01/06/2025	Personal Car Mileage	Out-of-Pocket	$12.60	Meeting with GM and Dir Kuhn	David De Jesus

Report Total :	$2,039.20
Personal Expenses :	$0.00
Total Amount Claimed :	$2,039.20
Amount Approved :	$2,039.20

Company Disbursements

Amount Due Employee :	$2,039.20
Amount Due Company Card :	$0.00
Total Paid By Company :	$2,039.20

Employee Disbursements

Amount Due Company Card From Employee :	$0.00
Total Paid By Employee :	$0.00

Expense Report

Report Name : JAN 2025 MWD

Employee Name : David De Jesus
Employee ID : 303

Report Header

Report ID : 5E81E1DC179449CEB0A0
Receipts Received : No
Report Date : 01/12/2025
Approval Status : Submitted & Pending Approval
Payment Status : Not Paid
Currency : US, Dollar

Meetings (MWD Representative)

Transaction Date	Expense Type	Vendor Description	City	Payment Type	Amount	Meeting Name	Cost Center
01/30/2025	Meetings (MWD Representative)		Walnut	Out-of-Pocket	$200.00	CRA ad-hoc Committee Update	David De Jesus
	Comment :	David De Jesus (02/01/2025): Staff and the GM provided the committee members with updates on the progress made with other basin states.					
01/29/2025	Meetings (MWD Representative)		Glendora	Out-of-Pocket	$200.00	Special Board Meeting	David De Jesus
	Comment :	David De Jesus (02/01/2025): The last of a serires of special meetings specifically dealing with personnel issues and the MWD GM.					
01/27/2025	Meetings (MWD Representative)		Walnut	Out-of-Pocket	$200.00	MWD PVID CEC	David De Jesus

						Committee Meeting	
	Comment :	David De Jesus (02/01/2025): Attended the MWD assigned responsibilities as a member of the MWD/PVID Community Enhancement Coalition (CEC) Committee. Discussion regarding the progress made on the MOU recently approved by the PVID board and slated to be reviewed at the One Water Committee and approved by the board in February.					
01/23/2025	Meetings (MWD Representative)		Glendora	Out-of-Pocket	$200.00	Adjourned Special Joint Exec and Board Meeting	David De Jesus
	Comment :	David De Jesus (01/25/2025): This meeting was a continuation of Tuesday's meeting to address personnel matters.					
01/22/2025	Meetings (MWD Representative)		Walnut	Out-of-Pocket	$200.00	Subcommittee on Pure Water	David De Jesus
	Comment :	David De Jesus (01/25/2025): The committee was updated on the current project. GM Litchfield addressed the committee regarding its continued development.					
01/21/2025	Meetings (MWD Representative)		Walnut	Out-of-Pocket	$200.00	Special Joint Exec and MWD Board Meeting	David De Jesus
	Comment :	David De Jesus (01/21/2025): Attended the meeting as required as posted.					
01/14/2025	Meetings (MWD Representative)		Walnut	Out-of-Pocket	$200.00	MWD Board Meeting	David De Jesus
	Comment :	David De Jesus (01/16/2025): All meetings were conducted via Zoom due to the unhealthy air quality due to the recent fires. Report to be made to the 3vs board on 01/15/25					
01/13/2025	Meetings (MWD Representative)		Walnut	Out-of-Pocket	$200.00	MWD Committee Meetings	David De Jesus
	Comment :	David De Jesus (01/16/2025): Attended various committee meetings to be reported to the 3Vs board on Wednesday the 15th					
01/11/2025	Meetings (MWD Representative)		Walnut	Out-of-Pocket	$200.00	Special Board Meeting	David De Jesus
	Comment :	David De Jesus (01/12/2025): A special meeting was held to discuss the need to move MWD meetings to Zoom Only (for a 45-day period) due to the Governors emergency declaration resulting from the fires. Staff shared information regarding the unhealthy air quality and the need to protect the health of all (public staff and board members alike).					
01/10/2025	Meetings (MWD Representative)		Walnut	Out-of-Pocket	$200.00	Meeting with MWD Auditor Suzuki	David De Jesus
	Comment :	David De Jesus (01/12/2025): Reviewed last summary report and progress made in audits and issues with the delay on others. Personnel needs were also addressed.					

Report Total : $2,000.00

Personal Expenses :	$0.00
Total Amount Claimed :	$2,000.00
Amount Approved :	$2,000.00

Company Disbursements

Amount Due Employee :	$2,000.00
Amount Due Company Card :	$0.00
Total Paid By Company :	$2,000.00

Employee Disbursements

Amount Due Company Card From Employee :	$0.00
Total Paid By Employee :	$0.00

Expense Report

Report Name : January2025.DirectorGoytia

Employee Name : Carlos Goytia
Employee ID : 314

Report Header

Report ID : FF8309C4DACD47D59D42
Receipts Received : No
Report Date : 01/31/2025
Approval Status : Submitted & Pending Approval
Payment Status : Not Paid
Currency : US, Dollar

Meetings

Transaction Date	Expense Type	Vendor Description	City	Payment Type	Amount	Meeting Name	Cost Center
01/30/2025	Meetings		Pomona	Out-of-Pocket	$200.00	City of Pomona Community Event/Mayor T.Sandoval	Carlos Goytia
	Comment :	Carlos Goytia (02/04/2025): attended as Elected Water Representative for District 2/Division 1. also met for a one on one meeting with Mayor Tim Sandoval to discuss water and city related issues					
01/29/2025	Meetings		Walnut	Out-of-Pocket	$200.00	Meeting w Director Jennifer Santana	Carlos Goytia
	Comment :	Carlos Goytia (02/04/2025): met with Upper District Board President Jennifer Santana to discuss regional water issues and also to discuss issue related to the SGVCOG.					
01/27/2025	Meetings		Pomona	Out-of-Pocket	$200.00	City of Pomona Council Meeting	Carlos Goytia

	Comment : Carlos Goytia (01/28/2025): attended as TVMWD Representative to the council.						
01/25/2025	Meetings		Pomona	Out-of-Pocket	$200.00	City of Pomona/Councilmembers Preciado & Garcia	Carlos Goytia
	Comment : Carlos Goytia (01/28/2025): met with Councilmembers Nora Garcia and Victor Preciado to discuss division 1 and district related issues.						
01/21/2025	Meetings		Pomona	Out-of-Pocket	$200.00	Pomona Water Resources Dept/Director Chris Diggs	Carlos Goytia
	Comment : Carlos Goytia (01/28/2025): met with Director Diggs and Director J.Marquez and GM Matt Litchfield to discuss water related issues and future collaborations.						
01/16/2025	Meetings		Claremont	Out-of-Pocket	$200.00	SGVCOG Board Meeting	Carlos Goytia
	Comment : Carlos Goytia (01/28/2025): attended and participated in board deliberations and discussions.						
01/15/2025	Meetings		Claremont	Out-of-Pocket	$200.00	TVMWD Board of Directors Meeting.	Carlos Goytia
	Comment : Carlos Goytia (01/28/2025): attended and participated in board deliberations and discussions.also attend a facilities tour and briefing for assemblymember Michelle Rodriguez field representative Kamille Hemsworth.						
01/14/2025	Meetings		Pomona	Out-of-Pocket	$200.00	Meeting with T. Parra/GPN Conference	Carlos Goytia
	Comment : Carlos Goytia (01/28/2025): met with Tiffany Parra CEO and event organizer for the 1st Annual GPN Conference to be a special guest speaker for event.						
01/06/2025	Meetings		Pomona	Out-of-Pocket	$200.00	TVMWD Executive Committee Meeting	Carlos Goytia
	Comment : Carlos Goytia (01/07/2025): met with General Manager and new Executive committee to discuss board agenda and discussions related to our service area.						
01/06/2025	Meetings		Pomona	Out-of-Pocket	$0.00	City of Pomona Council Meeting	Carlos Goytia
	Comment : Carlos Goytia (01/07/2025): attended as TVMWD Rep. (Remotely)						
01/03/2025	Meetings		Pomona	Out-of-Pocket	$200.00	City of Pomona/Councilmember Victor Preciado D2	Carlos Goytia
	Comment : Carlos Goytia (01/07/2025): met with Councilmember Preciado to discuss short term collaborations for 2025 for Division 1 and and in-turn District 2. also discussed water related issues as well as city related discussion.						

Personal Car Mileage

Transaction Date	Expense Type	Vendor Description	City	Payment Type	Amount	Meeting Name	Cost Center
01/30/2025	Personal Car Mileage			Out-of-Pocket	$4.20	City of Pomona Community Event/Mayor T.Sandoval	Carlos Goytia
01/29/2025	Personal Car Mileage			Out-of-Pocket	$8.40	Meeting w Director Jennifer Santana	Carlos Goytia
01/27/2025	Personal Car Mileage			Out-of-Pocket	$5.60	City of Pomona Council Meeting	Carlos Goytia

01/25/2025	Personal Car Mileage	Out-of-Pocket	$5.60	City of Pomona/Councilmembers Preciado & Garcia	Carlos Goytia
01/21/2025	Personal Car Mileage	Out-of-Pocket	$5.60	Pomona Water Resources Dept/Director Chris Diggs	Carlos Goytia
01/16/2025	Personal Car Mileage	Out-of-Pocket	$22.40	SGVCOG Board Meeting	Carlos Goytia
01/15/2025	Personal Car Mileage	Out-of-Pocket	$22.40	TVMWD Board of Directors Meeting.	Carlos Goytia
01/14/2025	Personal Car Mileage	Out-of-Pocket	$5.60	Meeting with T.Parra/GPN Conference	Carlos Goytia
01/06/2025	Personal Car Mileage	Out-of-Pocket	$3.50	TVMWD Executive Committee Meeting	Carlos Goytia
01/03/2025	Personal Car Mileage	Out-of-Pocket	$5.60	City of Pomona/Councilmember Victor Preciado D2	Carlos Goytia

Report Total :	$2,088.90
Personal Expenses :	$0.00
Total Amount Claimed :	$2,088.90
Amount Approved :	$2,088.90

Company Disbursements

Amount Due Employee :	$2,088.90
Amount Due Company Card :	$0.00
Total Paid By Company :	$2,088.90

Employee Disbursements

Amount Due Company Card From Employee :	$0.00
Total Paid By Employee :	$0.00

Expense Report

Report Name : Hanlon January

Employee Name : Jeff Hanlon
Employee ID : 319

Report Header

Report ID : 07EC62AAA2EF4759856D
Receipts Received : No
Report Date : 02/03/2025
Approval Status : Submitted & Pending Approval
Payment Status : Not Paid
Currency : US, Dollar

Meetings

Transaction Date	Expense Type	Vendor Description	City	Payment Type	Amount	Meeting Name	Cost Center
01/22/2025	Meetings		Claremont	Out-of-Pocket	$200.00	Six Basins Watermaster board meeting	Jeff Hanlon
	Comment :	Jeff Hanlon (02/03/2025): Attended as representative for TVMWD					
01/15/2025	Meetings		Claremont	Out-of-Pocket	$200.00	TVMWD regular board meeting	Jeff Hanlon
01/08/2025	Meetings		Claremont	Out-of-Pocket	$200.00	MWD monthly matters meeting	Jeff Hanlon
	Comment :	Jeff Hanlon (02/03/2025): Multiple board and staff briefed by Director DeJesus about MWD issues					
01/06/2025	Meetings		Pomona	Out-of-Pocket	$200.00	TVMWD Exec Committee Meeting	Jeff Hanlon

Comment : Jeff Hanlon (02/03/2025): Met with GM and executive committee to finalize board agenda

Report Total :	$800.00
Personal Expenses :	$0.00
Total Amount Claimed :	$800.00
Amount Approved :	$800.00
Company Disbursements	
Amount Due Employee :	$800.00
Amount Due Company Card :	$0.00
Total Paid By Company :	$800.00
Employee Disbursements	
Amount Due Company Card From Employee :	$0.00
Total Paid By Employee :	$0.00

Expense Report

Report Name : January 2025 - Kuhn

Employee Name : Bob Kuhn
Employee ID : 305

Report Header

Report ID : 3CB014B60F45426084C9
Receipts Received : No
Report Date : 01/31/2025
Approval Status : Submitted & Pending Approval
Payment Status : Not Paid
Currency : US, Dollar

Meetings

Transaction Date	Expense Type	Vendor Description	City	Payment Type	Amount	Meeting Name	Cost Center
01/29/2025	Meetings		Glendora	Out-of-Pocket	$200.00	JPIA Risk Management Meeting	Bob Kuhn
	Comment :	Bob Kuhn (02/10/2025): Remotely attended the JPIA Risk Management Committee meeting.					
01/23/2025	Meetings		Rancho Cucamonga	Out-of-Pocket	$200.00	CBWM Orientation Series	Bob Kuhn
	Comment :	Bob Kuhn (02/10/2025): Attended the CBWM orientation series.					
01/22/2025	Meetings		Glendora	Out-of-Pocket	$200.00	SGVEP Interview Panel	Bob Kuhn
	Comment :	Bob Kuhn (02/10/2025): I was on the interview panel for the SGVEP's Public Information Officer held on Zoom.					

01/15/2025	Meetings	Claremont	Out-of-Pocket	$200.00	Three Valleys MWD Board Meeting	Bob Kuhn
	Comment : Bob Kuhn (02/10/2025): Attended the Three Valleys Board meeting and discussed business of the district.					
01/06/2025	Meetings	Glendora	Out-of-Pocket	$200.00	Meeting with General Manager	Bob Kuhn
	Comment : Bob Kuhn (02/10/2025): Met with the General Manager and Director De Jesus to discuss 3V, CBWM and MWD matters.					

Personal Car Mileage

Transaction Date	Expense Type	Vendor Description	City	Payment Type	Amount	Meeting Name	Cost Center
01/23/2025	Personal Car Mileage			Out-of-Pocket	$23.80	CBWM Orientation Series	Bob Kuhn
01/15/2025	Personal Car Mileage			Out-of-Pocket	$14.00	Three Valleys Board Meeting	Bob Kuhn

Report Total :	$1,037.80
Personal Expenses :	$0.00
Total Amount Claimed :	$1,037.80
Amount Approved :	$1,037.80

Company Disbursements

Amount Due Employee :	$1,037.80
Amount Due Company Card :	$0.00
Total Paid By Company :	$1,037.80

Employee Disbursements

Amount Due Company Card From Employee :	$0.00
Total Paid By Employee :	$0.00

Expense Report

Report Name : Marquez January 2025

Employee Name : Jorge Marquez
Employee ID : 320

Report Header

Report ID : FA1748D926CB43D38CC6
Receipts Received : No
Report Date : 01/01/2025
Approval Status : Submitted & Pending Approval
Payment Status : Not Paid
Currency : US, Dollar

Meetings

Transaction Date	Expense Type	Vendor Description	City	Payment Type	Amount	Meeting Name	Cost Center
01/31/2025	Meetings		Fountain Valley	Out-of-Pocket	$200.00	Orange County Water District	Jorge Marquez
	Comment :	Jorge Marquez (02/03/2025): General tour of the Groundwater Replenishment System, taking treated water from OC SAN and understanding to process of purifying it and placing back in basin.					
01/24/2025	Meetings		El Monte	Out-of-Pocket	$200.00	Meeting with President of USGVMWD	Jorge Marquez
	Comment :	Jorge Marquez (01/25/2025): Meeting Discussion on USGVMWD and TVMWD, discussions regarding PURE Water Project, MET issues, and Puente Hills Landfill (Regional Park) Project.					
01/22/2025	Meetings		Claremont	Out-of-Pocket	$200.00	Six Basin Watermaster Meeting	Jorge Marquez

	Comment :	Jorge Marquez (01/25/2025): Attended Virtually - BOD in meeting Hanlon (TVMWD Rep. in person), Ti/Roberto Virtually. Discussion on PFAS and water levels.					
01/21/2025	Meetings		Pomona	Out-of-Pocket	$200.00	City of Pomona	Jorge Marquez
	Comment :	Jorge Marquez (01/25/2025): Introduction meeting with City of Pomona Water Resources Director Chris Diggs. Joined with BOD VP Goytia, and GM Matthew Litchfield. Topics covered water storage and general introduction to Pomona Water. Various projects with Pomona Water and it's history.					
01/15/2025	Meetings		Claremont	Out-of-Pocket	$200.00	TVMWD Board Meeting	Jorge Marquez
	Comment :	Jorge Marquez (01/15/2025): Regular Board Meeting					
01/12/2025	Meetings		Indio	Out-of-Pocket	$200.00	WELL Session 1 (Coachella)	Jorge Marquez
	Comment :	Jorge Marquez (01/15/2025): Day 3: Last day discussion with Water Resources Manager and wrap up and overview of past two days					
01/11/2025	Meetings		Indio	Out-of-Pocket	$200.00	WELL Session 1 (Coachella)	Jorge Marquez
	Comment :	Jorge Marquez (01/15/2025): Day 2: Conversations and tour with individuals Salton Sea Authority, Councilmember of Coachella and tour and discussion of the American Canal. Lesson on the history of water and hydrology.					
01/10/2025	Meetings		Indio	Out-of-Pocket	$200.00	WELL Session 1 (Coachella)	Jorge Marquez
	Comment :	Jorge Marquez (01/15/2025): Day 1: Conversation with Coachella Valley Water District regarding issues pertaining to contamination and agriculture in Coachella region.					
01/09/2025	Meetings		Claremont	Out-of-Pocket	$200.00	TVMWD Staff Meeting	Jorge Marquez
	Comment :	Jorge Marquez (01/09/2025): Go over TVMWD finance functions with CFO for financial planning for capital projects, budgeting etc. Meeting was virtual.					

Personal Car Mileage

Transaction Date	Expense Type	Vendor Description	City	Payment Type	Amount	Meeting Name	Cost Center
01/31/2025	Personal Car Mileage			Out-of-Pocket	$51.10	Orange County Water District	Jorge Marquez
01/24/2025	Personal Car Mileage			Out-of-Pocket	$22.40	Meeting with President of USGVMWD	Jorge Marquez
01/21/2025	Personal Car Mileage			Out-of-Pocket	$3.50	City of Pomona	Jorge Marquez
01/15/2025	Personal Car Mileage			Out-of-Pocket	$11.90	TVMWD Board Meeting	Jorge Marquez
01/10/2025	Personal Car Mileage			Out-of-Pocket	$139.30	WELL Session 1 (Coachella)	Jorge Marquez

Report Total :	$2,028.20
Personal Expenses :	$0.00
Total Amount Claimed :	$2,028.20
Amount Approved :	$2,028.20

Company Disbursements

Amount Due Employee :	$2,028.20
Amount Due Company Card :	$0.00
Total Paid By Company :	$2,028.20

Employee Disbursements

Amount Due Company Card From Employee :	$0.00
Total Paid By Employee :	$0.00

Expense Report

Report Name : January 2025 Roberto

Employee Name : Jody Roberto
Employee ID : 316

Report Header

Report ID : A21D023AE029455CB904
Receipts Received : No
Report Date : 01/17/2025
Approval Status : Submitted & Pending Approval
Payment Status : Not Paid
Currency : US, Dollar

Meetings

Transaction Date	Expense Type	Vendor Description	City	Payment Type	Amount	Meeting Name	Cost Center
01/31/2025	Meetings		Diamond Bar	Out-of-Pocket	$200.00	Ethics Training	Jody Roberto
	Comment :	Jody Roberto (02/06/2025): Completed mandatory ethics training.					
01/28/2025	Meetings		Los Angeles	Out-of-Pocket	$200.00	Phil Pace MWD Board Room Dedication	Jody Roberto
	Comment :	Jody Roberto (02/06/2025): Attended the dedication of the Phillip Pace board room at MWD named after former board chair Phil Pace.					
01/24/2025	Meetings		Inglewood	Out-of-Pocket	$200.00	So Cal Water Coalition Luncheon	Jody Roberto
	Comment :	Jody Roberto (01/30/2025): Mike, David and I attended the SO Cal Water Coalition quarterly luncheon at the Intuit Dome where the					

speakers discussed the recent election and California politics.

01/23/2025	Meetings		Covina	Out-of-Pocket	$200.00	City Manager's Appreciation Reception	Jody Roberto
	Comment :	Jody Roberto (02/06/2025): The SGV Economic Partnership hosted the City Manager's Appreciation Reception. I had a chance to speak to several of our local City Managers including Diamond Bar, Industry, Covina and La Verne.					
01/22/2025	Meetings		Diamond Bar	Out-of-Pocket	$200.00	WQA Board Meting	Jody Roberto
	Comment :	Jody Roberto (01/22/2025): The committee discussed and approve WQA business. New officers were selected and committee assignments confirmed.					
01/22/2025	Meetings		Diamond Bar	Out-of-Pocket	$0.00	Six Basins Watermaster Board Meeting	Jody Roberto
	Comment :	Jody Roberto (01/22/2025): The board discussed and approved Six Basins business. The officers for 2025 were selected. Carolina presented the staff report.					
01/21/2025	Meetings		Walnut	Out-of-Pocket	$200.00	Walnut Valley Water District Board Meeting	Jody Roberto
	Comment :	Jody Roberto (01/22/2025): Mike and I attended the meeting where the board discussed and approved district business. GM Sherry informed board that she and staff would be attending city council meetings in WVWD service area to reassure residents their drinking water was safe. There have been concerns due to the recent wildfires.					
01/16/2025	Meetings		Diamond Bar	Out-of-Pocket	$200.00	Member Agency Lunch	Jody Roberto
	Comment :	Jody Roberto (01/22/2025): Mike and I met with GM's and staff from Walnut Valley and Rowland Water Districts to discuss business pertaining to our agencies.					
01/15/2025	Meetings		Claremont	Out-of-Pocket	$200.00	3V Board Meeting	Jody Roberto
	Comment :	Jody Roberto (01/17/2025): Regular board meeting where we discussed and approved district business.					
01/14/2025	Meetings		Diamond Bar	Out-of-Pocket	$200.00	Rowland Water District Board Meeting	Jody Roberto
	Comment :	Jody Roberto (01/22/2025): Mike, Kirk and I attended the meeting where the board discussed and approved district business.					
01/06/2025	Meetings		Diamond Bar	Out-of-Pocket	$200.00	Spadra Basin Executive Meeting	Jody Roberto
	Comment :	Jody Roberto (01/22/2025): I attended the meeting where the committee discussed and approved district business.					

Personal Car Mileage

Transaction Date	Expense Type	Vendor Description	City	Payment Type	Amount	Meeting Name	Cost Center
01/28/2025	Personal Car Mileage			Out-of-Pocket	$40.60	Phil Pace MWD Board Room Dedication	Jody Roberto

01/23/2025	Personal Car Mileage	Out-of-Pocket	$16.10	City Manager's Appreciation Reception	Jody Roberto
01/21/2025	Personal Car Mileage	Out-of-Pocket	$6.30	Walnut Valley Water District Board Meeting	Jody Roberto
01/16/2025	Personal Car Mileage	Out-of-Pocket	$4.20	Member Agency Lunch	Jody Roberto
01/15/2025	Personal Car Mileage	Out-of-Pocket	$26.60	3V Board Meeting	Jody Roberto

Report Total :	$2,093.80
Personal Expenses :	$0.00
Total Amount Claimed :	$2,093.80
Amount Approved :	$2,093.80

Company Disbursements

Amount Due Employee :	$2,093.80
Amount Due Company Card :	$0.00
Total Paid By Company :	$2,093.80

Employee Disbursements

Amount Due Company Card From Employee :	$0.00
Total Paid By Employee :	$0.00

Expense Report

Report Name : Mike Ti January 2025

Employee Name : Mike Ti

Employee ID : 318

Report Header

Report ID : 493EDE875E654A7BA7FD

Receipts Received : No

Report Date : 01/15/2025

Approval Status : Submitted & Pending Approval

Payment Status : Not Paid

Currency : US, Dollar

Meetings

Transaction Date	Expense Type	Vendor Description	City	Payment Type	Amount	Meeting Name	Cost Center
01/24/2025	Meetings		Inglewood	Out-of-Pocket	$200.00	So Cal Water Coalition Quarterly Luncheon	Mike Ti
	Comment :	Mike Ti (01/26/2025): So Cal Water Coalition Quarterly Luncheon - David, Jody, and I carpooled to the SCWC quarterly luncheon at the Intuit Dome in Inglewood. Guest speakers former Senator Jim Brulte and Juan Rodriguez of Bearstar Strategies spoke about the state of California politics after the election.					
01/23/2025	Meetings		West Covina	Out-of-Pocket	$200.00	Reserve Policy with the CFO	Mike Ti
	Comment :	Mike Ti (01/26/2025): Reserve Policy with the CFO - I met with Jose Velasquez to discuss in detail the proposed financial reserve policy.					

01/22/2025	Meetings	West Covina	Out-of-Pocket	$200.00	Six Basins Regular Board Meeting	Mike Ti
	Comment : Mike Ti (01/26/2025): Six Basins Regular Board Meeting - heard presentation on PFAS study scope of work and staff report on basin levels.					
01/21/2025	Meetings	Walnut	Out-of-Pocket	$200.00	Walnut Valley WD Regular Board Meeting	Mike Ti
	Comment : Mike Ti (01/26/2025): Walnut Valley WD Regular Board Meeting - heard reports from Finance Committee on PWR Joint Water Line, Puente Basin Water Agency, and Spadra GW Sustainability Agency financial audits; investment transaction, Engineering and Special Projects report; and board representative assignments.					
01/16/2025	Meetings	Diamond Bar	Out-of-Pocket	$200.00	Monthly Meeting with WDWD and RWD GMs	Mike Ti
	Comment : Mike Ti (01/26/2025): Monthly Meeting with WDWD and RWD GMs - Tom, Dusty, Gabby, Sherry, Jared, Jody, and I met at lunch to discuss interagency cooperation and district business.					
01/15/2025	Meetings	Claremont	Out-of-Pocket	$200.00	Three Valleys MWD Regular Board Meeting	Mike Ti
	Comment : Mike Ti (01/26/2025): Three Valleys MWD Regular Board Meeting - approved SCWC membership participation and continue funding the CA Water For All Education Campaign, reviewed of the Annual Sunshine Ordinance, and discussed possible adjustments to director per diem compensation.					
01/14/2025	Meetings	Rowland Heights	Out-of-Pocket	$200.00	Rowland WD Regular Board Meeting	Mike Ti
	Comment : Mike Ti (01/15/2025): Rowland WD Regular Board Meeting- the general manager shared how the district assisted the water districts in the wildfires affected areas in Altadena by providing staff and generator fuels; presentations on the financial audit report; Puente Basin Water Agency's and PWR Joint Water Line Commissioner's financial statements; and committee reports					
01/08/2025	Meetings	West Covina	Out-of-Pocket	$200.00	Monthly MWD Matters	Mike Ti
	Comment : Mike Ti (01/15/2025): Monthly MWD Matters- David, Matt, Jose, Sylvie, and I met over Teams to discuss matters that may affect TVMWD					
01/06/2025	Meetings	Pomona	Out-of-Pocket	$200.00	GM Executive Committee Meeting	Mike Ti
	Comment : Mike Ti (01/15/2025): GM Executive Committee Meeting- Matt, Jeff, Carlos, and I met at lunch to discuss upcoming board meeting agenda and district business					

Personal Car Mileage

Transaction Date	Expense Type	Vendor Description	City	Payment Type	Amount	Meeting Name	Cost Center
01/24/2025	Personal Car Mileage			Out-of-Pocket	$62.30	So Cal Water Coalition Quarterly Luncheon	Mike Ti
01/21/2025	Personal Car Mileage			Out-of-Pocket	$7.00	Walnut Valley WD Regular Board Meeting	Mike Ti
01/16/2025	Personal Car Mileage			Out-of-Pocket	$11.90	Monthly Meeting with WDWD and RWD GMs	Mike Ti
01/15/2025	Personal Car Mileage			Out-of-Pocket	$28.70	Three Valleys MWD Regular Board Meeting	Mike Ti
01/14/2025	Personal Car Mileage			Out-of-Pocket	$8.40	Rowland WD Regular Board Meeting	Mike Ti
01/06/2025	Personal Car Mileage			Out-of-Pocket	$11.90	GM Executive Committee Meeting	Mike Ti

Report Total :	$1,930.20
Personal Expenses :	$0.00
Total Amount Claimed :	$1,930.20
Amount Approved :	$1,930.20
Company Disbursements	
Amount Due Employee :	$1,930.20
Amount Due Company Card :	$0.00
Total Paid By Company :	$1,930.20
Employee Disbursements	
Amount Due Company Card From Employee :	$0.00
Total Paid By Employee :	$0.00

THREE VALLEYS MUNICIPAL WATER DISTRICT

BOARD INFORMATION

BOARD OF DIRECTORS
STAFF REPORT

To: TVMWD Board of Directors

From: Matthew H. Litchfield, General Manager

Date: February 19, 2025

Subject: FY 2024-25 2nd Quarter Reserve Schedule

☐ Funds Budgeted: $ ☐ Fiscal Impact: $

Staff Recommendation

No Action Necessary – Informational Item Only

Background

Attached for Board review is the Reserve Schedule as of December 31, 2024 presented as prescribed by GASB Statement No. 54 Fund Balance Reporting and Governmental Fund Type Definitions. GASB 54 presentation is not required, however tracking fund balance in this manner provides greater visibility as to the level of fund balance available for use. GASB 54 establishes fund balance classifications that comprise a hierarchy based primarily on the extent to which a government is bound to observe constraints imposed upon the use of the resources reported in governmental funds. The hierarchy of five possible classifications of fund balance is:

- Nonspendable – Amounts that cannot be spent due to form.
- Restricted – Amounts constrained for a specific purpose by external parties, constitutional provision or enabling legislation.
- Committed (Reserved for Encumbrance) – Amounts constrained for a specific purpose by a government using its highest level of decision-making authority.
- Assigned (Board Designated) – Amounts intended for specific purposes.

- Unassigned – The residual fund balance.

The Board has control primarily over Committed, Assigned and Unassigned.

Discussion

Committed (Reserved for Encumbrance):

The Reserved for Encumbrance category reflects information for all encumbered projects that are still in progress.

- $1,771,9711 of encumbrances were carried forward from FY 2023-24 for projects still in progress.. This is included in the $3,673,789 in remaining encumbrances as of December 31, 2024.

Assigned (Board Designated) and Unassigned (General):

- Balances as of December 31 sit at $5,357,908, which include $390,000 of budgeted reserves for Board elections and Employee Benefits.

Environmental Impact
None

Strategic Plan Objective(s)
2.1 – Financial Stability
2.2 – Accountability

Attachment(s)
Exhibit A – FY 2024-25 2nd Quarter Reserve Schedule

Meeting History
None

NA/JV

TVMWD RESERVES SCHEDULE

FUND BALANCE	June 30, 2024 BALANCE	SOURCES	USES	TRANSFERS	December 31, 2024 BALANCE	RESERVE GOAL		
NONSPENDABLE								
Invested in Capital Assets net of related debt	36,569,144	-	-	-	36,569,144			
	$ 36,569,144	**$ -**	**$ -**	**$ -**	**$ 36,569,144**			
RESTRICTED								
Restricted for pension	$ 1,029,584	-	-	-	1,029,584			
	$ 1,029,584	**$ -**	**$ -**	**$ -**	**$ 1,029,584**			
RESERVED FOR ENCUMBRANCE								
GIS Services	37,977	35,000	(41,901)	-	31,076			
Analyzers - Chemical Systems	18,769	8,000	(9,885)	-	16,884			
Security Equipment	(252,907)	300,000	(42,047)	-	5,046			
Emergency Electrical Upgrades	-	-	(1,350)	-	(1,350)			
TOC Analyzer Replacement	32,833	-	-	-	32,833			
Office Lighting Efficiency Upgrades	150,000	500,000	(69,458)	-	580,542			
Roof/Shade Upgrades	422,737	-	-	-	422,737			
TTHM Fan	47,191	-	-	-	47,191			
Miramar Treatment Plant R&R Improvements	-	100,000	(352)	-	99,648			
Thompson Creek Leak Repair	-	-	(141,026)	-	(141,026)			
Well 2 VFD Suncovers	-	85,000	-	-	85,000			
Parking Space Covers	-	80,000	-	-	80,000			
Surface Backwash Replacement	-	60,000	(52,928)	-	7,072			
Filter drain valves	-	200,000	-	-	200,000			
Emergency Leak Repair	-	-	(68,893)	-	(68,893)			
CalTrans Well	488,249	200,000	(5,650)	-	682,599			
CIP-PM-21 Bypass MagMeter	705,800	500,000	-	-	1,205,800			
CIP-Accounting Software Replacement	53,531	50,000	-	-	103,531			
CIP-IT AV System Upgrade	30,605	75,000	-	-	105,605			
CIP-GW Reliability Project	-	100,000	(107,803)	-	(7,803)			
CIP-Vehicle	-	65,000	-	-	65,000			
CIP-SCADA & Communication Systems	37,186	100,000	(41,289)	-	95,897			
Office Furniture Replacement		26,400	-	-	26,400			
	$ 1,771,971	**$ 2,484,400**	**$ (582,582)**	**$ -**	**$ 3,673,789**			
BOARD DESIGNATED						**Lower**		**Upper**
Board Elections	$ 206,837	90,000	-	-	$ 296,837	$ 375,000		$ 500,000
Water Rate Stabilization	-	-	-	-	-	1,400,000		$ 2,100,000
Capital Asset R/R	2,411,071	-	-	-	2,411,071	3,500,000		9,700,000
Opportunity	2,350,000	-	-		2,350,000	2,000,000		3,000,000
Employee Benefits - Pension & OPEB	-	300,000	-	-	300,000	3,400,000		3,400,000
Emergency	-	-	-	-	-	-		-
	$ 4,967,908	**$ 390,000**	**$ -**	**$ -**	**$ 5,357,908**	**$ 10,675,000**		**$ 18,700,000**
UNASSIGNED								
General	$ -	-	-	-	$ -			
	$ -	**$ -**	**$ -**	**$ -**	**$ -**			

THREE VALLEYS MUNICIPAL WATER DISTRICT

BOARD ACTION

BOARD OF DIRECTORS
STAFF REPORT

To: TVMWD Board of Directors

From: Matthew H. Litchfield, General Manager

Date: February 19, 2025

Subject: Approval of Resolution No. 25-02-997 Debt Management Policy

☐ Funds Budgeted: $ ☐ Fiscal Impact: $

Staff Recommendation
Staff recommends that the Board of Directors adopt Resolution No. 25-02-997 approving the Debt Management Policy.

Discussion
Three Valleys proposed Debt Management Policy is attached for Board review as Exhibit A. The policy is intended to provide written guidelines, allowances and restrictions that guide the debt issuance practices of TVMWD, including the issuance process, management of a debt portfolio, and adherence to various laws and regulations.

Recent legislation requires government agencies to maintain a debt policy when issuing debt. Although TVMWD has been debt free since 2012, staff would rather have the policy established and current prior to such a need. Adoption of the policy would have no immediate impact on TVMWD.

TVMWD contracted Fieldman, Rolapp & Associates, municipal advisor to perform a comprehensive review of our policy and provided the following suggested changes to reflect current legal standards and management's best practices.

- Update references for "Financial Advisor" to "Municipal Advisor"
- Include a section on CDIAC's Annual Debt Transparency Reporting requirements, effective January 1, 2017, pursuant to Government code section 8855(k)

- Added clarity that potential Continuing Disclosure requirements include the annual update of certain financial information and preparation of material event notices
- Refer to advice from the Municipal Advisor in connection with the selection of an Underwriter
- Update language for the Disclosure Counsel subsection allowing the same firm to be used for Bond Counsel and Disclosure Counsel services

Environmental Impact
None

Strategic Plan Objective(s)
2.1 – Financial Stability
2.2 – Accountability

Attachment(s)
Exhibit A – Debt Management Policy
Exhibit B – Debt Management Policy Resolution No. 25-02-997

Meeting History
Board of Directors Meeting, February 5, 2025, Informational Item
Special Board of Directors Workshop, December 16, 2024, Informational Item

NA/JV

1) Introduction

a) Three Valleys Municipal Water District (TVMWD) is a special district formed by public election in 1950 and is the area's primary source of supplemental water covering the Pomona, Walnut and East San Gabriel Valleys. TVMWD is one of 26-member agencies of the Metropolitan Water District of Southern California (MWD) that is authorized to deliver wholesale water supplies from the Colorado River and Northern California. The region served by TVMWD spans over 133 square miles and serves 13 retail member agencies that in turn serve a population of over 500,000. The mission of TVMWD is to supplement and enhance local water supplies to meet our region's needs in a reliable and cost-effective manner.

b) The Three Valleys Municipal Water District Financing Corporation (Financing Corporation) was formed in 1992 to provide assistance to TVMWD in the financing and refinancing, or acquiring, constructing and rehabilitating various facilities, land and equipment, and the sale and leasing of facilities, land and equipment for the use, benefit and enjoyment of the public served by TVMWD and any other purpose incidental thereto.

2) Purpose

a) TVMWD's Debt Management Policy (the Policy) as set forth herein provides written guidelines, allowances, and restrictions that guide the debt issuance practices of TVMWD, including the issuance process, management of a debt portfolio, and adherence to various laws and regulations. Adherence to the Policy is essential to ensure TVMWD maintains a debt portfolio that supports TVMWD's financing needs and minimizes cost of funds. Adherence also signals to rating agencies and the capital markets that an agency is well managed and therefore is likely to meet its debt obligations in a timely manner.

b) TVMWD's Board of Directors (the Board) acknowledges that changes in the capital markets and other unexpected events may, from time to time, create situations and opportunities that are not contemplated by this Policy and may require adjustments or exceptions to the guidelines of the Policy. In such circumstances, the ability to be flexible is important; however, any authorization granted by the Board to proceed with a financing or financial product not expressly permitted by the Policy must be accompanied by an acknowledgement of the Board that the actions to be taken by TVMWD are not specifically authorized by the Policy in force at that time. The Policy shall be initially adopted by the Board and reviewed annually and approved as changes occur.

3) Roles and Responsibilities

a) Chief Finance Officer (CFO) - The CFO is responsible for developing debt financing recommendations, debt issuance and oversight of debt management. The CFO shall consider the need for debt financing based on the Five-Year Capital Program (Capital Program).
b) General Manager (GM) - The GM shall determine projects and timelines for the Capital Program that may require debt financing. The GM will be responsible for updating this Policy and submitting to the Board for review and adoption.
c) The Board - The Board approves the Capital Program and authorizes all debt transactions.
d) Consultants - TVMWD may hire consultants to perform specific debt-related tasks as outlined in Section 19.

4) Capital Program

a) TVMWD recognizes the need to invest in ongoing capital replacement and rehabilitation of its facilities as well as new infrastructure to ensure future viability of services. To endorse prudent fiscal management, TVMWD is committed to systematic capital planning and long-term financial planning. Evidence of this commitment is demonstrated through the Capital Program, which is integrated within TVMWD's Strategic Plan and ensures the projects of the Capital Program are in alignment with the goals and objectives of the Strategic Plan. Both the Capital Program and the Strategic Plan are adopted and adjusted annually.
b) Capital projects may include the acquisition/construction/enhancement of land, facilities, or infrastructure that enhance TVMWD's ability to achieve its mission. The Capital Program shall specifically include the following:
    i) Description and purpose of each capital project
    ii) How the project meets TVMWD's objectives
    iii) Cost estimate and timeline
    iv) Estimated or approved grant funding
    v) Estimated annual cost of O&M and staff time saved or incurred by the project

5) Use of Debt

a) TVMWD expects to pay the Capital Program from a combination of current revenues, available reserves, and prudently issued debt. TVMWD recognizes that debt can provide an equitable means of financing projects for its customers and provide access to new capital needed for infrastructure and projects. Debt may be used to meet financing needs (i) if it meets the goals of equitable treatment of all customers, both current and future; (ii) if it is cost-effective and fiscally prudent, responsible, and diligent under the prevailing economic conditions; (iii) is the best alternative as

compared to other funding sources including grants or other arrangements in lieu of incurring debt; and (iv) if there are other important policy reasons therefor.

b) Debt can be issued to fund the planning, pre-design, design, land and/or easement acquisition, construction, and related fixtures, equipment and other costs of capital projects as permitted by law. Debt cannot be issued for ongoing operations and maintenance. The proceeds of any debt obligation shall be expended only for the purpose for which it was authorized.

c) TVMWD may also utilize short term financing (including leases) to finance certain essential equipment and vehicles.

d) The weighted average useful life of the asset(s) or project may exceed the payout schedule of any debt TVMWD issues; however, such period shall comply with federal tax codes.

6) Debt Capacity

a) There is no specific provision within the California Government Code that limits the amount of debt that may be issued by TVMWD. TVMWD's borrowing capability is limited by the additional bonds test and debt coverage ratio required by any existing bond covenants. TVMWD will be mindful of its overall debt burden in the context of its revenues, expenses, reserves and overall financial health.

7) Types of Debt

a) Revenue bonds, Certificates of Participation (COPs), variable rate bonds, state revolving fund (SRF) loans, federal loans, bank loans, notes, commercial paper, direct placements, capital leases, lease-purchase financing, and lines of credit are all acceptable types of debt.

b) In addition to the aforementioned long and short-term financing instruments, TVMWD and the Financing Corporation may also consider joint arrangements with other governmental agencies. TVMWD will only be liable for its share of debt service, as specified in a contract executed in connection with the joint venture debt.

c) TVMWD is authorized to join with other special districts and/or municipal agencies to create a separate entity, a Joint Powers Authority (JPA), to issue debt on behalf of TVMWD. TVMWD will only be liable for its share of debt service, as specified in a contract executed in connection with the joint venture debt.

8) Debt Service Reserve Fund/Surety Policy

a) If there are market requirements or it is important to raise credit ratings, TVMWD may fund a debt service reserve fund as part of its debt issuance.

9) Debt Structure Considerations

a) In structuring a debt issuance, TVMWD will manage the amortization of debt, and to the extent possible, match its cash flow to the anticipated debt service payments. TVMWD will seek to structure debt with aggregate level principal and interest payments over the life of the borrowing. Backloading of debt service will be considered only when such structuring is beneficial to TVMWD's aggregate overall debt payment schedule.
b) The CFO and GM, with the advice of TVMWD's Municipal Advisor, will evaluate and recommend to the Board the use of a call option, if any, and call protection period for each issuance. A call option, or optional redemption provision, gives TVMWD the right to prepay or retire debt prior to its stated maturity. This option may permit TVMWD to achieve interest savings in the future through refunding of the bonds. Because the cost of call options can vary widely, depending on market conditions, an evaluation of factors, such as the call premium, time until the bonds may be called at a premium or at par, and interest rate volatility will guide the decision to issue bonds with a call option.

10) Debt Management Analysis

a) The CFO is responsible for periodic monitoring of outstanding debt and providing a written analysis to the Board on at least an annual basis. The analysis will summarize changes, opportunities for refundings or refinancings, strategies and any other information critical to allowing the Board to make an informed decision. It will spotlight the needs based on the Capital Program and other considerations.

11) Debt Refunding and Refinancing

a) Debt can be refunded or refinanced to achieve one or more of the following objectives:
   i) Reduce future interest costs;
   ii) Restructure future debt service in response to evolving conditions regarding anticipated revenue sources
   iii) Remove undesirable covenants

12) Method of Sale

a) TVMWD will select a method of sale that is the most appropriate when considering the financial, market, transaction-specific and Issuer-related conditions. There are three basic methods of sale:
   i) Competitive Sale
   ii) Negotiated Sale
   iii) Private Placement

b) Each type of debt sale has the potential to provide the lowest cost given the right conditions. The CFO and the Municipal Advisors will recommend to the Board the most appropriate method of sale in light of prevailing financial, market and transaction-specific conditions.

13) Internal Control Procedures

a) All debt transactions must be approved by the Board. The proceeds of bond sales will be invested until used for the intended project(s) in order to maximize utilization of the public funds. The investments will be made to obtain the highest level of 1) safety, 2) liquidity, and 3) yield, and may be held as cash. TVMWD's investment guidelines and bond indentures will govern objectives and criteria for investment of bond proceeds. The CFO will oversee the investment of bond proceeds in a manner to avoid, if possible, and minimize any potential negative arbitrage over the life of the bond issuance, while complying with arbitrage and tax provisions.
b) Bond proceeds will be deposited and recorded in separate accounts to ensure funds are not comingled with other forms of TVMWD funds. TVMWD's Trustee or Fiscal Agent will administer the disbursement of bond proceeds pursuant to each Indenture of Trust or Fiscal Agent Agreement, respectively. To ensure proceeds from bond sales are used in accordance with legal requirements, invoices are submitted by the originating department and approved by the CFO and GM for payment.

14) Credit/Ratings Objectives

a) TVMWD will seek to maintain the highest possible credit ratings that can be achieved for debt instruments without compromising TVMWD's policy objectives. Ratings are a reflection of the general fiscal health of TVMWD. By maintaining the highest possible credit ratings, TVMWD can issue its debt at a lower interest cost.
b) To enhance creditworthiness, TVMWD is committed to prudent financial management, systematic capital planning, and long-term financial planning.
c) TVMWD recognizes that external economic, natural, or other events may from time to time affect the creditworthiness of its debt. Each proposal for additional debt will be analyzed for its impact upon TVMWD's debt rating on outstanding debt.

15) Compliance with Bond Covenants

a) In addition to financial disclosure and arbitrage compliance, once the bonds are issued, TVMWD is responsible for verifying compliance with all undertakings, covenants, and agreements of each bond issuance on an ongoing basis. This typically includes ensuring:

i) Annual appropriation of revenues to meet debt service payments
ii) Timely transfer of debt service payments to the trustee or paying agent
iii) Compliance with insurance requirements
iv) Compliance with rate covenants where applicable
v) Compliance with all other bond covenants

b) On an annual basis, the CFO will prepare all required debt related schedules, disclosures and footnotes for inclusion in TVMWD's Annual Comprehensive Financial Report (ACFR). The ACFR shall describe in detail all funds and fund balances established as part of any direct debt financing of TVMWD. The CAFR will also contain information detailing any material or rate covenants contained in any direct offering of TVMWD and whether such covenants have been satisfied.

16) Disclosure and Arbitrage Rebate Compliance

a) TVMWD will comply with all financing covenants to maintain the validity of the issuance of debt, including, but not limited to tax-exemption, arbitrage rebate compliance, insurance provisions, reporting and monitoring requirements. TVMWD will ensure compliance with all continuing disclosure requirements as part of its ongoing debt program, including but not limited to the disclosure of annual financial information and material event notices. Any instance of noncompliance will be reported to the Board.

17) SB 1029 Compliance

a) SB 1029, signed on September 12, 2016 and now part of Government Code Section 8855, requires issuers to adopt debt policies addressing each of the five items below.
   i) The purposes for which the debt proceeds may be used.
      (1) Section 5 of this policy provides information regarding the purposes for which TVMWD may spend debt proceeds.
   ii) The types of debt that may be issued.
      (1) Section 7 of this policy provides information regarding the types of debt TVMWD may issue.

   iii) The relationship of the debt to, and integration with, the issuer's capital improvement program or budget, if applicable.
      (1) Sections 4 and 10 of this policy provide information regarding the relationship between the TVMWD's debt and capital improvement program.
   iv) Policy goals related to the issuer's planning goals and objections.
      (1) Section 4 describes the TVMWD's planning goals and objectives.
   v) The internal control procedures that the issuer has implemented, or will implement, to ensure that the proceeds of the proposed debt issuance will be directed to the intended use.

(1) Section 13 of this policy provides information regarding the TVMWD's internal control procedures designed to ensure that the proceeds of a debt issuance are spent as intended.

b) Pursuant to Government Code Section 8855(k), TVMWD will submit annual debt transparency reports for any debt for which it has submitted a report of final sale on or after January 21, 2017 every year until the later date on which the debt is no longer outstanding and the proceeds have been fully spent.

18) SB 450 Compliance

a) SB 450, signed on October 9, 2017 and now part of Government Code Section 5852, requires issuers to disclose good faith estimates prior to approving the issuance of the bonds. The following good faith information will be disclosed in a public meeting prior to the approval of issuance of bonds:
   i) The true cost on the bonds
   ii) The sum of all fees and charges to issue the bonds
   iii) The amount of proceeds to be generated by the sale of the bonds
   iv) The total amount of the issuer's obligation to bondholders

19) Consultants

a) Municipal Advisor
   i) The municipal advisor will advise TVMWD on refunding opportunities for current outstanding debt, as well as assist in evaluating the merits of competitive, negotiated or private placement of new debt, and determining the most appropriate structure to ensure effective pricing that meets the TVMWD's near-term and long-term cash flow needs. The municipal advisor will work with all parties involved in the financing transaction, including the TVMWD's bond counsel, trustee, underwriters, credit liquidity providers, to develop and monitor the financing schedule and preparation of the Official Statement. The municipal advisor will assist TVMWD in developing and distributing bid specifications for desired services, such as, trustee and paying agents, printing, remarketing and credit liquidity service providers, and assist TVMWD in its review process. TVMWD also expects that its municipal advisor will provide objective advice and analysis, maintain confidentiality of the TVMWD's financial plans, and be free from any material conflict of interest.
   ii) TVMWD will select independent municipal advisors. While serving as the TVMWD's municipal advisor, a firm may not also engage in the underwriting of TVMWD bond issue for which that firm acts as municipal advisor. A firm may not switch roles (i.e., from municipal advisor to underwriter) after a financial transaction has begun. Municipal advisors shall be selected through a competitive qualification process after a review of proposals by the CFO, GM, and/or other staff, and is subject to approval by the Board.

iii) During the contract term of any party acting as municipal advisor, neither the firm nor any individual employed by that firm will perform financial advisory, investment banking or similar services for any entity other than TVMWD in transactions involving a TVMWD financial commitment.

b) Bond Counsel
   i) Bond counsel will prepare the necessary authorizing resolutions, agreements and other documents necessary to execute the financing. All debt issued by TVMWD or the Financing Corporation will include a written opinion by bond counsel affirming that TVMWD is authorized to issue the debt, stating that TVMWD has met all state constitutional and statutory requirements necessary for issuance, and determining the debt's federal income tax status.
   ii) TVMWD will retain external bond counsel for all debt issues. The CFO will make recommendations for approval by the Board on the retention of bond counsel.
   iii) Bond and Disclosure Counsel services may be provided by the same firm.
c) Disclosure Counsel
   i) Disclosure Counsel will be responsible for ensuring that the official statement complies with all applicable rules regulations and guidelines.
   ii) TVMWD may engage and retain, when appropriate, Disclosure Counsel through a competitive process administered by the CFO to prepare official statements for debt issues. Disclosure Counsel will be a nationally recognized firm with extensive experience in public finance.
d) Underwriters
   i) For negotiated sales, TVMWD will generally select or pre-qualify underwriters through a competitive process. This process may include a request for proposal or qualifications to firms considered appropriate for the underwriting of a particular issue or type of bonds. With the advice of the Municipal Advisor, the CFO and GM will determine the appropriate method to evaluate the underwriter submittals and then select or qualify firms on that basis. TVMWD will not be bound by the terms and conditions of any underwriting agreements; oral or written, to which it was not a party.

RESOLUTION NO. 25-02-997

RESOLUTION OF THE BOARD OF DIRECTORS OF THREE VALLEYS MUNICIPAL WATER DISTRICT AUTHORIZING ADOPTION OF DEBT MANAGEMENT POLICY

WHEREAS, Three Valleys Municipal Water District ("the District") recognizes that debt can provide an equitable means of financing projects for its customers and provide access to new capital needed for infrastructure and projects.

WHEREAS, the District expects to pay the Capital Program from a combination of current revenues, available reserves, and prudently issued debt.

WHEREAS, the Board of Directors wishes to ensure that debt is issued and managed prudently in order to maintain a sound fiscal position and protect credit quality.

NOW THEREFORE, BE IT RESOLVED, that the Board of Directors does hereby authorize the attached Debt Management Policy.

ADOPTED and PASSED at a meeting of the Three Valleys Municipal Water District's Board of Directors, on this 19th day of February 2025, by the following vote:

AYES:
NOES:
ABSTAIN:
ABSENT:

_____
Mike Ti, President

ATTEST:

_____
Jeff Hanlon, Secretary

SEAL:

THREE VALLEYS MUNICIPAL WATER DISTRICT

BOARD ACTION

BOARD OF DIRECTORS
STAFF REPORT

To: TVMWD Board of Directors

From: Matthew H. Litchfield, General Manager

Date: February 19, 2025

Subject: Approval of Resolution No. 25-02-998 Reserve Policy

☐ Funds Budgeted: $ ☐ Fiscal Impact: $

Staff Recommendation

Staff recommends that the Board of Directors adopt Resolution No. 25-02-998 approving the Reserve Policy.

Background

In 2013 the Board approved Resolution No. 19-02-844, approving reserve categories and funding goal levels as part of the strategic plan process. The Reserve Policy has been reviewed by staff and consultant Fieldman, Rolapp, & Associates, and a revised policy is being proposed.

Discussion

This Reserve Fund Policy (the "Policy") has been developed to maintain prudent management of the finances related to the operations of the Three Valleys Municipal Water District (TVMWD), by establishing and maintaining practical reserve funds. Designated Reserves provide funding for scheduled and unscheduled expenses including operation and maintenance, debt service, emergencies, capital improvement, repair and replacement, and for the stabilization of revenues and charges.

This Policy describes sensible reserve fund needs, identifies the sources and uses of funding for such reserves, and recommended target amounts for reserve funds. Reserves are highly regarded by credit rating agencies, credit providers and investors. Reserves will be accumulated and maintained to allow the TVMWD to fund operating expenses and capital expenditures in a manner consistent with its Operating and Capital Improvement Budget and avoid significant member rate fluctuations due to changes in cash flow requirements. The monies to fund the

reserves should come from revenues of District operations after operating expenses, including debt service obligations, are met.

The proposed Policy establishes specific reserve funds with set target levels with minimum and maximum amounts. Details of the proposed Policy can be reviewed in the attached Reserve Policy as **Exhibit A** to the recommended Reserve Policy Resolution **Exhibit B**.

Environmental Impact
None

Strategic Plan Objective(s)
2.1 – Financial Stability
2.2 – Accountability

Attachment(s)
Exhibit A – Reserve Policy
Exhibit B – Reserve Policy Resolution No. 25-02-998

Meeting History
Board of Directors Meeting, February 5, 2025, Informational Item
Special Board of Directors Workshop, December 16, 2024, Informational Item

NA/JV

THREE VALLEYS MUNICIPAL WATER DISTRICT
DESIGNATED RESERVE FUND POLICY

1.0 INTRODUCTION

This Reserve Fund Policy (the "Policy") has been developed to maintain prudent management of the finances related to the operations of the Three Valleys Municipal Water District (the "District"), by establishing and maintaining prudent reserve funds. Designated Reserves ("Reserves") provide funding for scheduled and unscheduled expenses including operation and maintenance, debt service, (if any), emergencies, capital improvement, repair and replacement, and for the stabilization of rates and charges.

This Policy describes the prudent reserve fund needs, identifies the sources and uses of funding for such reserves, and recommended target amounts for reserve funds. Reserves are highly regarded by credit rating agencies, credit providers and investors. Reserves will be accumulated and maintained to allow the District to fund operating expenses and capital expenditures in a manner consistent with its Operating and Capital Improvement Budget and avoid significant member rate fluctuations due to changes in cash flow requirements. The monies to fund the reserves should come from revenues of District operations after operating expenses, including debt service obligations, are met.

Through a variety of policy documents and plans, including the District's strategic plan, Master Plans and other financial policies, the Board has set forth a number of long-term goals for the District. A fundamental purpose of the District's policy documents and plans are to link what must be accomplished with the necessary resources to successfully do so.

The Board of Directors ("Board") may designate specific Reserve Funds and maintain minimum fund balances consistent with statutory obligations that it has determined to be in the best interest of the District. The Policy directives outlined in this document are intended to ensure that the District has sufficient funds to meet current and future needs. The Board will review the level of funds in accordance with the review and approval of the Operating and Capital Improvement Budget.

2.0 STATEMENT OF PURPOSE

The purpose of this Policy is to ensure the District's financial stability, and to have sufficient funding available to meet its operating, capital and debt service, if any, obligations. This plan establishes the level of reserves necessary for maintaining the District's creditworthiness and ratings and for adequately providing for:

- Cash flow requirements and working capital;
- Economic uncertainties and other financial hardships, including performance of the national, regional and local economies;
- Infrastructure replacements;
- Water supply reliability;
- Emergency repairs;
- Local disasters, natural disasters or catastrophic events;
- Loss of significant revenue sources due to variations in water sales resulting from, among other things, variable weather conditions or conservation;
- Unfunded mandates including regulatory requirements.

3.0 TYPES OF RESERVES

The establishment of reserve funds is in the best interest of the District. Traditional reserve policy categories are typically classified as follows:

- Operating Reserves (Working Capital);
- Emergency or Contingency Reserves;
- Capital Improvement and Replacement Funds (Pay-go);
- Major Capital Reserves (major capital projects typically bond funded);
- Revenue Stabilization Reserves;
- Restricted Reserves Fund.

Reserve funds are established utilizing the following criteria:

- Distinguish between legally restricted and unrestricted amounts;
- Contain a defined and distinct purpose;
- Contain a target level or a range of target levels;
- Identify events or conditions that prompt the use of the reserves;
- Identify the requirements that must be met to use the funds;
- A mechanism to initially fund and to replenish reserves to approved levels;
- A priority for funding from remaining revenues after payment of operations, debt service, if any, and capital;
- Specify periodic review dates, usually annually as part of the budget process, for balances and target levels;
- Balances should be maintained in amounts sufficient to meet minimum reserve targets in cash and/or cash equivalents.

The District will analyze the benefits and trade-offs of utilizing Pay-Go and/or debt financing to determine the optimal funding strategy or combination of funding strategies in accordance with the District's Debt Management Policy Section 5). The District will do

this analysis in the context of funding future capital facilities and maintaining and replacing existing assets. The analysis will consider the District's current and projected liquidity, capital positions, the impact of inflation, the cost of water and other operational factors of the District and its capital improvement program. The District will measure its liquidity position by calculating "Day's Cash" or other appropriate liquidity calculations. In addition, the District will calculate its capital position, as measured by its debt-to-equity ratio and any other appropriate calculation.

Earnings from the investment of funds received by the District can be allocated to the unrestricted reserves based on Board direction.

4.0 UNRESTRICTED RESERVES

4.1 Operating Reserve Fund (Working Capital Fund)

These funds are maintained to safeguard the financial viability and stability of the District and are funded from rates and charges and property taxes. The District maintains the Operating Reserve to safeguard against unexpected fluctuations in budgeted expenses and revenues due to unforeseen events or timing of receipt of payments. Funds can be expended to meet operation needs, to cover biennial election and associated costs, or to fund costs for water purchases that may be opportunistic to increase water supply reliability. Operating Reserves are typically established based on percentage of operating expenses and can range from fifteen percent (15%) to fifty (50%) of annually budgeted operating expenses, exclusive of imported water costs and pass-through costs, debt service on outstanding debt, depreciation, and amortization of intangibles. Actual funding targets for the Operating Reserve Funds depend on numerous variables, including but not limited to the timing of revenues receipts; the timing of expenses; the variability of water supply and demand; etc.

Target Levels –The Operating Reserve Fund shall have a minimum amount equal to 15% of annual budgeted operating expenses plus $2 million to fund potential water purchases, a maximum amount equal to 50% of annual budgeted operating expenses plus $2 million, and a target amount equal to 25% of annual budgeted operating expense, exclusive of imported water costs and pass-through costs, depreciation, amortization of intangibles and debt service on outstanding debt, plus $2 million.

Replenishment – If at any time the amount on deposit declines below ten percent (10%) of annual budgeted operating expense, the District will take steps to restore

the amount on deposit within two (2) years to 25% of annual budgeted operating expenses.

Source of funding: Revenues of the District.

4.2 Emergency Reserves

This reserve is established to provide additional liquidity in the event of a natural disaster, financial crisis, various economic uncertainties or financial hardships, loss of significant revenue sources, or local disasters. Funds can be used for capital obligations, cash flow requirements, unfunded mandates including costly regulatory requirements and other such needs. These amounts should supplement monies received from insurance claims and by state and federal programs.

Target Levels –The District shall maintain an Emergency Reserve equal to four and a half percent to eight percent of its net capital assets. The minimum target is four and a half percent (4.5%) of net replacement value of the District's capital assets, net of depreciation, and the maximum funding level shall be eight percent (8%) of the District's capital assets net of depreciation, but in no event more than $10,000,000. For purposes of clarity, in order to provide funding in an emergency, the Board may authorize the use of all funds in the Emergency Reserve and the District will not be in violation of this Policy in fully depleting this Emergency Reserve.

Replenishment – When the amount on deposit falls below two percent (2%) of net assets, the District will take steps to restore the amount on deposit within three years from water rates.

Authorization – At the recommendation of the General Manager, or designee, the District Board may authorize the use of funds from the Emergency Reserve. Upon the occurrence of an event identified above and until such time that the Board can act, the General Manager is authorized to approve the use of an amount of funds per limitations described in the District's Purchasing Policy.

Source of funding: Revenues of the District.

4.3 Capital Improvement and Replacement Funds (Pay-go)

These funds are established as Reserves for the District's non-debt funded board approved capital program. Funds from this reserve are intended to fund Pay-go capital and asset replacement costs, plus any contingency amounts for these

projects. For purposes of clarity, in order to provide funding for needed projects, the Board may authorize the use of all funds in the Capital Improvement and Replacement (Pay-go) and the District will not be in violation of this Policy in fully depleting this Reserve.

Target Levels – The minimum target level of this fund is the greater of i) $3,500,000 or ii) the of Repair and Replacement ("R&R") spent on Pay-go projects for the next fiscal year, and the target balance is the R&R spent on Pay-go capital projects for the next three (3) fiscal years. The purpose of this limit is to ensure that at the start of each fiscal year, funds are available to pay for the planned Pay-go capital costs. The District will take steps to make contributions to this fund as necessary to meet future Pay-go capital needs.

Authorization – Upon the approval by the District's Board of the capital improvement plan budget, Staff is authorized to use funds from the Capital Improvement and Replacement Funds (Pay-go) to pay for the projects approved in the budget.

Source of funding: Revenues of the District.

4.4 Major Capital Reserve Fund

The District seeks to maintain a Major Capital Reserve Fund to provide funding of planned major capital project expenditures plus an amount for related contingencies. This reserve is established to ensure that proper balances are maintained, and projects are properly planned in consideration of rate impacts.

Solely for the purposes of calculation, the District will take into account all amounts currently available from any debt financing for capital purposes as included in the Major Capital Reserve Fund, in addition to any amounts set-aside herein from sources other than debt proceeds. Nothing herein will alter, amend or change the treatment of, or accounting for debt proceeds as prescribed in the governing documents of such debt.

Target Levels – It is recommended that the District maintain the proper balance in an amount sufficient to fund planned major capital expenditure. The minimum funding level is the minimum of major capital projects for the next fiscal year and the target level is reflective of the major capital projects for the next three (3) fiscal years.

The District will take steps to make contributions to this fund as necessary to meet future major capital needs.

Authorization – Upon the approval by the District Board of the capital projects, Staff is authorized to use funds from the Major Capital Reserve Fund to pay for the projects approved.

Source of funding: Revenues of the District.

4.5 Revenue Stabilization Reserve Fund

These funds are maintained to provide the District with the ability to supplement revenues losses when water sale revenues are under-collected.

Target Levels – Funding targets for the Revenue Stabilization Reserves depend on numerous variables including, but not limited to, the timing and volatility of revenues and the variability of water supply and demand, among other things. The Revenue Stabilization Reserves shall have a minimum amount equal to ten percent (10%) of water sales shortages over a two (2) year period , and a target amount equal to ten percent (10%) of water sales shortages over a three (3) year period. Upon the recommendation of the General Manager and notwithstanding the recommended minimum level, the District Board may approve the use of all funds on deposit in the Revenue Stabilization Reserves towards offsetting a proposed rate increase.

Authorization – Upon the approval by the Board of Directors of the District's budgeted funds to be used to offset any rate increase, such amounts shall be transferred to the District's revenue fund.

Source of funding: Revenues, surplus funds of the District,.

5.0 RESTRICTED RESERVES

Restrictions on the use of these funds are imposed by an outside source such as creditors, grantors, contributors, laws, or regulations governing use.

5.1 Employee Benefits

To accumulate funds to offset net other postemployment benefits (OPEB) and pension liabilities held at CalPERS. Funds to be deposited at the close of each fiscal year to the OPEB Trust until the balance of the trust and amounts held at CalPERS

reaches approximately ninety percent (90%) of the total liability. This reserve will maintain the remaining ten percent (10%) to offset the unfunded liability and to ensure the trust is not overfunded.

Target Levels – Funded annually by the Budget using surplus revenues following receipt of CalPERS unfunded liability payments, in an amount not to exceed 10% of the net OPEB and CalPERS pension liabilities.

Authorization – Use of these funds to meet 90% unfunded liability.

Source of funding: Surplus Revenues.

5.2 Debt Proceeds Funds

Debt proceeds funds are monies derived from the proceeds debt. Typically, they consist of construction fund monies and may include a debt service reserve fund ("DSRF"), if such was deemed necessary. The use of these proceeds is restricted by the conditions set forth in the respective legal documents. These funds are usually held by the Trustee and provided to the District when requested, pursuant to the respective legal documents, and as outlined in Section 13) of the Debt Management Policy.

Target Levels – The debt service reserve requirement is established at the time of the bond issue. This amount may be recalculated as the bonds are paid down. Any excess principal and/or interest earnings can be used to pay debt service on the bonds.

Events or Conditions Prompting the Use of the Fund(s) – As stipulated in the respective legal documents. Construction fund monies are expected to be spent on applicable projects, while DSRF can only be used in the event of a shortfall in revenues to pay debt service or to pay down principal at maturity.

Periodic Review Dates for Balances – Reviewed by the Trustee and District Staff.

Authorization – Based on related bond documents, District Staff can initiate transfer.

Source of Funding: Any excess principal and/or interest earnings can be used to pay debt service on the bonds.

6.0 REPORTING

The annual budget document will include a reserve analysis, showing reserve amounts and targets for each type of reserve fund. Staff will identify any major change in conditions which may threaten reserve levels, and the General Manager will provide an analysis to the Board of Directors. This analysis would include an explanation of why reserve levels are below targeted levels and/or a recommended course of action to improve reserve levels.

7.0 COMPLIANCE

The District's Board may waive any requirements of this Policy upon the recommendation of the General Manger or Chief Financial Officer after consultation with bond counsel and the municipal advisor. Further, the Board waives the initial proposed minimum funding level as long as the minimum thresholds are achieved within three (3) fiscal years.

The following table illustrates the Reserve Fund Policy target levels based on priority:

Reserve Fund		Funding Levels		
		Minimum	**Target**	**Maximum**
		Unrestricted Reserves		
1	**Operating Reserve (Working Capital)**	15% of annual operating expense budget, net of imported water cost and pass-through costs, interest expense, depreciation and amortization, plus $2 million.	25% of annual operating expense budget, net of imported water cost and pass-through costs, interest expense, depreciation and amortization, plus $2 million.	50% of annual operating expense budget, net of imported water cost and pass-through costs, interest expense, depreciation and amortization, plus $2 million.
2	**Emergency Reserve**	4.5% of the net replacement value of the District's capital assets, net of depreciation	6% of the net replacement value of the District's capital assets net of depreciation	8% of the replacement value of the District's capital assets net of depreciation (no more than $10,000,000)

3	**Capital Improvement and Replacement Reserve (Pay-go)**	Greater of i) $3,500,000 or ii) R&R Pay-go projects for the next fiscal year	R&R Pay-go projects for the next 3 years	NA
4	**Major Capital Reserve**	Major capital projects for the next fiscal year	Major capital projects for the next three (3) fiscal years	NA
5	**Revenue Stabilization Reserve**	10% of water sales shortages over a two (2) year period	10% of water sales shortages over a three (3) year period	NA

RESOLUTION NO. 25-02-998

RESOLUTION OF THE BOARD OF DIRECTORS OF THREE VALLEYS MUNICIPAL WATER DISTRICT AUTHORIZING ADOPTION OF RESERVE POLICY

WHEREAS, the purpose of the Three Valleys Municipal Water District ("the District") Reserve Policy is to ensure that the District continues to have sufficient funding available to meet its operating, capital and debt service obligations.

WHEREAS, the Board of Directors deems having established reserve policies is consistent with sound and prudent fiscal practices as well as legal requirements.

WHEREAS, the Reserve Policy establishes various reserve categories, defines the purpose and use of the funds, and identifies target levels.

WHEREAS, the Board of Directors understands that District goals and objectives may change, and as such, District reserve levels may need to be reevaluated from time to time.

WHEREAS, the adoption of this resolution will supersede all previous resolutions passed by the Board of Directors with respect to reserve policies.

NOW THEREFORE, BE IT RESOLVED, that the Board of Directors does hereby authorize the Reserve Policy.

ADOPTED and PASSED at a meeting of the Three Valleys Municipal Water District's Board of Directors, on this 19th day of February 2025, by the following vote:

AYES:
NOES:
ABSTAIN:
ABSENT:

_____
Mike Ti, President

ATTEST:

_____
Jeff Hanlon, Secretary

SEAL:

THREE VALLEYS MUNICIPAL WATER DISTRICT

BOARD INFORMATION

BOARD OF DIRECTORS
STAFF REPORT

To: TVMWD Board of Directors

From: Matthew H. Litchfield, General Manager

Date: February 19, 2025

Subject: Water Resources Master Plan Update

☐ Funds Budgeted: $ ☐ Fiscal Impact: $

Staff Recommendation
No Action Necessary – Information Only

Discussion
The purpose of the Water Resources Master Plan and Drought Contingency Plan (WRMP-DCP or Project) is to develop a roadmap to enhance Three Valleys Municipal Water District's (Three Valleys/TVMWD) water supply portfolio thereby providing reliable, sustainable and robust water resources and supplies for the next 50 years. The Project will develop supply portfolios and suites of action based on the projected short and long-term needs that account for the potential impacts on water supply and availability due to climate change. This will include evaluating the current and future water resources priorities along with a vulnerability assessment to develop a comprehensive long-term plan.

Three Valleys received grant funding in the amount of $200,000 from United States Bureau of Reclamation (USBR) for the WaterSMART Drought Contingency Plan in February 2023. The attached presentation provides a summary of the workshops and collaboration that has been held with the stakeholders within the region over the past two years. The item will be brought back as a future agenda item for further consideration.

Environmental Impact
None

Strategic Plan Objective(s)

1.2 Diverse Portfolio
1.3 Infrastructure Reliability
1.4 Operational Efficiency
2.3 Public Engagement

Attachment(s)

Exhibit A – WRMP Workshop Presentation
Exhibit B – WRMP Technical Memorandum
Exhibit C – DCP Technical Memorandum

Meeting History

Board of Directors Meeting, September 6, 2023, Informational Item Only
Special Board of Directors Workshop Meeting, February 15, 2023, Informational Item Only

NA/SL

THREE VALLEYS
MUNICIPAL WATER DISTRICT

Board Workshop

Three Valleys Municipal Water District

February 19, 2025

8:00am to 9:30am

Workshop Agenda

10 min	**Welcome and Workshop Goals**
45 min	**WRMP Overview**
15 min	**Questions and Feedback**
10 min	**Next Steps**

Presenters and GEI Project Team

Roger Putty, PE, PMP
Planning Lead
(Presenter)

Kwabena Asante, PhD, PE
Technical Lead
(Presenter)

Fatima Segoviano
Water Resources Engineer

Matthew Bachman
Water Resources Engineer

Peter Kavounas, PE
Senior Civil Engineer

Mark Ashenfelter
Project Manager/
Grant Administrator

Workshop Goals

1. **Review and Discussion of WRMP**

2. **Board Direction on WRMP Recommendations**

Water Resources Master Plan

Roadmap To Enhance Water Supply Reliability

→→→ Guiding Objectives and Priorities →→→

TM

Water Supply Vulnerability Assessment

Workshops 1 through 5

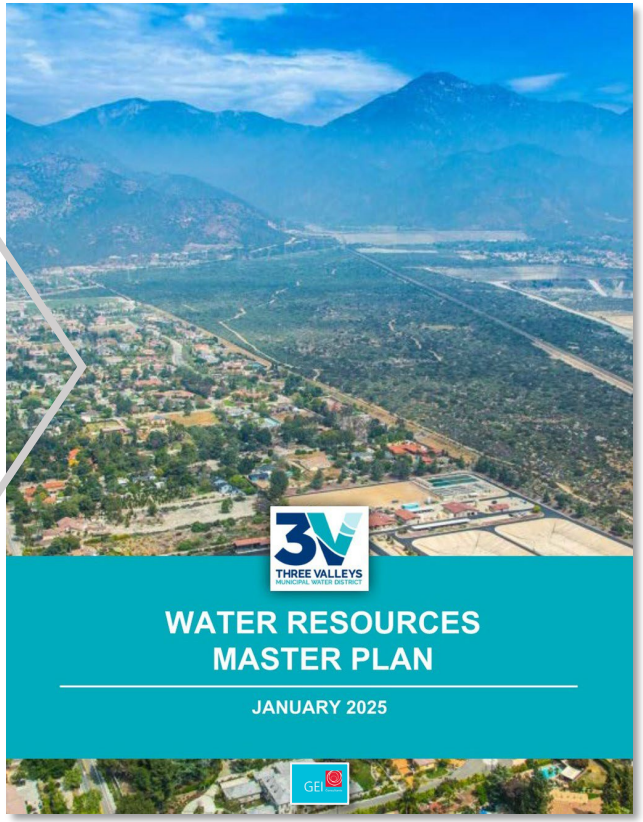
TM

Proposed Mitigation Projects

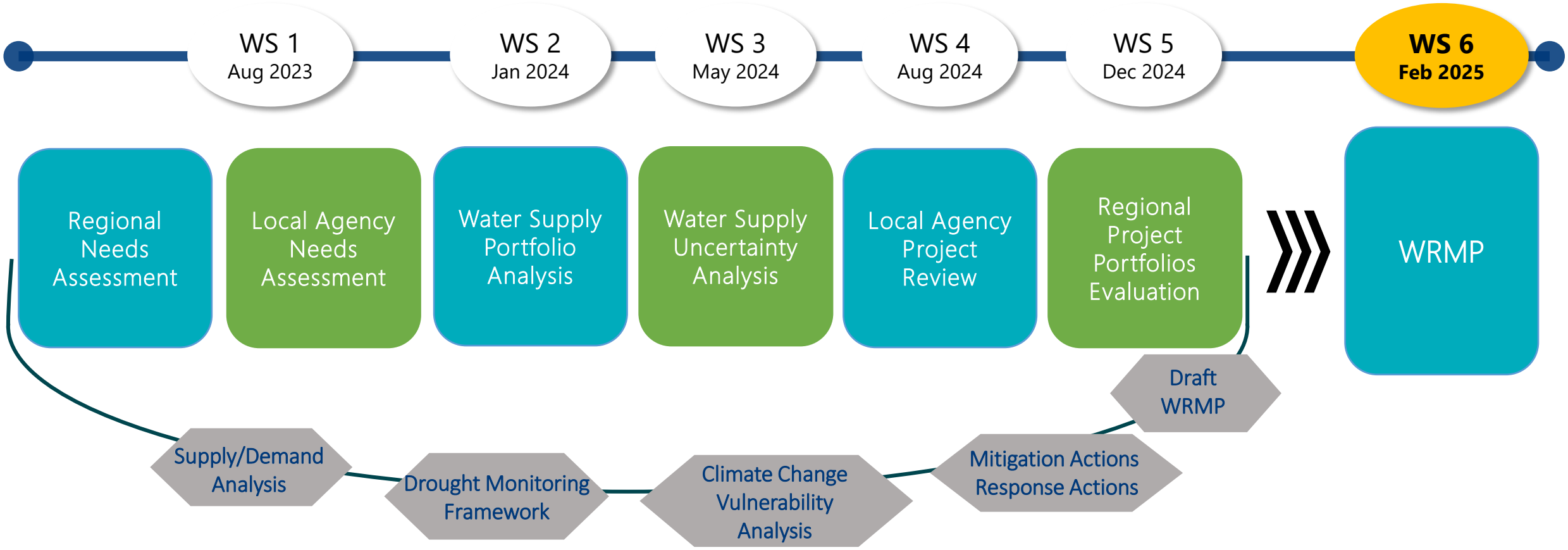
TM

Proposed Regional Projects

→→→ Guiding Objectives and Priorities →→→



Drought Task Force Engagement



Approach to Water Resources Master Plan Development

- **Water Supply Vulnerability Assessment**
  - **Future growth and climate change**
  - **Extreme droughts**
  - **System performance**
- **Proposed Mitigation Projects and Response Actions**
  - **Local projects proposed by member agencies**
  - **Demand reduction from statewide conservation measures**
- **Multi-Agency Proposed Regional Projects**
  - **Development of regional project concepts**
  - **Assessment of project benefits**
  - **Assessment of project risks**
  - **Benefit-Risk ranking of regional projects**
- **Summary and Recommendations**

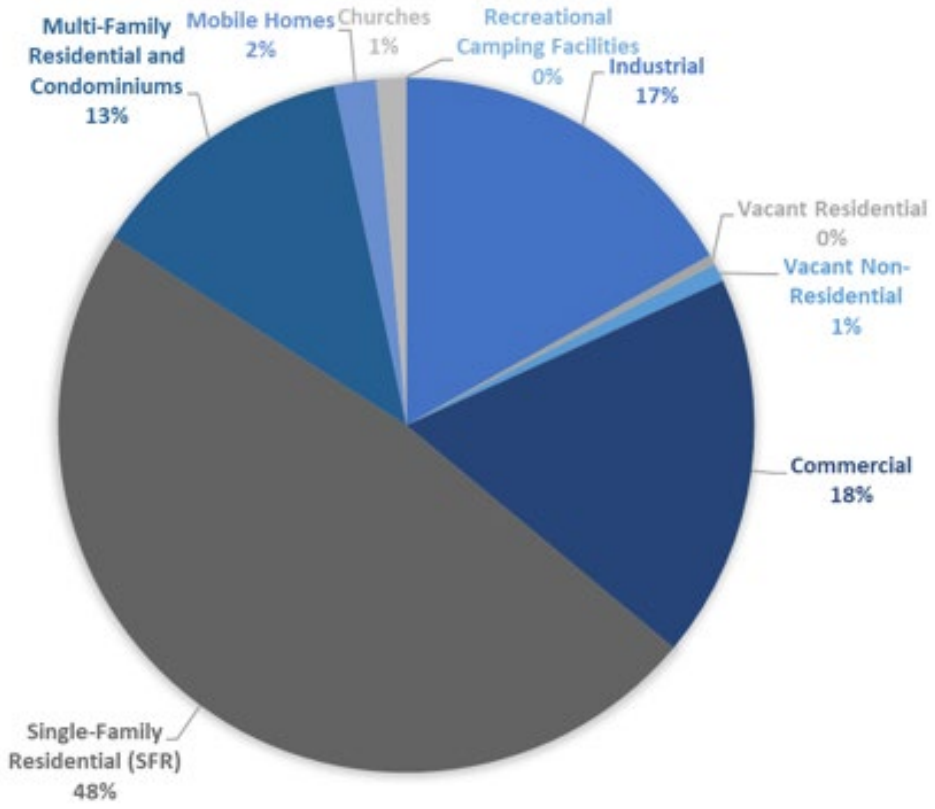
Water Supply Vulnerability Assessment

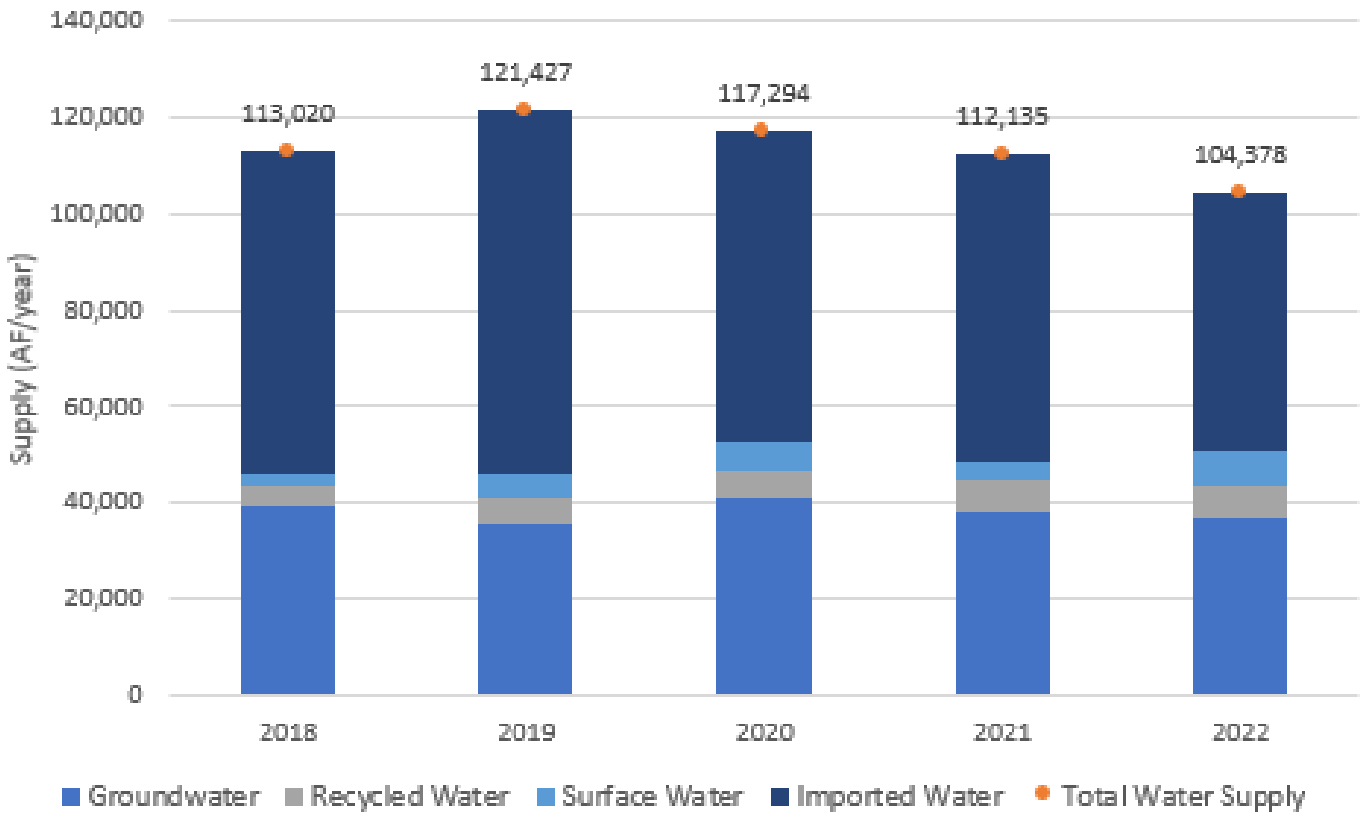
Water Supply Vulnerability Assessment

1. **Baseline Water Demand and Supply Sources**
2. **Member Agency Dependency on Imported**
3. **Impacts of Droughts**
4. **Impacts of Future Growth and Climate Change**

Baseline Water Demands

Three Valleys member agencies serve the water needs of a mix of residential, commercial and industrial users





Member Agency Water Supply Sources

Three Valleys member agencies rely on a combinations of water sources and storage accounts to supply their needs

Member Agency	Groundwater	Imported Water	Surface Water	Recycled Water
Boy Scouts of America		X		
Cal Poly Pomona	X	X		X
City of Covina[a]	X	X	X	
City of Glendora*	X	X	X	
City of La Verne	X	X		
City of Pomona	X	X	X	X
Golden State Water Company (Claremont)*	X	X		
Golden State Water Company (San Dimas)*	X	X	X	
Mount San Antonio College		X		
Rowland Water District	X	X		X
Suburban Water Systems*	X	X	X	X
Valencia Heights Water Company*	X	X	X	X
Walnut Valley Water District	X	X		X

* Purchases water from Covina Irrigating Company which produces water from local surface and groundwater sources and treats imported water from Three Valleys.

Storage System	Three Valleys Storage Capacity (AF)	Three Valleys - Pomona Agreement
Six Basins	3,500	
Main San Gabriel Basin	50,000	
Chino Basin		1,390

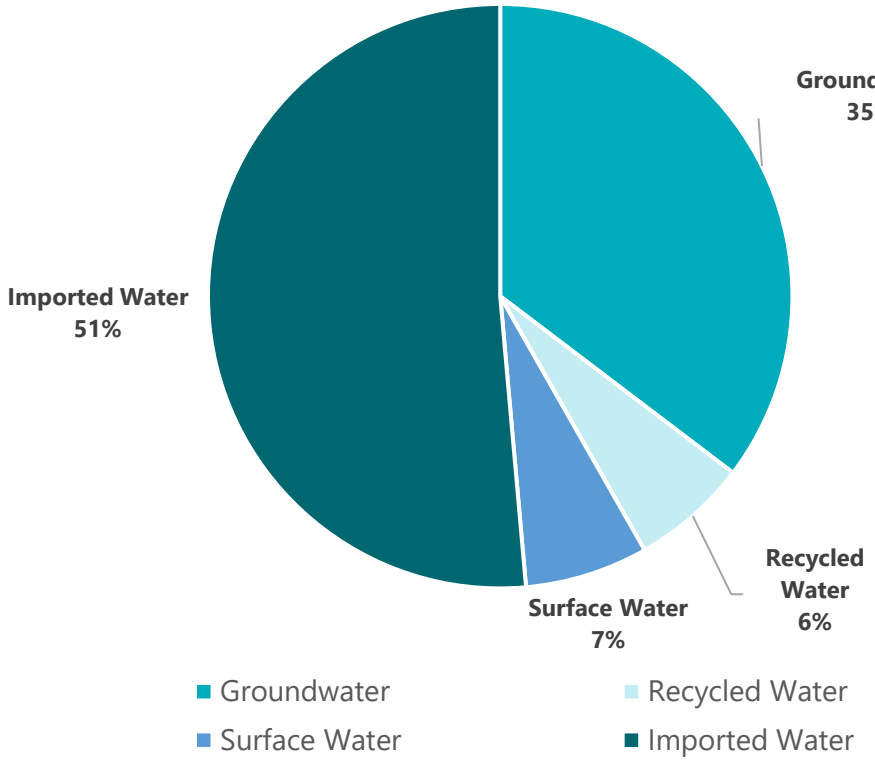
PBWA has a storage and export agreement with the Main Basin for 30,000 AF

Chino Basin Three Valleys storage through Pomona is a one-time agreement

Member Agency Dependency on Imported Water During Droughts

Three Valleys region and several member agencies have

- **High overall dependency on imported water (about 57% of total supplies)**
- **Increasing dependency during drought periods (+10%)**

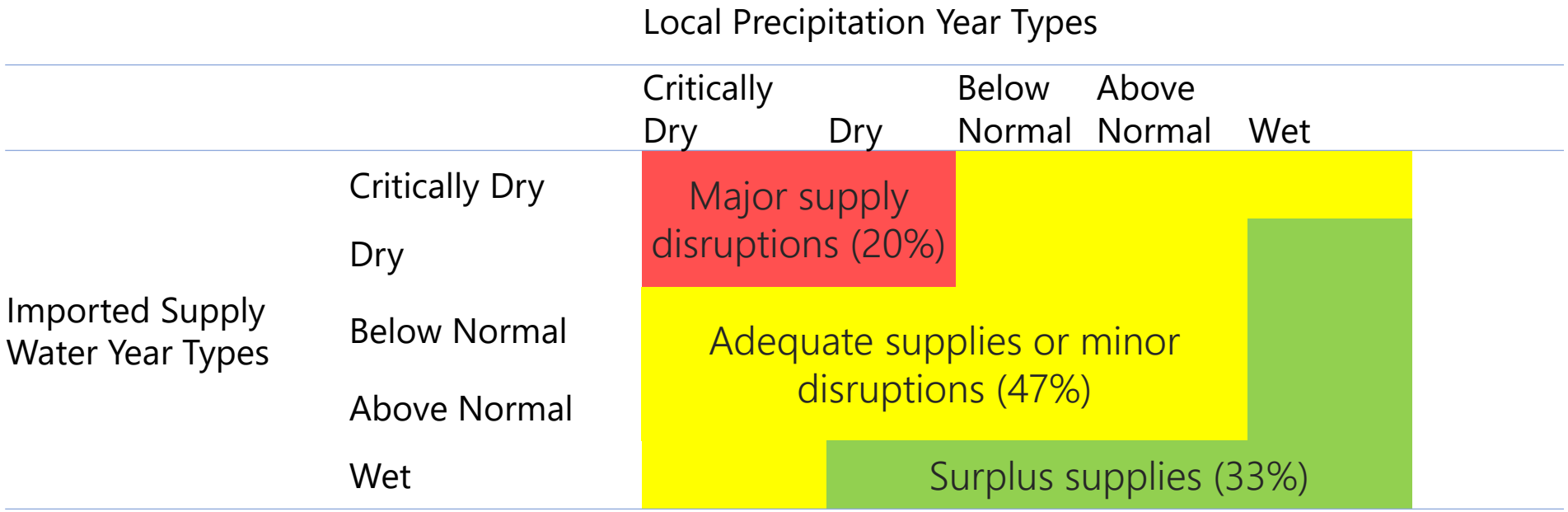


Agency	Current Dependency on IW (2015-2022)	Dependency on IW during Drought Periods
Boy Scouts of America	0%	0%
Cal Poly Pomona	5%	6%
City of Covina	4%	18%
City of Glendora	6%	25%
City of La Verne	55%	79%
City of Pomona	21%	30%
Covina Irrigating Company	56%	65%
Golden State Water Company (Claremont)	56%	65%
Golden State Water Company (San Dimas)	82%	87%
Mount San Antonio College	100%	100%
Rowland Water District	82%	88%
Suburban Water Systems (San Jose)	28%	75%
Valencia Heights Water Company	10%	29%
Walnut Valley Water District	91%	88%

How Often do Droughts Impact Both Local and Imported Supplies?

Based on 82 years of local and State Water Project (SWP) data:

- **Dry and/or Critically Dry droughts causing deficits in both Three Valleys local and imported water sources simultaneously occurs in approximately 20% of years which is 1 in 5 years.**
- **Surplus water supplies are available in about 33% of years (1 in 3 years) for use in enhancing local resilience to future drought events.**



Impacts of Recent Droughts on Local and Imported Supplies

How frequently have droughts impacted water supplies in recent years?

Local production has declined after persistent local droughts

Increasing dependency on imports to fill the gap

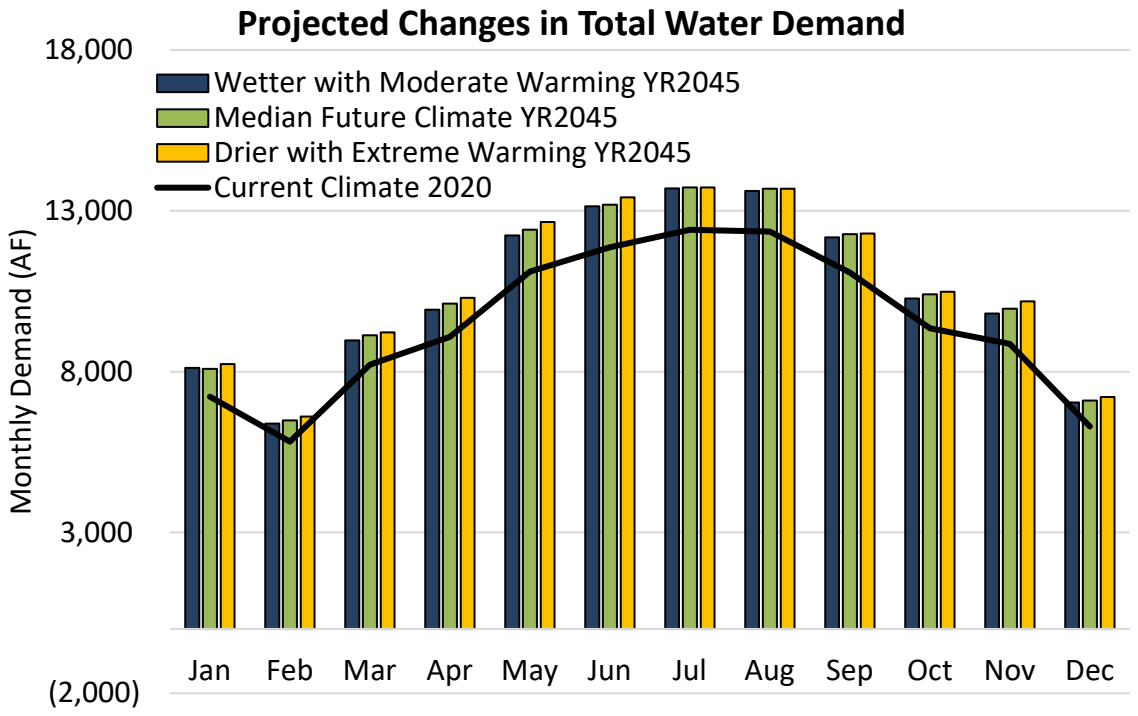
Major Supply Deficits
Adequate/Minor Supply Deficits
Surplus Supplies

Three Valleys Sources	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
SWP Year Type	Below Normal	Wet	Below Normal	Dry	Critically Dry	Critically Dry	Below Normal	Wet	Below Normal	Wet	Dry	Critically Dry	Critically Dry
Local Precipitation Year Type	Wet	Dry	Critically Dry	Critically Dry	Dry	Dry	Below Normal	Dry	Dry	Wet	Below Normal	Dry	Critically Dry
Local Three Valleys Water Supply (TAF)	60.6	64.4	65.2	61.1	57.7	52.6	43.1	45.2	45.7	46.1	52.6	48.4	50.7

Impacts of Future Growth and Climate Change

Three Valleys region is projected to experience:

- **Increasing water demand due to warming and growth**
- **Total local waters supplies unchanged or slightly lower**



Total Local Supply (AF/year)	2018-2022	2045	Net Change
Drier Future with Extreme Warming	48,694	48,345	-1,039
Median Future Climate Conditions		48,345	-349
Wetter Future with Moderate Warming		52,587	3,893

Future Water Budget with Climate Change and Growth

Region's annual water supply deficits projected to increase to 15 TAFY by 2045

- Projected growth +10 TAFY
- Climate change +5 TAFY

Increasing water budget deficits need to be addressed through

- Increasing imported water
- Developing alternate supplies
- Reducing demands, e.g., through water use efficiency and managing growth

Demand (AF/year)	2018-2022	2045	Net Change
Drier Future with Extreme Warming	113,651	128,000	+14,400
Median Future Climate Conditions		126,600	+12,900
Wetter Future with Moderate Warming		125,400	+11,700

Imported Water Supply Required (AF/year)	2018-2022	2045	Net Change
Drier Future with Extreme Warming	64,957	80,400	+15,400
Median Future Climate Conditions		78,200	+13,300
Wetter Future with Moderate Warming		72,800	+7,800

Proposed Mitigation Projects and Response Actions

Proposed Mitigation Projects and Response Actions

1. **Water Conservation**

2. **Proposed Local Agency Projects**

3. **Regional Drought Continency Planning**

Water Conservation: Targets and Potential Savings

Agency	Current 55 GPCD target (AF)	Projected 2025 47 GPCD target (AF)	Projected 2030 42 GPCD target (AF)
Glendora	-1,854	-2,326	-2,621
La Verne	171	-97	-231
Pomona	1,015	-226	-817
GSWC Claremont	2,531	2,193	2,002
GSWC San Dimas	1,194	693	387
Rowland	168	-313	-602
Suburban	2,341	805	-99
Walnut	173	-701	-1,208
Conservation Savings	**-1,854**	**-3,663**	**-5,578**

Actual GPCD above target GPCD

Actual GPCD below target GPCD

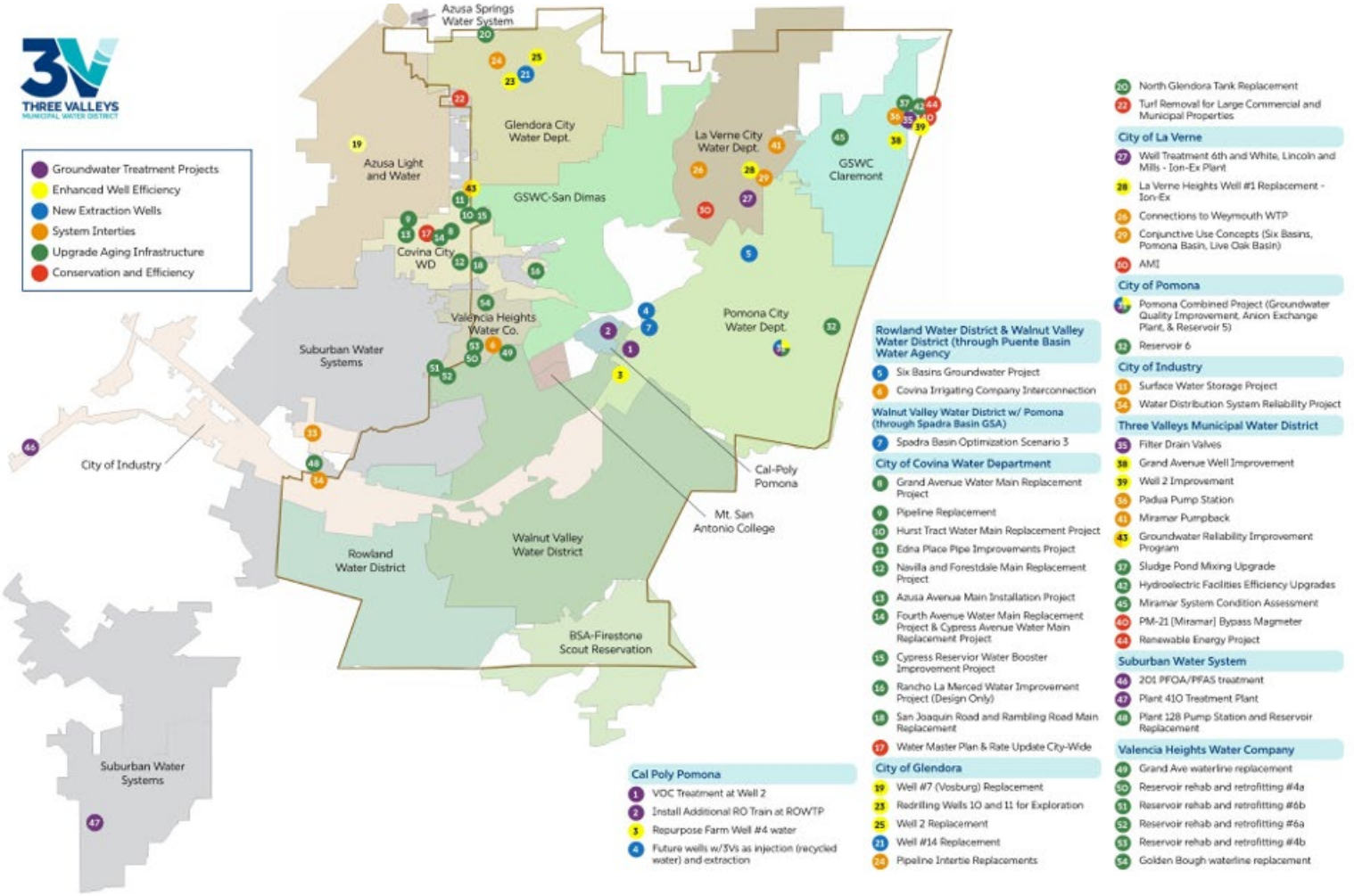
Increased water use efficiency to meet State mandated water use targets reduces demand +5 TAFY by 2030

Proposed Local Agency Projects

Pursue mitigation actions to address vulnerabilities identified through the Water Supply Vulnerability Assessment

Prioritize projects that align with the proposed mitigation actions, which can result in:

- Enhanced water supply reliability for the region and its member agencies
- More regional benefits
- More competitive grants



Note:
1. GSWC = Golden State Water Company, BSA = Boy Scouts of America
2. Project #44 is included to account for all proposed mitigation actions. However, upon further review with Three Valleys, it was determined that Project #44 does not qualify as a drought mitigation action.

Proposed Local Agency Projects: Implementation Timeline

Collectively, local agencies identified a total of 54 projects, programs, and/or strategies

Projects vary by type and implementation timeline, which informed the regional solutions

Projects included in the plan have increased opportunities for grant funding

	Short-Term	Mid-Term	Long-Term
System Interties	34, 41	6, 24, 26	29, 33, 36, 43*
New Extraction Wells	4, 5		21, 31*
Enhanced Well Efficiency	3, 25, 40	39	19, 23, 28, 38
Upgrade Aging Infrastructure	10, 12, 14, 15, 16, 20, 45, 48, 51, 52	8, 11, 13, 18, 37, 49, 50	9, 32, 42, 53, 54
Groundwater Treatment Projects	1, 35	2, 46, 47	7, 27
Conservation and Efficiency	17, 22	30, 44	
TOTAL	**21**	**16**	**17**

**Categorized under multiple project types*

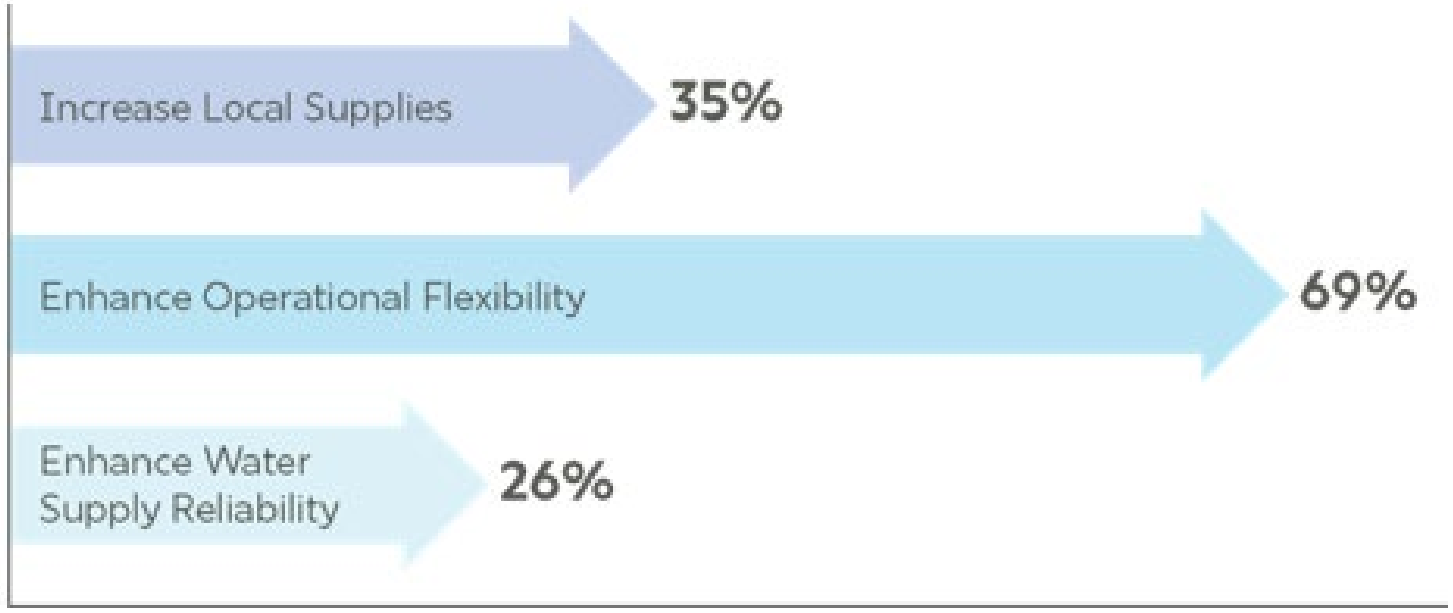
Proposed Local Agency Projects: Benefits

Proposed projects provide a range of local and regional benefits:

Increasing Local Supplies:
- New Extraction Wells
- Enhanced Well Efficiency
- Groundwater Treatment Projects

Enhancing Operational Flexibility:
- System Interties
- Upgrading Aging Infrastructure
- Conservation and Efficiency Measures

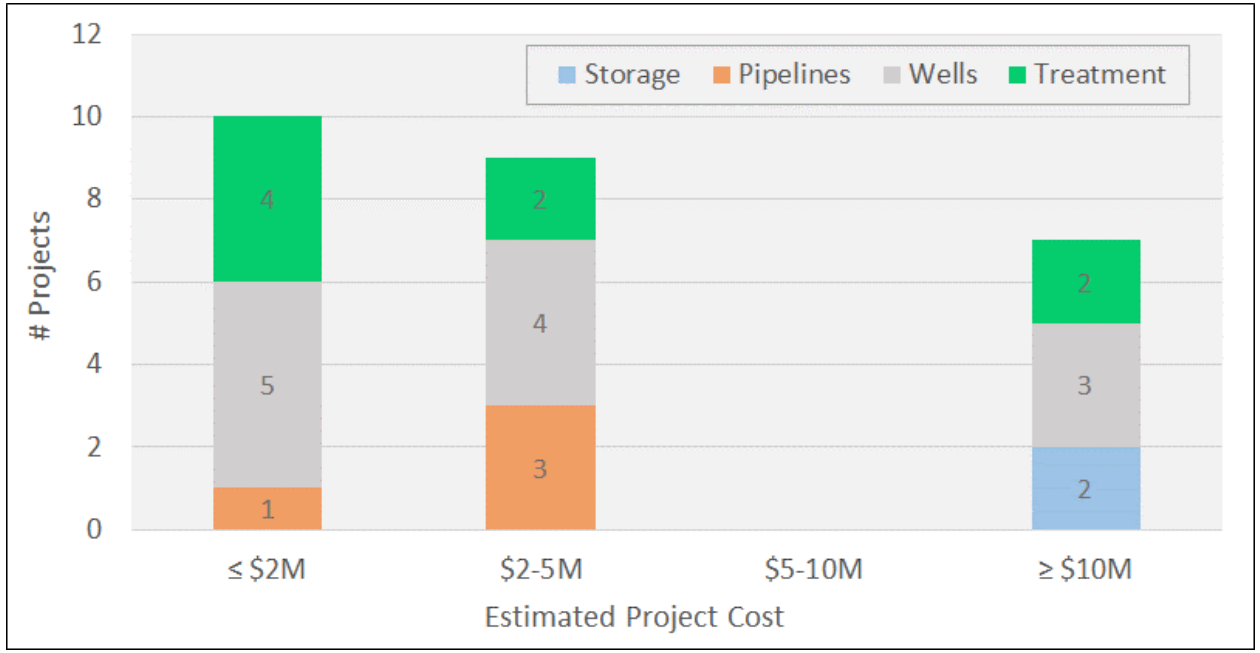
Enhancing Water Supply Reliability:
- Overall supply increase
- Reduction in drought imported water dependency
- Decrease in overall imported water dependency



Proposed Local Agency Projects: Construction Costs

- Member agencies identified proposed infrastructure components, yield and cost for 26 of the 54 local water projects
- Construction cost estimated at over $660 million
- Most local projects proposed replace aging infrastructure and/or maintain current water production
- Projects to generate additional water supplies and/or storage are expensive

Type of Project	Number of Projects	Estimated Average Cost ($)	Estimated Total Cost ($)
Storage	2	$88M	$176M
Pipelines	4	$3M	$12M
Wells	12	$27.3M	$327M
Treatment	8	$6.5M	$52M
		Total	$667M

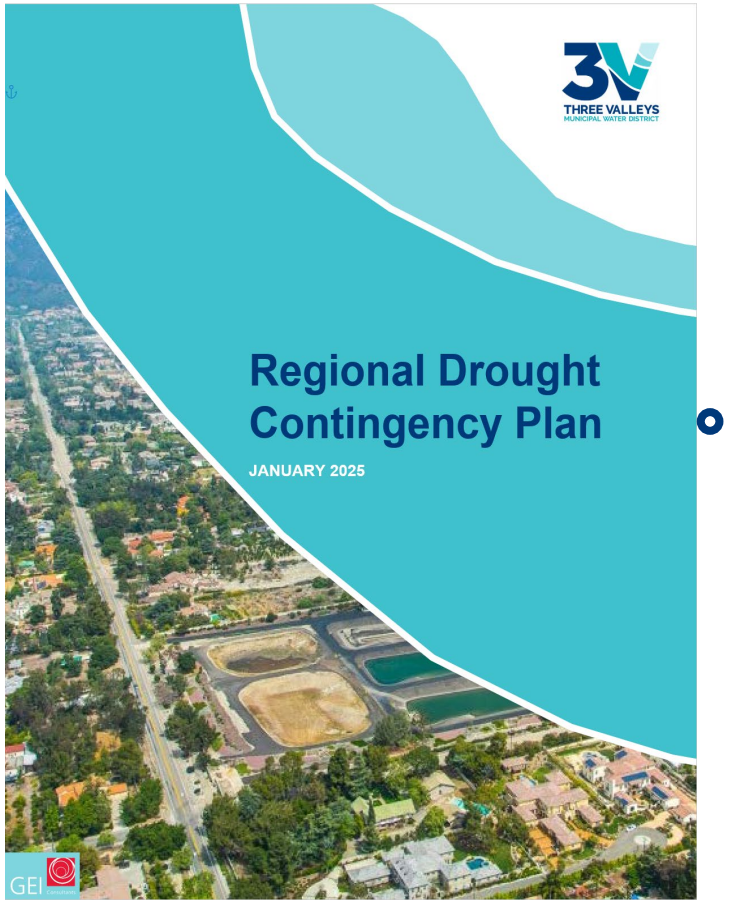


Proposed Local Agency Projects: Project Yield & Unit Costs

- **Yield and Unit Costs only available for about half of proposed projects**
- **Most local projects proposed replace aging infrastructure; not new yield**
- **Local production capacity could decline in half if these local projects are not implemented**
- **Securing external funding for local projects is challenging and competitive**

Category (Number of Projects)	Total Project Yield (AF)	Project Yield Cost ($/AF)	
		Group Range	Group Average
Integrated Storage and Wells (1)	2,994	--	$53,616
Pipelines (2)	2,200	$2,000 - $17,000	$3,465
Wells (5)	14,300	$300 - $15,000	$10,735
Treatment (4)	9,535	$1,000 - $3,000	$1,841
TOTAL	29,029	$300 - $17,000	$11,685

Regional Drought Contingency Planning



Look here for help to answer those questions

How will we recognize and respond to the next drought?

How will drought affect us?

How can we protect ourselves from the next drought and increase opportunities for grant funding?

Regional Drought Contingency Planning: Meetings/DTF

Regional coordination will continue to be used to review and respond to water availability conditions:

- Member agency manager meetings are held monthly.

- More frequent meetings (at least twice monthly) may be held with any member agency in Stage 5 or above.

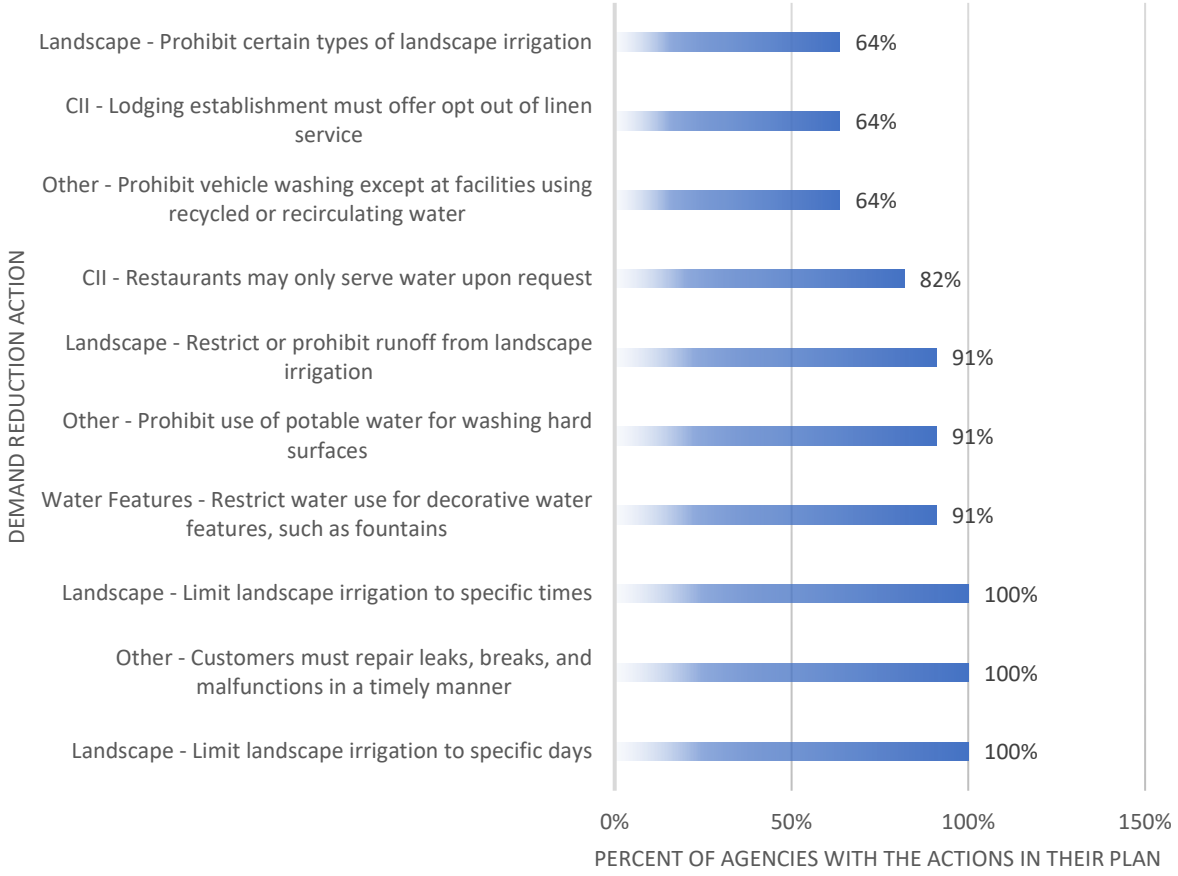
Drought Task Force Meetings will be convened accordingly:

- A drought emergency declaration from the State, Metropolitan.
- Or if any member agency raises concerns.

Three Valleys may also conduct an annual check-in meeting with the Drought Task Force.

Regional Drought Contingency Planning: Response Actions

A variety of local and regional drought response actions identified in the plan



Regional Drought Contingency Plan includes:

- Triggers for droughts and surplus conditions
- Procedures for managing response
  - Demand and supply projections
  - Identifying infrastructure constraints
  - Strategic communication of response actions
  - Assembly of the Drought Task Force
  - Coordinating mitigation actions
  - Updating the DCP
- Descriptions of Three Valleys staff roles

Multi-Agency Proposed Regional Projects

Multi-Agency Proposed Regional Projects: Components

Regional Project #1 – External Partnership with Covina Valley Water Company (Main San Gabriel Basin)	Regional Project #2 – Three Valleys Groundwater Reliability Improvement Program (GRIP)	Regional Project #3 – Three Valleys Storing Water in Main San Gabriel Basin (GRIP+)	Regional Project #4 – Chino Basin Conjunctive Use with Three Valleys
Construction of an intertie to access existing water supply from Covina Valley Water Company (CVWC). Through Puente Basin Water Agency (PBWA), WVWD and RWD would lead the construction of this intertie, which would allow pumping of surplus CVWC well and surface water into the Badillo-Grand pipeline via the new interconnection.	Three Valleys partnership with the City of Glendora and PBWA to implement a regional distribution network and local supplies by utilizing 9,000 AF/yr of stranded City assets. The regional distribution network would be augmented by the construction of new treatment facilities and conveyance pipelines.	Three Valleys partnership with the City of Glendora and City of Pomona in which Three Valleys would store surplus imported water in wet years for the Cities via groundwater recharge at the Santa Fe Spreading Grounds in the Main San Gabriel Basin.	Partnership between Three Valleys and the City of Pomona. Three Valleys will store water in the Chino Basin and fund City of Pomona's infrastructure projects in exchange for the pumping and delivery of water for use by the Three Valleys member agencies, such as the City of La Verne, Golden State Water Company and the Puente Basin Water Agency.

Multi-Agency Proposed Regional Projects: Components

Project	Facilities					
	Extraction Wells	'Put' Facilities	Regional Pipeline	Increased Treatment Capacity	Increased Storage	Increased Local Supply
External Partnership with Covina Valley Water Company (Main Basin)			●			●
Three Valleys Groundwater Reliability Improvement Program (GRIP)	●		●	●	●	●
Three Valleys Storing Water in Main Basin (GRIP+)	●		●		●	●
Chino Basin Conjunctive Use with Three Valleys					●	●

Multi-Agency Proposed Regional Projects: Benefits Evaluation

Goal	Regional Project Needs as Evaluation Criteria
10 TAF	1. Reduce dependency on imported water during drought years
10 TAF	2. Reduce overall dependency on imported water
60 TAF	3. Increase total water in storage to about one year of imported supplies from Metropolitan
15 TAF	4. Increase Three Valleys PUT capacity by 15 TAF/year
15 TAF	5. Increase climate resilience – need to meet additional 15 TAFY[1]
	6. Increase operational flexibility with additional Three Valleys conveyance facilities to transmit water from West to East, through a shared program with member agencies.
	7. Affordability of marginal cost of water produced compared to Metropolitan water
	8. Increase local groundwater treatment capacity
	9. Increase local extraction capacity

[1] *Compliance with State 2030 goal for 42 GPCD reduces total member agency demand by approximately 5 TAFY*

Multi-Agency Proposed Regional Projects: Risk Evaluation

- 4 categories of project risk identified
- Each project is assigned a severity score and a likelihood score for each category of risk
- Severity and likelihood scores assigned range from 1 (low) to 4 (high)

Risk Category	Risk Elements	Project 1 Severity	Project 1 Likelihood
Costs	Risk of Capital Cost Overuns		
	Risk of Partner Agencies not paying their share		
	Risk of not securing External Financing and funding		
	Risk of increasing long-term operations and maintenance		
Implementation	Risk of Project duration and schedule overuns		
	Risk of Land not being available		
	Risk of Running into Constructability issues		
	Risk of having limited implementation options		
	Risk of Permitting Complications (conditions, denials etc)		
	Risk of the project not being thoroughly planned		
Operations	Risk of Yield variability and reliability		
	Uncertainty of Operating Partnerships		
	Risk of inter-dependent projects not coming through		
	Risk of Environmental and water quality regulations (eg PF		
	Lack of Redundancy for emergency operations/asset failur		
Stakeholders	Lack of Ratepayer support		
	Risk of not garnering Three Valleys and member board sup		
	External stakeholder opposition		
	Opposition from Environmental/special interest groups		

Multi-Agency Proposed Regional Projects: Benefit-Risk Rankings

- **Project rankings based on Benefit - Risk Ratio**
- **High Benefit - Risk Ratios indicate preferred projects**

Regional Project	Sum of Benefit Scores (max = 27)	Benefit Index	Sum of Risk Scores (max = 64)	Risk Index	Benefit - Risk Ratio	Preferred Project Rank
Project 4: Chino Basin Conjunctive Use with Three Valleys	13.7	0.51	19.3	0.30	1.68	**1**
Project 3: Three Valleys Storing Water in Main San Gabriel Basin (GRIP+)	16.6	0.61	23.8	0.37	1.65	**2**
Project 1: External Partnership with Covina Irrigation Company (Main San Gabriel Basin)	9.7	0.36	16.1	0.25	1.43	**3**
Project 2: Three Valleys Groundwater Reliability Improvement Program (GRIP)	14.1	0.52	34.4	0.54	0.97	**4**

Summary and Recommendations

WRMP Summary of Findings

The Three Valleys Water Resources Master Plan has documented:

1. **Current and future water supply needs with climate change and growth for the next two decades**
2. **Scope and costs information for 26 proposed local infrastructure projects**
3. **Identified and evaluated benefits and risks for four regional project concepts for meeting regional water supply reliability goals**

WRMP Recommendations

Infrastructure Conditions Assessment (1 and 2):

1. **Conduct a comprehensive assessment of the condition of water infrastructure in the Three Valley region**
   - **Quantify status of existing wells, pipelines, pumping, and treatment assets**
   - **Establish the remaining life and replacement schedule of existing assets**
   - **List all existing infrastructure that are no longer functioning or in use**
2. **Align infrastructure plans to future changes in system performance and water supply reliability**
   - **Regularly updated infrastructure masterplan**
   - **Regularly updated regional capital improvement plan**

WRMP Recommendations (continued)

Multi-Agency Regional Projects (3 and 4):

3. **Continue development of the regional projects including**
   - **Conceptual planning of project components, constraints, project costs, and review alternatives**
   - **Engage member agencies to recruit project participants, establish participation agreements, and seek approval of agency boards to seek implementation funds**
   - **Develop funding proposals and engage funding agencies to solicit early input on fundability**
4. **Pursue state and federal funding opportunities**

Questions, Feedback, and Actions

1. **Discussion of questions and feedback on final draft WRMP by Three Valleys and Member Agencies**

2. **Board Direction on WRMP Recommendation?**

Workshop Closing Comments and Adjournment

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THREE VALLEYS
MUNICIPAL WATER DISTRICT

WATER RESOURCES MASTER PLAN

JANUARY 2025

GEI Consultants

Table of Contents

Figures

Tables

Acronyms and Abbreviations

1,2,3-TCP	1,2,3-Trichloropropane
AF	acre-feet
AF/year	acre-feet per year
CEC	contaminants of emerging concern
CIP	Capital Improvement Program
CPP	California State Polytechnic University at Pomona
CRA	Colorado River Aqueduct
DBCP	Hexavalent Chromium, Arsenic, 1,2-Dibromo-3-chloropropane
CVWC	Covina Valley Water Company
DCP	Drought Contingency Plan
DWR	California Department of Water Resources
FEMA	Federal Emergency Management Agency
ET	evapotranspiration
FY	fiscal year
GAMA	Groundwater Ambient Monitoring and Assessment
gpm	gallons per minute
GRIP	Groundwater Reliability Improvement Program
GRIP+	Groundwater Reliability Improvement Program "Plus"
GSA	Groundwater Sustainability Agency
GSWC	Golden State Water Company
JWL	Joint Water Line
MCL	Maximum Contaminant Level
Metropolitan	Metropolitan Water District of Southern California
O&M	operations and maintenance
PBWA	Puente Basin Water Agency

PCE	Trichloroethene
PFA	polyfluoroalkyl substances
TAF	thousand acre-feet
TAF/year	thousand acre-feet per year
TCE	Trichloroethene
TDS	Total Dissolved Solids
USBR	U.S. Bureau of Reclamation
RWD	Rowland Water District
SGMA	Sustainable Groundwater Management Act
SWP	State Water Project
SWS	Suburban Water Systems
Three Valleys	Three Valleys Municipal Water District
UWMP	2020 Urban Water Management Plan
VHWC	Valencia Heights Water Company
WRMP	Water Resources Master Plan
WVWD	Walnut Valley Water District

1 Introduction

Three Valleys Municipal Water District (Three Valleys) was formed in 1950 and provides water supply and water resource management to over 500,000 people in a 133 square mile area in eastern Los Angeles County. As a member agency of the Metropolitan Water District of Southern California (Metropolitan), Three Valleys provides wholesale water to its 13 member agencies, which includes:

- Boy Scouts of America,
- California State Polytechnic University at Pomona (CPP)
- City of Covina
- City of Glendora
- City of La Verne
- City of Pomona
- Golden State Water Company (GSWC) (Claremont and San Dimas systems)
- Mount San Antonio College
- Rowland Water District (RWD)
- Suburban Water Systems (SWS)
- Valencia Heights Water Company (VHWC)
- Walnut Valley Water District (WVWD).

These member agencies are described in more detail in Section 2.

1.1 Objectives

The mission of Three Valleys is to supplement and enhance local water supplies to meet the region and their member agencies' needs in a reliable and cost-effective manner. The objective of the Three Valleys Water Resources Master Plan (WRMP) is to provide a roadmap of needed capital improvements to meet Three Valleys' member agencies' needs. The key objectives are as follows:

- Assess Three Valleys current water system performance.
- Establish a comprehensive approach to achieve water supply reliability within the Three Valleys service area.
- Inform and supplement Three Valleys' Capital Improvement Program (CIP) to gain efficiency in operations and maintenance (O&M) and sustainably manage the water system.
- Identify the investment priorities for the future and provide information to inform policy decisions related to infrastructure and supply.

1.2 Relevant Studies

To increase water supply reliability and proactively address the region's concern with drought, in 2023 Three Valleys began preparing a WRMP and Regional Drought Contingency Plan (DCP). The WRMP has several elements in common with Three Valleys' DCP, such as the assessment of water shortage conditions based on current and future water supply needs and anticipated impacts to supplies from climate change and other risks, along with the identification and prioritization of projects to enhance

the region's water supply portfolio. The WRMP and Regional DCP were prepared in parallel with a coordinated schedule and approach. The Regional DCP is included as Appendix C.

1.3 Organization of Report

This document is organized as follows:

Section 1 – Introduction

Section 2 – Existing System Description

Section 3 – Water System Reliability

Section 4 – Mitigation Projects Development and System Performance Evaluation

Section 5 – Mitigation Projects Analysis

Section 6 – Opportunities for Regional Agency/Project Collaboration

Section 7 – Summary and Recommendations

Section 8 – References

Appendix A – List of Mitigation Projects

Appendix B – Results of Pairwise Benefit Evaluation

Appendix C – Three Valleys Regional Drought Contingency Plan

2 Existing System Description

Three Valleys was formed in 1950 and provides water supply and water resource management to over 500,000 people in a 133 square mile area in eastern Los Angeles County. The estimated population within the Three Valleys wholesale service area in 2020, along with future population projections documented in Three Valleys' 2020 Urban Water Management Plan (UWMP), is presented in Table 2-1.

Table 2-1. Three Valleys Current and Future Populations

	2020	2025	2030	2035	2040	2045
Three Valleys	513,623	523,167	532,888	542,790	555,204	561,782

2.1 Water Supplier Service Area

Three Valleys' member agencies retail the water directly to their customers, or wholesale it to other water systems for resale. Three Valleys' member agencies produce water from local sources; however, when water demands exceed these local supplies, the member agencies may rely on Three Valleys to supply their supplemental water needs. Three Valleys' service area includes the Cities of Claremont, Covina, Diamond Bar, Glendora, Industry, La Verne, Pomona, San Dimas, Walnut, West Covina, and unincorporated areas of Los Angeles County (including Charter Oak and Rowland Heights) (Figure 2-1).

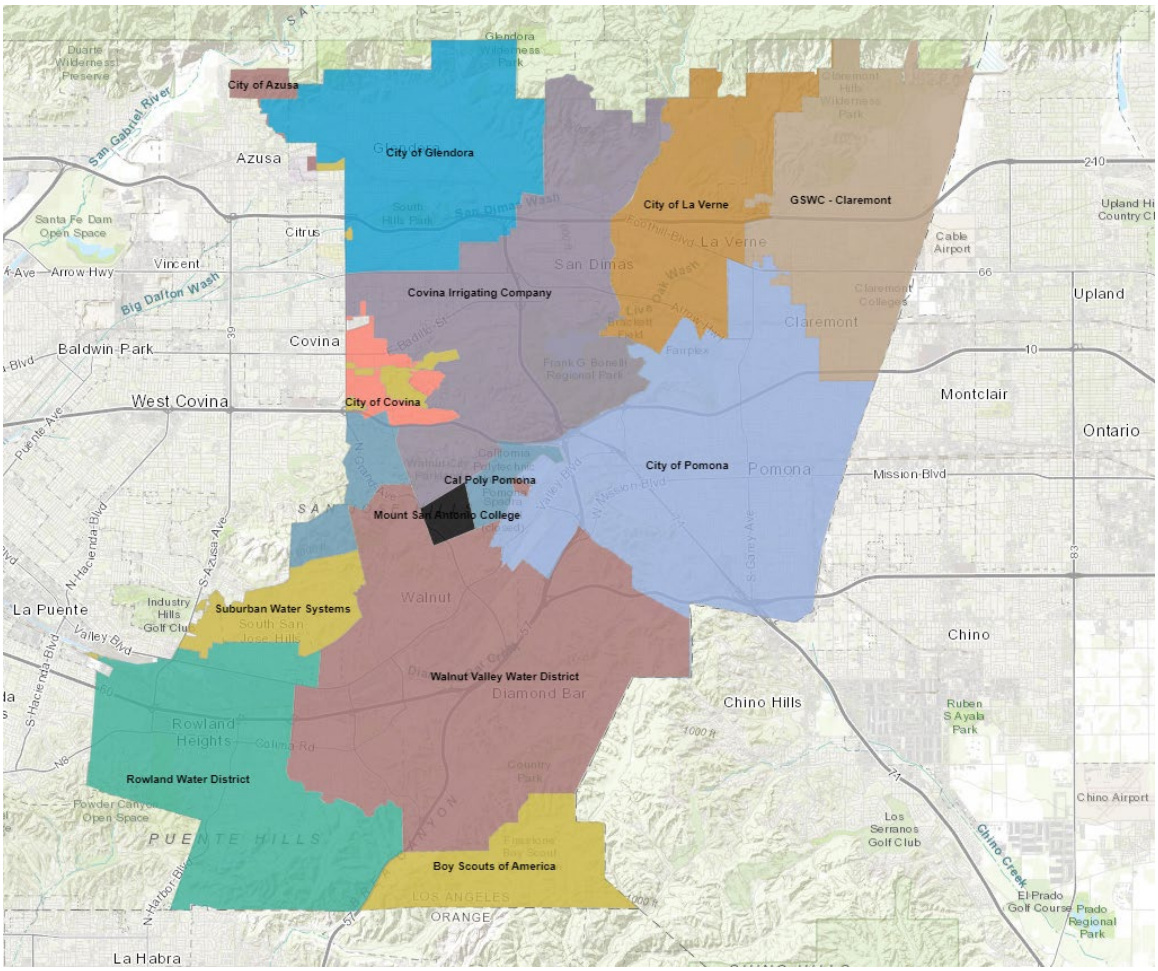


Figure 2-1: Three Valleys Municipal Water District Service Area

Three Valleys is one of 26 member agencies of Metropolitan. Three Valleys' water supply sources consist of untreated imported water purchased from Metropolitan, treated imported water purchased from Metropolitan, and groundwater from the Six Basins groundwater basin, with imported water from Metropolitan accounting for the majority of Three Valleys' supply. Water purchased from Metropolitan comes from the Colorado River Aqueduct and the State Water Project (SWP). Most Three Valleys member agencies rely on a combination of imported water and groundwater supplies. A few members also use other sources including three who currently utilize recycled water, and five who utilize surface water supplies. Several of these agencies are in SWP dependent areas, meaning they cannot receive Colorado River supplies from Metropolitan, and are solely dependent on imported water from the SWP.

2.2 Member Agencies

Wholesale water within the region is supplied by Three Valleys by importing and distributing water obtained from Metropolitan to its 13 member agencies. Three Valleys has 13 members agencies including the following:

- Boy Scouts of America: Boy Scouts of America is one of three institutions that receives imported water from Three Valleys. They own and operate the Firestone Scout Reservation, a campground and wilderness facility located in the southern part of the Three Valleys' service area.
- California State Polytechnic University, Pomona: California State Polytechnic University is one of three institutions that receives imported water from Three Valleys, located within the City of Pomona.
- City of Covina: The City of Covina has a service area of approximately 7 square miles encompassing the majority of the City of Covina, a portion of the City of West Covina and an unincorporated portion of Los Angeles County. In 2020, the City of Covina served a population of approximately 29,287 through about 8,500 municipal connections.
- City of Glendora: The City of Glendora's service area covers approximately 11 square miles encompassing the majority of the City of Glendora and a portion of the Cities of San Dimas, Azusa and an unincorporated portion of Los Angeles County. In 2020, the City of Glendora served a population of approximately 45,551 through about 13,468 municipal connections.
- City of La Verne: The City of La Verne has a service area of approximately 8.56 square miles bounded on the west by the City of San Dimas, on the south by the Puddingstone Recreation area, on the east by Fulton Road and the prolongation of Williams Avenue, and on the north by the Los Angeles National Forest. In 2020, the City of La Verne served a population of approximately 31,321 through about 8,800 municipal connections.
- City of Pomona: The City of Pomona's service area covers approximately 22.9 square miles encompassing the majority of the City of Pomona and portions of the Cities of La Verne, Claremont, and Chino Hills. In 2020, the City of Pomona served a population of approximately 153,988 through about 30,041 municipal connections.
- Golden State Water Company (Claremont and San Dimas systems): Golden State Water Company (Claremont system) provides water service to the City of Claremont, portions of the Cities of Montclair, Pomona, and Upland, and adjacent unincorporated areas of Los Angeles County, which encompasses approximately 9.2 square miles. The San Dimas system serves portions of the Cities of La Verne, Walnut, and Covina, and adjacent unincorporated areas of Los Angeles County, covering approximately 13.7 square miles. In 2020, Golden State Water Company served a population of approximately 36,713 through about 11,076 municipal connections in the Claremont system. In the San Dimas system, Golden State Water Company served a population of approximately 53,120 through about 16,033 municipal connections.
- Mount San Antonio College: Mount San Antonio College is one of three institutions that receives imported water from Three Valleys, located within the City of Walnut.
- Rowland Water District (RWD): RWD's water service area covers approximately 17.2 square miles encompassing portions of the Cities of Industry, La Puente, and West Covina, and unincorporated areas of Los Angeles County including Rowland Heights and Hacienda

Heights. In 2020, Rowland Water District served a population of approximately 59,283 through about 13,202 municipal connections.

- Suburban Water Systems: Suburban Water Systems has a service area of approximately 41.7 square miles encompassing the Cities of Glendora, Covina, West Covina, La Puente, Walnut, Whittier, La Mirada, La Habra, and Buena Park as well as sections of unincorporated Los Angeles County and Orange County. Suburban Water Systems' service area is currently divided into two main service areas: the San Jose Hills Service Area, and the Whittier/La Mirada Service Area. In 2020, Suburban Water Systems served a population of approximately 298,367 through about 42,512 municipal connections. This includes approximately 175,529 residents in the San Jose Hills service area and approximately 122,838 residents in the Whittier/La Mirada service area.
- Valencia Heights Water Company: Valencia Heights Water Company is a mutual water company serving portions of the City of West Covina and unincorporated areas of Los Angeles County. Valencia Heights Water Company serves less than 3,000 customers and does not supply more than 3,000 acre-feet (AF) of water annually and thus is not required to prepare a UWMP.
- Walnut Valley Water District (WVWD): WVWDs water service area covers approximately 29 square miles covering the City of Diamond Bar and portions of the Cities of Industry, Pomona, Walnut, and West Covina, as well as unincorporated areas of Los Angeles County including Rowland Heights. In 2020, Walnut Valley Water District served a population of approximately 99,956 through about 27,100 municipal connections.

2.3 Water Sources

An overview of the water sources used by each agency within Three Valleys' service area is shown in Table 2-2.This summary highlights the diversity of water supply portfolios among the water agencies in the region. As a result, each agency is impacted differently by drought, driving a need for regional solutions that are flexible and adaptable to different community needs.

Table 2-2. Current Three Valleys Member Agency Water Sources

Member Agency	Groundwater	Imported Water	Surface Water	Recycled Water
Boy Scouts of America		X		
Cal Poly Pomona	X	X		X
City of Covina[a]		X	X	
City of Glendora[a]	X	X	X	
City of La Verne	X	X		
City of Pomona	X	X	X	X
Golden State Water Company (Claremont)[a]	X	X		

Member Agency	Groundwater	Imported Water	Surface Water	Recycled Water
Golden State Water Company (San Dimas)[a]	X	X	X	
Mount San Antonio College		X		
Rowland Water District	X	X		X
Suburban Water Systems[a]	X	X	X	X
Valencia Heights Water Company[a]	X	X	X	X
Walnut Valley Water District	X	X		X

[a] Purchases water from Covina Irrigating Company (recently renamed Covina Valley Water Company), which produces water from local surface and groundwater sources and treats imported water from Three Valleys

Historical water supply data was provided by each member agency for the years 2015-2022. Table 2-3 shows the average annual water supply sources for each Three Valleys member agency for this period.

Table 2-3. Three Valleys Member Agencies Average Annual Water Supply Sources (2015-2022)

Agency	Groundwater (AF)	Imported Water (AF)	Purchased Water (AF)	Surface Water (AF)	Recycled Water (AF)	Total (AF)
Boy Scouts of America	0	20	0	0	0	20
Cal Poly Pomona	284	39	0	0	454	777
City of Covina	0	222	4,906	0	0	5,128
City of Glendora	9,732	635	0	14	0	10,381
City of La Verne	1,625	2,007	0	0	0	3,632
City of Pomona	12,777	4,309	0	1,740	1,881	20,707
Covina Valley Water Company (CVWC)	860	2,538	0	1,135	0	4,533
Golden State Water Company (Claremont)	4,159	5,316	0	0	0	9,475
Golden State Water Company (San Dimas)	1,777	8,043	0	0	0	9,821
Mount San Antonio College	0	154	0	0	0	154
Rowland Water District	1,226	9,046	0	0	795	11,067
Suburban Water Systems (San Jose)	13,056	5,374	0	0	682	19,112
Valencia Heights Water Company	298	65	0	288	11	662
Walnut Valley Water District	858	17,232	0	0	926	19,016
TOTAL	46,652	55,000	4,906	3,177	4,749	114,485

2.3.1 Imported Water

Three Valleys purchases both untreated and treated imported water from Metropolitan and supplies it to its member agencies. Three Valleys currently receives a Tier 1 water supply allotment from Metropolitan of 80,688 acre-feet per year (AF/year); from 2010-2020, Three Valleys imported an average of 64 TAF from Metropolitan, with annual imports ranging from 54-73 TAF.

Metropolitan imports water from the SWP which is owned and operated by the California Department of Water Resources (DWR) and conveys water from the Bay-Delta to Southern California via the California Aqueduct, and from the Colorado River through the Colorado River Aqueduct (CRA) which is owned and operated by Metropolitan. Generally, Metropolitan sources around 35 percent of its water from the SWP, with another 25 percent sourced from the Colorado River Aqueduct.

Three Valleys supplies treated imported water directly to its member agencies through service connections from the Metropolitan distribution system, but it does not provide water directly to retail customers. Untreated imported water is sent to Three Valleys' Miramar Water Treatment Plant for processing before being distributed to the member agencies. This untreated water is also used to replenish portions of the Six Basins and is delivered to the Main San Gabriel Basin (also referred to as Main Basin) to meet Replacement Water obligations specified in the Main Basin Judgment. Furthermore, Three Valleys obtains untreated imported water supplies from Metropolitan for delivery to the Covina Irrigating Company, which treats these deliveries at its William B. Temple Treatment Plant before supplying other member agencies within the Three Valleys' region.

During drought periods, water allocations from SWP are significantly reduced, leading to a greater proportion of Colorado River supplies in Metropolitan's supply mix. However, the Colorado River faces ongoing water quality issues, and in August 2021, the federal government declared a water shortage for the first time at one of the river's main reservoirs. Additionally, several of Three Valleys' member agencies are in SWP dependent areas, meaning they cannot receive Colorado River supplies from Metropolitan, and are solely dependent on imported water from the SWP.

Each year, Metropolitan member agencies communicate their anticipated water needs for the next five years, allowing Metropolitan to collaborate with them on forecasts for long-term future water supply. Total imported water use by Three Valleys member agencies amounts to approximately 51 percent of the region's total water supply portfolio.

2.3.2 Groundwater

The region also uses local groundwater from four different groundwater basins including the Six Basins, Chino Basin, Main San Gabriel Basin, and Spadra Basin. However, Three Valleys only has water storage accounts in the Six Basins, the Main San Gabriel Basin, and Chino Basin. Table 2-4 shows Three Valleys operational water storage accounts.

Table 2-4. Three Valleys Operational Storage Accounts

Storage System	Type	Three Valleys Storage Capacity (AF)	Three Valleys - Pomona Agreement**
Six Basins	Groundwater basin	3,500	
Main San Gabriel Basin	Groundwater basin	50,000	
Chino Basin	Groundwater basin		1,390

[a] PBWA has a storage and export agreement with the Main San Gabriel Basin for 30,000 AF

**Chino Basin Three Valleys storage through Pomona is a one-time agreement

Three basins (Six Basins, Chino Basin, and Main San Gabriel Basin) are adjudicated groundwater basins; therefore, they are exempt from the requirement to designate a Groundwater Sustainability Agency (GSA) as mandated by the Sustainable Groundwater Management Act (SGMA). These basins are managed by their respective Watermasters to manage the ownership of water rights and water use with goals similar to that of SGMA. The Spadra Basin is a small, non-adjudicated subbasin of the San Gabriel Valley Basin, designated as a 'very low-priority' basin by DWR. However, the Walnut Valley Water District and the City of Pomona collectively formed the Spadra Basin GSA to manage the basin. Total groundwater use by Three Valleys member agencies amounts to approximately 35 percent of the region's total water supply portfolio.

According to the State Water Resources Control Board's Groundwater Ambient Monitoring and Assessment (GAMA) Program, groundwater from these basins has exhibited Maximum Contaminant Level (MCL) exceedances for numerous constituents, including 1,2,3-Trichloropropane (1,2,3-TCP), Hexavalent Chromium, Arsenic, 1,2-Dibromo-3-chloropropane (DBCP), Perchlorate, Tetrachloroethene (PCE), Trichloroethene (TCE), Total Dissolved Solids (TDS), and Uranium. To remove these contaminants, agencies use a combination of blending and wellhead treatment, both of which are resulting in a greater reliance on imported water.

2.3.3 Recycled Water

Three Valleys does not directly use or have access to recycled water. However, several member agencies in the region use recycled water to meet non-potable demands; Table 2-5 lists these member agencies.

Table 2-5. Average Annual Three Valleys Member Agency Water Use (2015-2022)

Member Agency	Recycled Water Use (AF)
Cal Poly Pomona	454
City of Pomona	1,881
Rowland Water District	795
Suburban Water Systems	682
Valencia Heights Water Company	11
Walnut Valley Water District	926

Recycled water sources in the region are primarily from the Pomona Water Reclamation Plant and San Jose Creek Water Reclamation Plant, both owned and operated by the Los Angeles County Sanitation District. Total recycled water use by Three Valleys member agencies amounts to approximately 6 percent of the region's total water supply portfolio.

2.3.4 Surface Water

Three Valleys does not use self-supplied surface water sources to meet regional water demands. However, the District purchases San Antonio Creek surface water supplies from the City of Pomona to replenish the Six Basins. Several Three Valleys member agencies use surface water to meet potable demands; the City of Pomona, for example, sources local surface water from San Antonio Creek, which is then purchased by Three Valleys to replenish the Six Basins. Additionally, some member agencies obtain surface water from the Covina Irrigating Company, which treats water from the San Gabriel River. Total surface water use by Three Valleys member agencies amounts to approximately 7 percent of the region's total water supply portfolio.

3 Water System Reliability

This section describes the existing and projected water demands in Three Valleys service area, both regionally as well as by member agency, and describes a vulnerability assessment developed by Three Valleys to assess the potential risk to water delivery reliability posed by projected climate change in the region.

3.1 Existing Water Demand

Total water demands in the Three Valleys service area has varied significantly during recent years, particularly during the five consecutive year drought from fiscal year (FY) 2011-12 to FY 2015-16. Total Three Valleys water demand for 2020 was aggregated from the latest available member agency UWMPs and is shown in Table 3-1. These demand estimates are much higher than the actual water use baseline. The combination of conservation measures and water use restrictions that has been imposed for most of the past 15 years due to recurring regional droughts has likely contributed to actual water use being lower than estimated water demand. However, the data from member agency UWMPs is still useful for understanding the distribution of water demand by use types.

Table 3-1. 2020 Distribution of Water Demand for the Three Valleys Service Area

Use Type	Demand (AF/year)	Contribution to Demand (%)
Single-Family Residential	69,639	51.6%
Commercial	18,822	14.0%
Other	11,712	8.7%
Multi-Family Residential	10,233	7.6%
Losses	5,726	4.2%
Recycled Water Demand	6,463	4.8%
Institutional	6,026	4.5%
Landscape & Agriculture	4,789	3.6%
Industrial	1,434	1.1%
Total Demand from Member Agencies	**134,844**	**100%**

AF = acre-feet

Source: Data aggregated from member agencies' 2020 UWMPs

3.2 Projected Water Demand

Three Valleys member agencies projected demands are provided in Table 3-2. Projected demand data by water source was provided by member agencies in five-year increments (starting at 2025 through 2045). The projected demands listed in Table 3-2 were calculated by taking the average of all projected demands provided by each agency for 2025-2045.

Table 3-2. Three Valleys Member Agencies Projected Average Annual Water Supply Sources (2025-2045)

Agency	Groundwater (AF)	Imported Water (AF)	Purchased Water (AF)	Surface Water (AF)	Recycled Water (AF)	Total (AF)
Boy Scouts of America	0	35	0	0	0	35
Cal Poly Pomona	956	60	0	0	1,430	2,446
City of Covina	0	200	5,465	0	0	5,665
City of Glendora	10,450	771	0	0	0	11,221
City of La Verne	2,895	10,890	0	0	0	13,785
City of Pomona	16,040	6,000	0	2,000	2,350	26,390
Covina Irrigating Company (CIC)*	2,293	6,768	0	3,026	0	12,087
Golden State Water Company (Claremont)	5,205	5,596	0	0	0	10,801
Golden State Water Company (San Dimas)	3,000	7,340	0	0	0	10,340
Mount San Antonio College	0	536	0	0	0	536
Rowland Water District	4,700	7,542	0	0	940	13,182
Suburban Water Systems (San Jose)	16,715	6,023	0	0	700	23,438
Valencia Heights Water Company	795	100	0	850	30	1,775
Walnut Valley Water District	5,521	13,986	0	0	2,180	21,687
TOTAL	68,570	65,847	5,465	5,876	7,630	153,388

*CIC receives and treats imported water from Three Valleys. CIC also produces water from local and groundwater sources. CIC was recently acquired by Valencia Heights Water Company and rebranded as Covina Valley Water Company.

3.3 Climate Change Vulnerability

Three Valleys developed a Climate Change Vulnerability Assessment as part of the preparation of their WRMP and DCP to enhance their understanding of the impacts of climate change on future water demand in Three Valleys wholesale service area and the sources of Three Valleys water supplies (Three Valleys 2024). The Assessment analyzed projected changes in future water supplies and water demand during a normal year, single dry and wet years, and multi-year (5-year) dry and wet periods over the next 20 years, using climate projections developed for the water resources planning by DWR. The analysis of future climate impacts on water supplies and demands included three potential future climate conditions: drier future conditions with extreme warming; median future conditions; and wetter future conditions with moderate warming.

Results from this climate modeling show minor decreases in average annual water supplies from the San Gabriel River basin during drought (single year and multi-year) years relative to baseline conditions due to shifts in precipitation from winter to fall and projected increases in surface water evaporation caused by increasing temperatures, particularly under the extreme warming climate scenario. Modeling results also projected a shorter rainy season with potential for higher intensity precipitation events resulting in higher peak flows of shorter duration.

In terms of water demand, climate modeling results projected increases in outdoor water uses under normal, single dry, and multi-year drought conditions, caused by projected temperature increases. This leads to higher evapotranspiration (ET) rates for landscaping, irrigated crops, and native vegetation. Average annual outdoor water use by customers within the Three Valleys service area could increase by up to six percent under the most severe (Dry Hot) climate change scenario.

A comparison of Three Valleys and Metropolitan's water budget projections under future climate conditions shows similar total demand projections, with Three Valleys showing increased reliance on imported surface water (supplied by Metropolitan) in its future projections. This increased reliance in Three Valleys projections occurs because local water supplies are projected to remain nearly constant while water demand increases due to future growth and increased climate-related water deficits. This highlights the need to develop mitigation actions to reduce future reliance on imported surface water.

Table 3-3 through Table 3-5 display the projected Three Valleys service area water budgets under the three modeled potential future climate conditions. The projected budgets show that between 2020 and 2045, imported water supply requirements will increase by 15.4 thousand acre-feet per year (TAF/year) under drier - extreme warming future conditions, 13.3 TAF/year under median future climate conditions, and 7.8 TAF/year if future conditions are wetter with moderate warming.

Table 3-3. Three Valleys Service Area Water Budget – Drier Future with Extreme Warming

Source (AF/year)	2018-2022	2025	2030	2035	2040	2045
Total Demand	113,651	120,346	121,219	123,062	125,472	128,004
Groundwater	38,316	38,282	38,234	37,895	37,551	37,202
Surface Water	4,760	4,741	4,718	4,579	4,440	4,301
Recycled Water	5,619	5,929	5,953	6,000	6,073	6,151
Total Local Supply	48,694	48,952	48,905	48,473	48,063	47,655
Net Imported Water Supply Required	64,957	71,394	72,314	74,589	77,409	80,349

Table 3-4. Three Valleys Service Area Water Budget – Median Future Climate Conditions

Source (AF/year)	2018-2022	2025	2030	2035	2040	2045
Total Demand	113,651	120,346	121,219	122,590	124,513	126,557
Groundwater	38,316	38,282	38,234	38,007	37,763	37,535
Surface Water	4,760	4,741	4,718	4,698	4,678	4,658
Recycled Water	5,619	5,929	5,953	6,000	6,073	6,151
Total Local Supply	48,694	48,952	48,905	48,705	48,514	48,345
Net Imported Water Supply Required	64,957	71,394	72,314	73,885	75,999	78,212

Table 3-5. Three Valleys Service Area Water Budget – Wetter Future with Moderate Warming

Source (AF/year)	2018-2022	2025	2030	2035	2040	2045
Total Demand	113,651	120,346	121,219	122,220	123,723	125,376
Groundwater	38,316	38,282	38,234	39,101	39,983	40,837
Surface Water	4,760	4,741	4,718	5,012	5,304	5,598
Recycled Water	5,619	5,929	5,953	6,000	6,073	6,151
Total Local Supply	48,694	48,952	48,905	50,113	51,360	52,587
Net Imported Water Supply Required	64,957	71,394	72,314	72,107	72,362	72,790

3.4 Dependence on Imported Water

Based on the historical water use for each of Three Valleys' member agencies from 2015 to 2022, almost all of Three Valleys' member agencies rely on imported water as a major supply source. Imported water constitutes the largest portion of the region's supply, accounting for about 51 percent of the total from 2015 to 2022 (Figure 3-1).

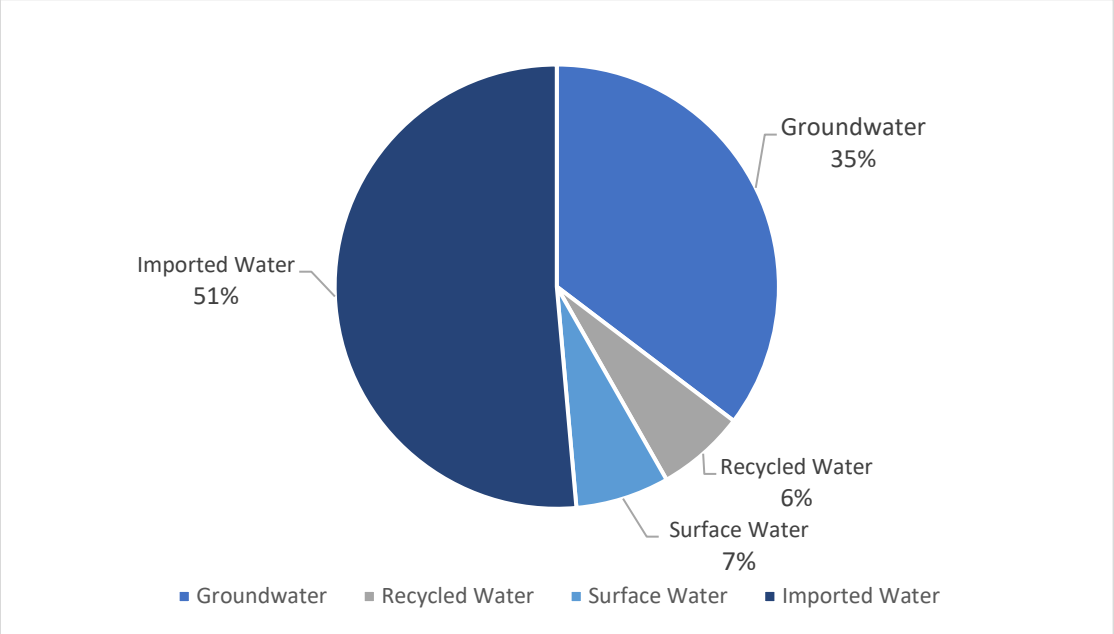


Figure 3-1. current dependency Water Use by Source

Table 3-6 presents Three Valleys member agencies dependencies on imported water – relative to their total supply of water – under normal, drought, and future conditions. Using historical data provided by member agencies for 2015-2022 and projected data through 2045, imported water dependency was first calculated under the latest available hydrologic conditions (2015-2022). Over half of the member agencies are at least 50 percent dependent on imported water for their total supply portfolio in these recent years.

Next, imported water dependency was calculated for each member agency looking at the worst drought available in these records (2022). Dependence on imported water supplies increases during drought, with eight member agencies being at least 65 percent dependent on imported water during this drought.

Finally, imported water dependency was calculated for projected supply portfolios in 2045. Similar to recent years, over half of the member agencies are at least 50 percent dependent on imported water in 2045 according to their projections.

Much like the findings of the Climate Change Vulnerability Assessment described in the previous Section, the imported water data and projections from Three Valley member agencies highlight the need to develop regional actions or project portfolios to help reduce dependence on imported supplies and secure more reliable water sources for the region.

Table 3-6. Three Valleys Member Agencies Dependence on Imported Water (IW)

Agency	Dependency on IW (2015-2022)	Dependency on IW during Drought	Dependency on IW (2045)
Boy Scouts of America	100%	100%	100%
Cal Poly Pomona	5%	6%	2%
City of Covina	4%	18%	3%
City of Glendora	6%	25%	7%
City of La Verne	55%	79%	79%
City of Pomona	21%	30%	21%
Covina Irrigating Company	56%	65%	56%
Golden State Water Company (Claremont)	56%	65%	52%
Golden State Water Company (San Dimas)	82%	87%	71%
Mount San Antonio College	100%	100%	100%
Rowland Water District	82%	88%	56%
Suburban Water Systems (San Jose)	28%	75%	26%
Valencia Heights Water Company	10%	29%	6%
Walnut Valley Water District	91%	88%	65%

4 Mitigation Projects Development and System Performance Evaluation

As described in Section 3.3, the Climate Change Vulnerability Analysis conducted by Three Valleys showed an increasing reliance on imported surface water (supplied by Metropolitan) in its future projections, highlighting the need to develop mitigation actions to reduce future reliance on imported surface water. In response to these findings, Three Valleys worked with their member agencies to compile a suite of projects designed towards the goal of increasing regional water supply planning and operational flexibility and resiliency[1]. This suite of mitigation projects includes projects that are in various stages of implementation, including pre-planning, planning, design, and construction. Many of these mitigation projects are consistent with existing planning programs and processes of the various regional stakeholders, such as Three Valleys' Capital Improvement Plan.

This section describes the process of identifying and developing the suite of mitigation projects as well as initial analyses of those projects' proposed benefits relative to existing system performance in four infrastructure categories: water supply storage, conveyance pipelines, wells, and water quality treatment.

4.1 Mitigation Projects Development

In June 2024, Three Valleys sent invitations to its member agencies and regional stakeholders to schedule meetings to discuss potential mitigation projects. Organizations received a project information sheet tailored to their agency. In July 2024, Three Valleys conducted individual meetings with the agencies to review, confirm, and update the mitigation projects.

The project information form asked each organization to assess whether and to what degree their submitted mitigation project(s) have the potential to enhance regional water supply reliability. Relevant features that could contribute to improving water supply reliability include infrastructure such as pipelines and pump stations; reduced reliance on imported water supplies; treatment of groundwater contaminants like per- and polyfluoroalkyl substances (PFAs) or contaminants of emerging concern (CECs); and system enhancements or repairs to storage facilities or other components.

Additionally, each organization was asked to provide as many key identifiers as possible for each mitigation project, including, but not limited to, the following:

- Project stage (conceptual, feasibility, design, construction)
- Implementation timeline/schedule (years)
- Estimated costs (capital and annual)
- Estimated annual water savings or supplemental supplies created

[1] As described in Section 1.2, Three Valleys has been developing a Regional DCP in parallel with the development of this WRMP. As part of the development of the DCP, Reclamation requires identification and description of actions that mitigate the impacts of drought and enhance regional resiliency. Pursuant to this requirement, Three Valleys has compiled a suite of Mitigation Actions; these Mitigation Actions will be referred to as mitigation projects in this WRMP.

4.1.1 Mitigation Projects Identified

Three Valleys held a workshop in August 2024 where the submitted mitigation projects were presented and discussed amongst member agencies and regional stakeholders. The workshop aimed to address gaps in the requested mitigation project data as well as to solicit additional feedback on the submitted projects. From the data collected and the input received during the workshop, a total of 54 projects, programs, and strategies were identified (Figure 4-1). A full list of the submitted mitigation projects and their descriptions (where available) are provided in Appendix A – List of Mitigation Projects.

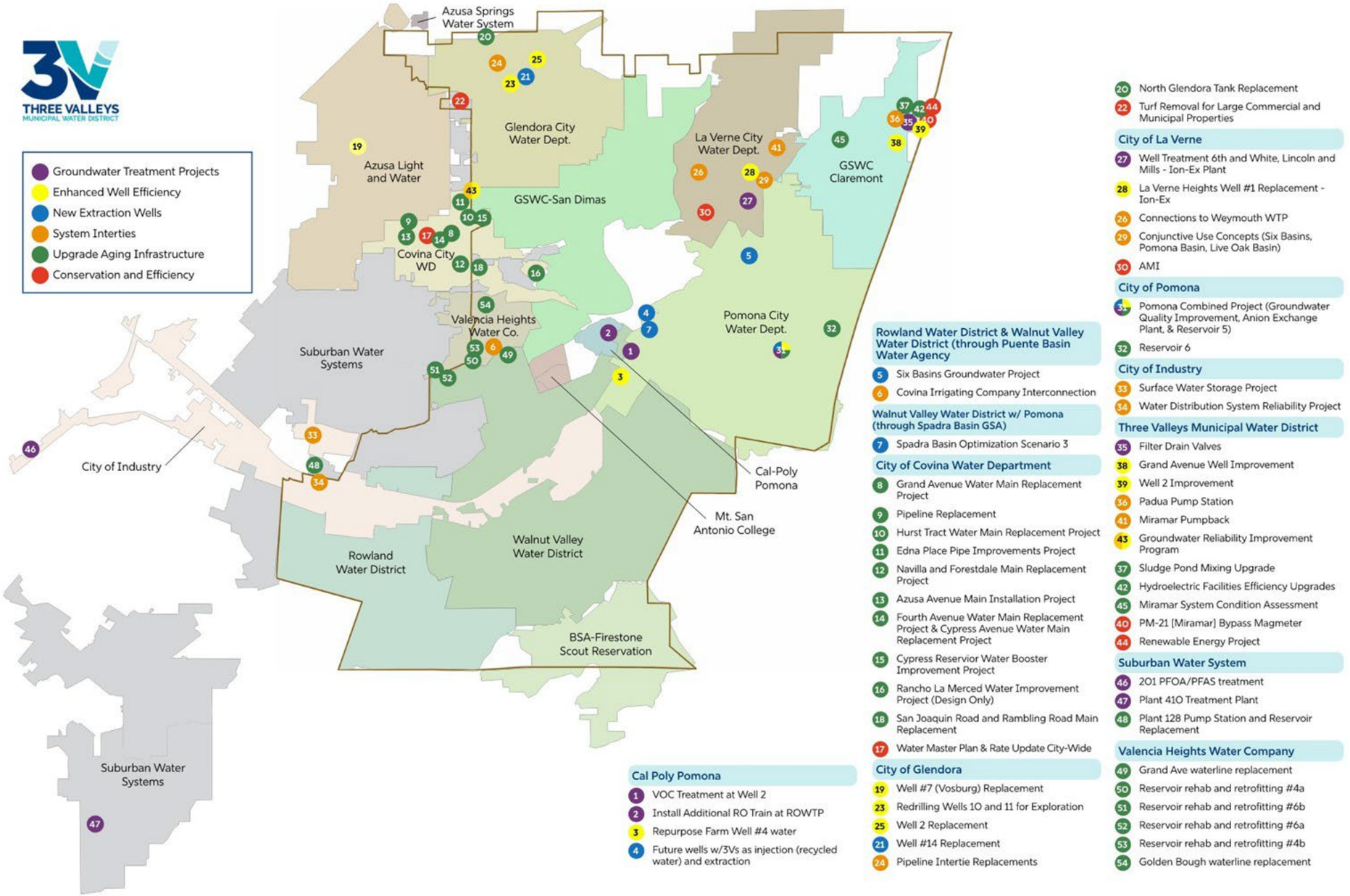


Figure 4-1. Potential Suite of Mitigation Projects Identified by Member Agencies and Regional Stakeholders

Note:

1. GSWC = Golden State Water Company, BSA = Boy Scouts of America
2. Project #44 is included to account for all proposed mitigation actions. However, upon further review with Three Valleys, it was determined that Project #44 does not qualify as a drought mitigation action.

4.1.2 Conservation Measures

Mitigation actions such as water conservation can also reduce future water supply deficits. Recent legislation such as SB 1157 requires urban retail water suppliers in California to implement water conservation measures which will reduce overall water use. Water conservation targets required by state regulations include the following indoor residential water use targets:

- 55 gallons per capita daily prior to January 1, 2025,
- 47 gallons per capita daily from January 1, 2025, to January 1, 2030,
- 42 gallons per capita daily beginning to January 1, 2030.

Table 4-1 shows how much water conservations saving would be realized if member agencies meet pre-2025, 2025 to 2030, and post-2030 indoor water use targets. The numbers in red show potential future water savings that would be achieved if member agencies reduced the water use to below the target. Total conservation savings are only aggregated from member agencies which have not yet met the indoor water use targets. Existing water saving from member agencies which have already met the water conservation targets are shown in black.

Table 4-1: Water Conservation Targets and Savings

Agency	Savings if Current 55 GPCD Target is Met (AF)	Projected 2025 Savings if 47 GPCD Target is Met (AF)	Projected 2030 Savings if 42 GPCD target is Met (AF)
Glendora	-1,854	-2,326	-2,621
La Verne	171	-97	-231
Pomona	1,015	-226	-817
GSWC Claremont	2,531	2,193	2,002
GSWC San Dimas	1,194	693	387
Rowland	168	-313	-602
Suburban	2,341	805	-99
Walnut	173	-701	-1,208
Conservation Savings	-1,854	-3,663	-5,578

Based on this analysis, total water use in the region would be reduced by an additional 5.6 TAF/year if all Three Valleys member agencies meet the state's 2030 water conservation target. Achieving this conservation reduction would reduce the overall future water supply deficit from 15 TAF/year to about 10 TAF/year.

The state has also passed AB 1572 which includes bans on the use of potable water for irrigation of nonfunctional turf with potable water on institutional properties including public agencies, commercial and industrial properties, common areas of properties of homeowners' associations, community organizations, and public water systems. The full impact of the legislation on total water in the region cannot be easily determined at this time because of the gradual phasing-in of irrigation prohibitions

for different land use types. As with other conservation measures, total savings will depend on levels of compliance achieved.

4.2 System Performance Evaluation

The following sections describe the initial analyses of the identified mitigation projects' proposed benefits relative to existing system performance in four infrastructure categories: water supply storage, conveyance pipelines, wells, and water quality treatment.

4.2.1 Storage Capacity

As described in Section 2.3.2, Three Valleys' water supply sources include: groundwater pumped from Six Basins; untreated, imported surface water purchased from Metropolitan for use at Three Valleys' treatment plant; and treated imported surface water purchased from Metropolitan. Three Valleys' main source of water supply is imported water from Metropolitan.

At of the end of 2023, Three Valleys had approximately 1,150 AF stored in the Main San Gabriel Basin (which is projected to increase to 10,000 AF by the end of 2024). The highest volume of water stored by Three Valleys in the Main San Gabriel Basin was 24,000 AF in 2019. Three Valleys also had 3,300 AF stored in the Six Basins groundwater basin in 2023, projected to decrease to 2,500 AF for 2024, and approximately 1,390 Fheld in a storage account in the Chino groundwater basin by City of Pomona (2024). By end of 2024, Three Valleys is projected to have approximately 14 TAF in storage compared to its current storage capacity amongst the basins of 54,890 AF. The availability of water and the groundwater spreading facility availability limits the ability for Three Valleys to fully utilize its groundwater storage programs.

System Storage Facilities Analysis

Additional investment in water storage infrastructure is needed to ensure that all member agencies have access to storage facilities. In addition, the region seeks to enhance water supply reliability by maximizing use of its full storage capacity (of approximately 55 TAF), which is currently about a year's worth of imported water supply.

Table 4-2 shows proposed and conceptual mitigation projects from Three Valleys – and their member agencies – that could increase Three Valleys' storage capacity and/or improve the reliability of their current storage systems. These mitigation projects are summarized and described in more detail in Section 5.

Table 4-2. Proposed Projects to Enhance Storage Capacity

Project	Proponent	Increase in Storage Capacity (AF)
Surface Water Storage Project	City of Industry	n/a
Spadra Basin Optimization Scenario 3	Walnut Valley Water District with Pomona (through Spadra Basin GSA)	3,500
	TOTAL	3,500+

4.2.2 Pipelines

As a water wholesaler, Three Valleys relies on a network of pipelines to deliver water to retail agencies. In addition, Three Valleys connects to neighboring pipelines for added flexibility. For instance, in the spring of 2015, Three Valleys was able to connect to the City of Pomona's Canon pipeline that conveys water from San Antonio Creek to the City of Pomona's Pedley Filtration Plant located in the City of Claremont to the direct surface water to San Antonio Spreading Grounds that benefit the Three Valleys' groundwater wells located in the Six Basins.

System Pipeline Facilities Analysis

A full asset condition survey has not been conducted for the Three Valleys water system. However, many pipelines and associated infrastructure within the system are approaching or even past their planned service life of approximately 50 years. This is particularly true for infrastructure constructed soon after the agency was established nearly 75 years ago. In addition, operational constraints in the conveyance system limit full utilization of water supply and storage capabilities. For example, Three Valleys has capacity to store 50,000 AF in the Main San Gabriel Basin but currently only has turnout capacity to import 5,000 to 6,000 AF/year from Metropolitan. Three Valleys developed a conceptual project which was tested in the fall of 2024 which provided an additional recharge capacity of 30 cubic feet per second. The facility would be able to recharge approximately 10,000 AF if operated continuously for six months without interruptions for basin maintenance or other facility limitations.

Table 4-3 shows proposed and conceptual mitigation projects from Three Valleys – and their member agencies – that could improve the reliability of their current pipeline systems. These mitigation projects are summarized and described in more detail in Section 5.

Table 4-3. Proposed Projects to Enhance Pipeline Reliability

Project	Proponent
Miramar System Condition Assessment	Three Valleys Municipal Water District
Covina Irrigating Company Interconnection	Rowland Water District & Walnut Valley Water District (through Puente Basin Water Agency)
Water Loss Reduction through Pipeline Replacement	City of Covina Water Department
Pipeline Intertie Replacements	City of Glendora

4.2.3 Wells

The number of active wells in the Three Valleys' region is estimated at between 40 and 50 based on the annual groundwater extraction of approximately 46,652 AF/year and an estimated yield of 800 gallons per minute (gpm) per well operating approximately 80 percent of the time. Some functioning wells are less efficient to operate as they approach the end of their planned service life. In addition, the region also has several wells which are no longer in use because of malfunctioning infrastructure or water quality conditions.

There is currently no comprehensive study on the state of wells in the region. However, anecdotal information from member agencies indicates that additional investment in new wells, groundwater treatment and rehabilitation projects is required to maintain or even increase total well extraction capacity in the region over the next few years.

System Wells Facilities Analysis

Table 4-4 shows well projects proposed by Three Valleys and member agencies to increase the total extraction capacity and improve the reliability of current wells. These mitigation projects are summarized and described in more detail in Section 5.

Table 4-4. Proposed Projects to Enhance Reliability of Well Extraction Capacity

Project	Proponent	Estimated Increase in Extraction Capacity (AF)
Grand Avenue Well Improvement	Three Valleys	n/a
Well #2 Improvement	Three Valleys	n/a
Groundwater Reliability Improvement Project	Three Valleys	9,000
Repurpose Farm Well #4 Water	Cal Poly Pomona	600
Future Wells as Injection (Recycled Water) and Extraction - 2 sites	Cal Poly Pomona (with Three Valleys, City of Pomona)	1,200
Six Basins Groundwater Project	Rowland Water District & Walnut Valley Water District (through Puente Basin Water Agency)	1,500
Spadra Basin Optimization Scenario 3	Walnut Valley Water District with Pomona (through Spadra Basin GSA)	2,994
Well #2 Replacement	City of Glendora	n/a
Well #7 Replacement	City of Glendora	n/a
Well #14 Replacement	City of Glendora	2,000
Redrilling Wells #10, #11 for Exploration	City of Glendora	n/a
La Verne Heights Well #1 Replacement	City of La Verne	n/a
	TOTAL	17,294+

4.2.4 Water Quality Treatment Infrastructure

Three Valleys obtains untreated, imported water supplies from Metropolitan for treatment at the District's Miramar Water Treatment Plant. In addition, Three Valleys produces groundwater from three wells located in the Six Basins which are also treated at the Miramar Water Treatment Plant.

System Treatment Infrastructure Facilities Analysis

The total treatment capacity currently operated by Three Valleys and their member agencies is unknown. However, member agencies have identified 8 water treatment projects. If implemented, the projects would enhance the region's treatment capacity by over 9,500 AF/year

Table 4-5 shows proposed and conceptual mitigation projects from Three Valleys – and their member agencies – that could improve the reliability of their water treatment infrastructure and systems. These mitigation projects are summarized and described in more detail in Section 5.

Table 4-5. Proposed Projects to Enhance Water Treatment Infrastructure Reliability

Project	Proponent	Increase in Usable Supply (AF)
Filter Drain Valves	Three Valleys	n/a
Sludge Pond Mixing Upgrade	Three Valleys	n/a
Volatile Organic Compounds (VOC) Treatment at Well #2	Cal Poly Pomona	460
Install Additional Reverse osmosis (RO) Train at Cal Poly Pomona Water Treatment Plant	Cal Poly Pomona	275
Well Treatment	City of La Verne	3,500
City of Pomona Combined Project (Groundwater Quality Improvement, Anion Exchange Plant)	City of Pomona	5,300
201 PFOA/PFAS Treatment	Suburban Water System	n/a
Plant 410 Treatment Plant	Suburban Water System	n/a
	TOTAL	9,535+

4.3 Summary of Infrastructure Need

As described in the previous sections, Three Valleys has a need for additional infrastructure investment across all infrastructure categories analyzed. Investments in mitigation projects identified as part of this process will support Three Valleys' goals of increasing local water supply reliability and reducing dependency on imported water supply.

Table 4-6 shows estimated Three Valleys and member agency project benefits relative to their respective infrastructure needs. It should be noted that the project water supply yields listed in this table were submitted by the respective project proponents as part of the mitigation project development (see Section 4.1); not every project submitted had a yield associated with the project as part of these project proponent submittals. Therefore, the yield and project costs listed in this table were only calculated for projects that included an estimated yield.

Table 4-6. Summary of Proposed Project Benefits Relative to Infrastructure Needs

Category (Number of Projects)	Total Project Yield (AF)	Project Yield Cost ($/AF)	
		Group Range	Group Average
Integrated Storage and Wells (1)	2,994	--	$53,616
Pipelines (2)	2,200	$2,000-$17,000	$3,465
Wells (5)	14,300	$300-$15,000	$10,735
Treatment (4)	9,535	$1,000-$3,000	$1,841
TOTAL	29,029	$300-$17,000	$11,685

5 Mitigation Projects Analysis

As described in the previous Section, Three Valleys and its member agencies, together with other regional stakeholders, identified 54 projects, programs, and strategies designed towards the goal of increasing regional water supply planning and operational flexibility and resiliency. Of those, 26 projects included new infrastructure and/or updates to existing infrastructure; these 26 projects were sorted into four infrastructure categories, described in the previous Section.

Numerous factors have the potential to impact implementation of these mitigation projects, such as funding availability, regulatory requirements, implementation complexities, and strategic planning priorities that are unique to each regional stakeholder. The following sections describe several of these factors: project cost, project implementation schedule, and probability of project's implementation. A summary of funding opportunities for regional and/or local projects is also presented.

5.1 Cost

Table 5-1 and Figure 5-1 present summaries of proposed regional infrastructure project estimated construction costs. The estimated total cost of the 26 proposed projects is over $660 million. Note that the projects included in these summaries include all 26 infrastructure projects described above, not just the infrastructure projects that were submitted with estimated water supply yields as presented in Section 4.3 and Table 4-5.

Table 5-1. Summary of Proposed Infrastructure Project Estimated Construction Costs

Type of Project	Number of Projects	Estimated Average Cost ($)	Estimated Total Cost ($)
Storage	2	$88M	$176M
Pipelines	4	$3M	$12M
Wells	12	$27.3M	$327M
Treatment	8	$6.5M	$52M
		TOTAL	$667M

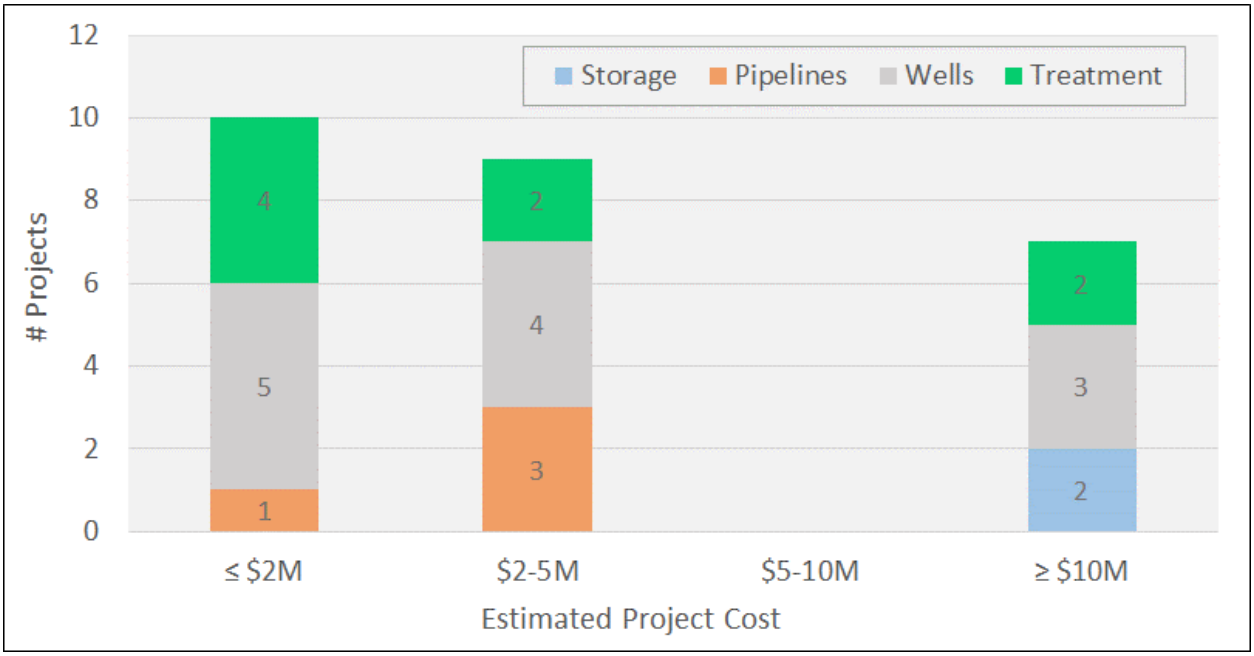


Figure 5-1. Grouped Summaries of Proposed Infrastructure Project Costs

Key Observations:

- Storage projects are relatively expensive in terms of total cost and cost per acre-foot. However, these projects can greatly improve water supply reliability and reduce dependence on imported water during periods of drought.
- Treatment and Wells projects are the most common type of proposed projects. They are also the most cost-effective source of supply in terms of cost per acre-foot. The amount of supply available from these projects is limited by availability of water rights.
- All Pipeline projects proposed are less than $5M. While they do not generate any new supplies, pipeline projects enhance water supply reliability and provide additional operational flexibility.

5.2 Schedule

Table 5-2 and Figure 5-2 present summaries of proposed regional infrastructure estimated project implementation schedules. Note that the projects included in these summaries include all 26 infrastructure projects described above, not just the infrastructure projects that were submitted with estimated water supply yields as presented in Section 4.3 and Table 4-5.

Table 5-2. Summary of Proposed Infrastructure Project Implementation Schedules

Type of Project	Number of Projects	Estimated Construction Schedule
Storage	2	6 yrs
Pipelines	4	3.4 yrs
Wells	12	4.1 yrs
Treatment	8	3 yrs

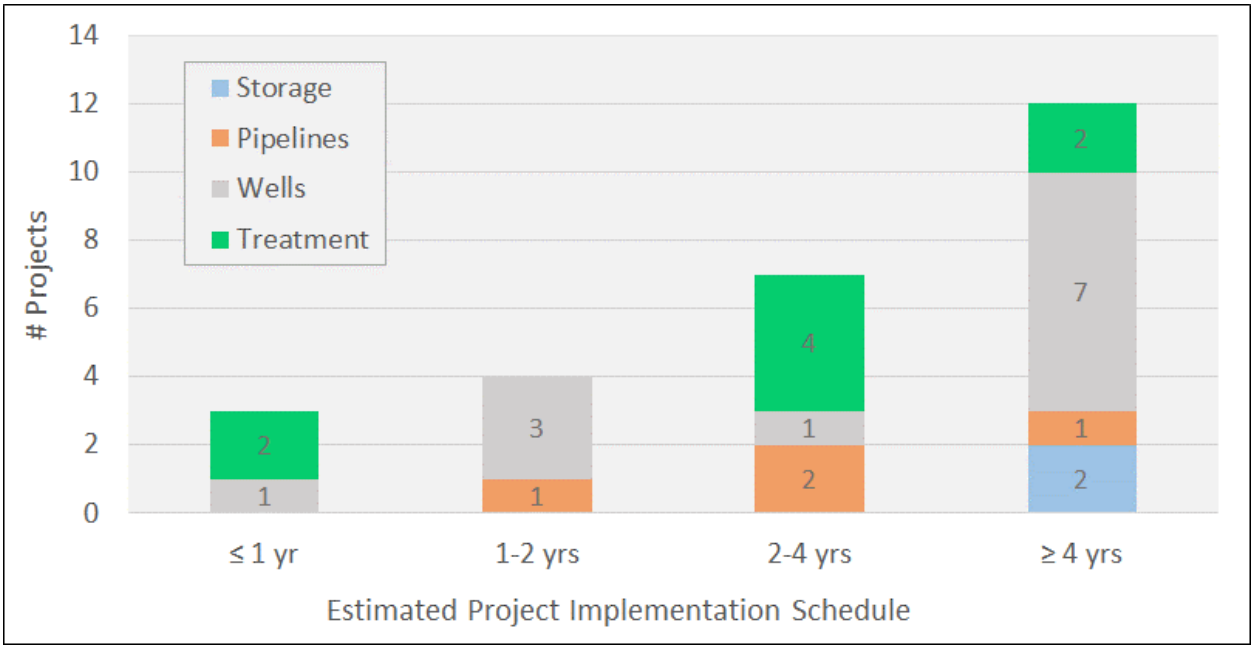


Figure 5-2. Grouped Summaries of Proposed Infrastructure Project Implementation Schedules

Key Observations:

- Most of the proposed projects have implementation schedules of greater than 4 years. These projects typically require external funding and collaboration from multiples agencies for implementation.
- However, there are 7 projects in three categories (wells, treatment, and pipelines) that are estimated to be completed in less than two years. These are typically projects that can be implemented by individual agencies as part of local capital improvement plans.
- Storage projects typically fall within the class of longer-range implementation projects which require external funding and regional partnerships.

5.3 Implementation

Table 5-3 and Figure 5-3 present summaries of proposed regional infrastructure project implementation probabilities. Note that the projects included in these summaries include all 26 infrastructure projects described above, not just the infrastructure projects that were submitted with estimated water supply yields as presented in Section 4.3 and Table 4-5.

Table 5-3. Summary of Proposed Infrastructure Project Implementation Probabilities

Type of Project	Number of Projects	Average Implementation Probability
Storage	2	20%
Pipelines	4	40%
Wells	12	52%
Treatment	8	68%

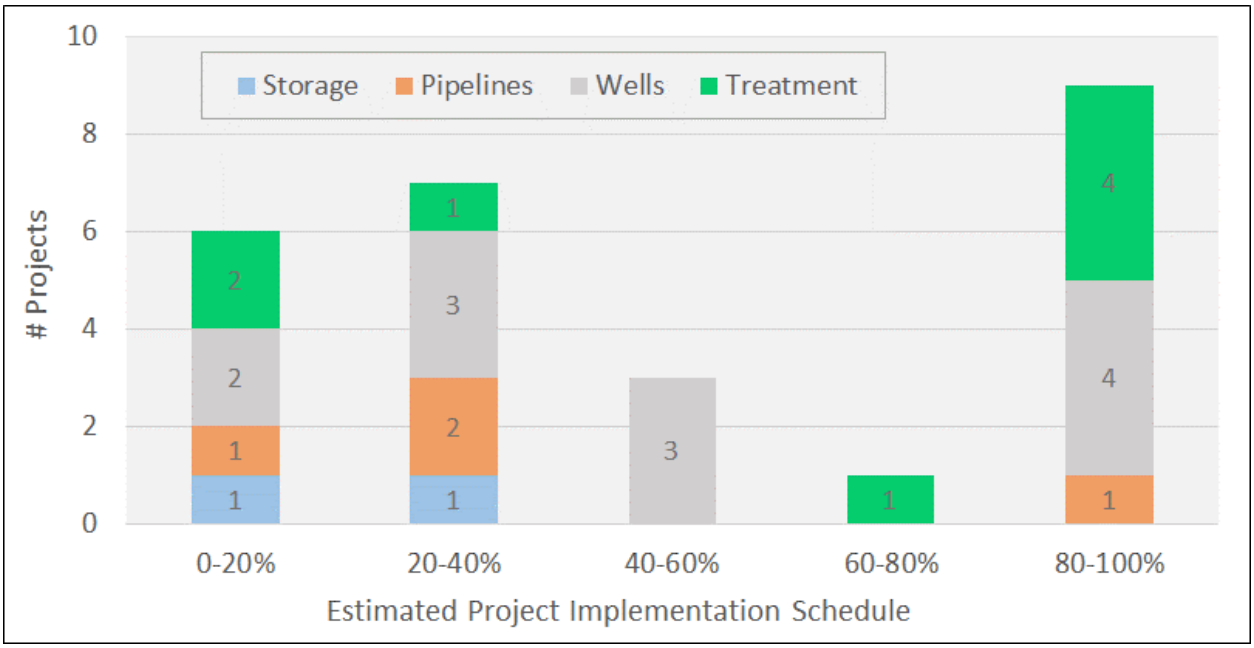


Figure 5-3. Grouped Summaries of Infrastructure Project Implementation Probabilities

Key Observations:

- Approximately half of Treatment and Wells projects are viewed as highly likely to be implemented.
- Storage projects and other infrastructure projects requiring regional partnerships and external funding are viewed as less likely (less than 40% probability) to be implemented.

5.4 Funding Opportunities

Implementation of these regional projects most cost effective with funding from a combination of local, state and federal sources. Federal funding sources have been identified from the Federal Emergency Management Agency (FEMA) and the U.S. Bureau of Reclamation (USBR). State funding has been identified from the State Water Resources Control Board. Additional state funding programs are expected to become available in coming years following the passage in November 2024 of the statewide Proposition 4 ballot measure which authorizes bonds for safe drinking water, wildfire prevention, and protecting communities and natural lands from climate risks.

In general, there are currently several grant programs which could fund treatment and storage infrastructure projects. There are fewer grant programs that are well suited for well and pipeline infrastructure projects. The list of potential grant opportunities which could fund implementation of regional projects in the Three Valley service area are presented in Table 5-4.

Table 5-4. Potential Funding Opportunities for Project Implementation

Organization	Program Name	Type(s) of Projects Funded				Priorities	Timeline(s)	Funding Available ($)		Cost Share / Funding Match
		Storage	Pipelines	Wells	Treatment			Total Funding	Funding / Project	
FEMA	Building Resilient Infrastructure and Communities (BRIC)	x	x	x	x	Research-supported, proactive investment in community resilience	Ongoing ("once the funding opportunity is published, the application period for the BRIC funding cycle will open in the fall and close in early winter")	$800M+	$200K - $12M+[a]	75% federal 25% non-federal
Bureau of Reclamation (USBR)	WaterSmart	x	x	x	x	Water and Energy Efficient Grants	First round of applications has been submitted Second round of applications are due Nov 13, 2024	approx. $50M	Up to $500K: projects completed within two years Up to $5M: projects completed within three years	50% federal 50% non-federal
		x	x	x	x	Drought Response Program - Drought Resiliency	FY25 funding applications received by Oct 7, 2024, are currently under review	up to $40M	Up to $750K: projects completed within two years Up to $3M: projects completed within three years	50% federal 50% non-federal
			x			Small-Scale Water Efficiency Grants	FY25 funding applications received by Oct 7, 2024, are currently under review	approx. $12M	Up to $125K: projects completed within two years Total project costs cannot exceed $250K	50% federal 50% non-federal
					x	Water Recycling and Desalination	FY25 Funding Opportunity expected Dec 2024 Applications due Mar 2025	approx. $30M	n/a	50% federal 50% non-federal
State Water Resources Control Board (SWRCB)	General Drought Funding	x				Projects that address either drought-related urgent drinking water needs or long-term resilience	Next round of applications due Feb 28, 2025	n/a		
	Water Recycling Funding Program				x	Water recycling projects that offset or augment state or local fresh water supplies and water recycling research	Ongoing	approx. $153M[b]	n/a	50% state 50% non-state
	Drinking Water State Revolving Fund (DWSRF)	x	x	x	x	Infrastructure improvements to correct system deficiencies and improve drinking water quality for the health, safety, and welfare of all Californians	Revolving	approx. $220-375M	Low-interest loans, additional subsidy (principal forgiveness), and technical assistance to public water systems	
	Clean Water State Revolving Fund (CWSRF)	x			x	Projects that help protect and improve water quality	Revolving	approx. $600M	Low-interest loans, additional subsidy (principal forgiveness), and technical assistance to public water systems	

[a] Project type-specific funding varies based on type of project being funded (mitigation projects, capability and capacity building activities, management costs, direct technical assistance); for more detailed information, see BRIC website

[b] Total represents sum of funding from multiple sources (Prop 1, Prop 13, Prop 68, General Fund) as of Aug 1, 2024

6 Opportunities for Regional Agency/Project Collaboration

As a region which relies 50 to 60 percent on imported water supplies, it is imperative for Three Valleys to invest in local supplies and supply diversification. Three Valleys has been advocating amongst regional partnering agencies to increase investments in the three groundwater basins that the Three Valleys services are overlies and includes storage accounts, specifically, the Chino, Main San Gabriel, and Six Basins groundwater basins. This section presents four regional projects which were derived from projects proposed by Three Valleys, member agencies, and regional stakeholders. These regional projects are highlighted in this section because they address the regional goals of increasing water supply reliability and reducing dependence on imported water supplies (see Section 0).

6.1 Description of Regional Projects

6.1.1 Regional Project #1 – External Partnership with Covina Valley Water Company (Main San Gabriel Basin)

This regional project would include construction of an intertie to access existing water supply from CVWC. Through Puente Basin Water Agency (PBWA), a joint powers authority between WVWD and RWD, WVWD and RWD would lead the construction of this intertie, which would allow pumping of surplus CVWC well and surface water into the Badillo-Grand pipeline via the new interconnection. Table 6-1 shows the regional needs addressed by this regional project.

Table 6-1: Regional Needs addressed by Regional Project 1

Regional Needs	Components of Regional Project 1
Extraction Wells	
'Put' Facilities	
Regional Pipelines	X
Increase in Treatment Facilities	
Increase in Storage	
Increase of Local Supply	X

This project would increase regional water supply reliability and reduce overall dependence on imported water supplies, thereby improving operational flexibility by integrating additional water sources into the existing network within the Three Valleys service area. This regional project would provide an estimated 2 TAF toward Three Valleys' goals of reducing overall dependency on imported water by 10 TAF and increasing overall water supply by 15 TAF.

6.1.2 Regional Project #2 – Three Valleys Groundwater Reliability Improvement Program (GRIP)

This regional project would include a Three Valleys partnership with the City of Glendora and PBWA to implement a regional distribution network and local supplies by utilizing 9,000 AF/year of stranded City assets. The regional distribution network would be augmented by the construction of new treatment facilities and conveyance pipelines. Three Valleys, as the lead agency, will develop the project that includes new replacement wells with wellhead treatment for City of Glendora's Wells #3, 4, and 7, and the pipeline and pumpstations. This regional project could also be expanded to address

water quality concerns for more member agencies. Table 6-2 shows the regional needs addressed by this regional project.

Table 6-2: Regional Needs addressed by Regional Project 2

Regional Needs	Components of Regional Project 2
Extraction Wells	X
'Put' Facilities	
Regional Pipelines	X
Increase in Treatment Facilities	X
Increase in Storage	X
Increase of Local supply	X

This project would increase regional water supply reliability, thereby improving operational flexibility by integrating additional water sources into the existing network. This regional project would provide an estimated 9 TAF toward Three Valleys' goal of increasing overall water supply by 15 TAF.

6.1.3 Regional Project #3 – Three Valleys Storing Water in Main San Gabriel Basin (GRIP+)

This regional project would include a Three Valleys partnership with the City of Glendora and City of Pomona in which Three Valleys would store surplus imported water in wet years for the Cities via groundwater recharge at the Santa Fe Spreading Grounds in the Main San Gabriel Basin. The project would also include the drilling of five new wells (two for Glendora, three for Pomona) along with wellhead treatments for all five wells, as well as the installation of approximately 5 miles of potable water pipeline by connecting Main San Gabriel Basin supplies to the City of Pomona's distribution system via the Pomona-Walnut-Rowland Joint Water Line (JWL). Table 6-3 shows the regional needs addressed by this regional project.

Table 6-3: Regional Needs addressed by Regional Project 3

Regional Needs	Components of Regional Project 3
Extraction Wells	X
'Put' Facilities	
Regional Pipelines	X
Increase in Treatment Facilities	
Increase in Storage	X
Increase of Local Supply	X

Most of City of Pomona's groundwater supply comes from the Chino and Six Basins groundwater basins, which have degraded water quality; this affects 1) their ability to maximize their groundwater rights, and 2) their reliance on imported water, as their existing wells need blending to remove contaminants. This regional project, therefore, would increase water supply reliability and improve operational flexibility by expanding water storage via the Main San Gabriel groundwater basin, creating infrastructure to integrate supplies into the existing network, and increasing groundwater

treatment capacity. This project would produce approximately 9.2 TAF of local groundwater supply, increasing water supply reliability toward Three Valleys' goal of increasing overall water supply by 15 TAF.

6.1.4 Regional Project #4 – Chino Basin Conjunctive Use with Three Valleys

This regional project would include a partnership between Three Valleys and the City of Pomona. Three Valleys will store water in the Chino Basin and fund City of Pomona's infrastructure projects in exchange for the pumping and delivery of water for use by the Three Valleys member agencies, such as the City of La Verne, Golden State Water Company and the Puente Basin Water Agency. The exchange water could also be conveyed from the Chino Basin to respective member agencies via the Joint Water Line (JWL) and the Badillo/Grand Transmission Main. Alternate water conveyance arrangements could also be considered to enable broader participation and access to water supply benefits by interested member agencies. This local groundwater source could be particularly helpful to member agencies with high dependencies on imported water to meet their demands, such as RWD and WVWD. Table 6-4 shows the regional needs addressed by this regional project.

Table 6-4: Regional Needs addressed by Regional Project 4

Regional Needs	Components of Regional Project 4
Extraction Wells	
'Put' Facilities	
Regional Pipelines	
Increase in Treatment Facilities	
Increase in Storage	X
Increase of Local Supply	X

This project would increase regional water supply reliability and reduce dependence on imported water during droughts, thereby improving operational flexibility by integrating additional water sources into the existing network, contributing toward Three Valleys' goals of reducing overall dependency on imported water by 10 TAF and increasing overall water supply by 15 TAF.

6.2 Risk Analysis and Prioritization of Regional Projects

In this master planning process, member agencies are trying to determine which regional projects deliver the broadest combination of regional benefits with the lowest risk. As projects progress from initial conception to preliminary design, quantitative benefit-cost analyses will need to be conducted. However, the regional projects included in this masterplan are currently at the early stages of initial conception. Qualitative methods applied for evaluating the benefits and risks of the regional projects are described in this section of the report.

6.2.1 Assessing Project Benefits

A pairwise comparison analysis was used to compare the regional projects on multiple benefit criteria. Pairwise comparison is a decision analysis method which allows evaluators to rank multiple decision alternatives by iteratively comparing two alternatives at a time. The pairwise comparison allows

member agencies to compare two projects at a time for each regional benefit. The comparisons are repeated until all project pairs have been compared for each regional benefit of interest. The list of project benefits used as evaluation criteria is shown in Table 6-5.

Table 6-5: Evaluation Criteria used for Project Benefits

Goal	Regional Project Needs as Evaluation Criteria
10 TAF	1. Reduce dependency on imported water during drought years
10 TAF	2. Reduce overall dependency on imported water
60 TAF	3. Increase total water in storage to about one year of imported supplies from Metropolitan
15 TAF	4. Increase Three Valleys PUT capacity by 15 TAF/year
15 TAF	5. Increase climate resilience – need to meet additional 15 TAF/year[2]
	6. Increase operational flexibility with additional Three Valleys conveyance facilities to transmit water from West to East, through a shared program with member agencies.
	7. Affordability of marginal cost of water produced compared to Metropolitan water
	8. Increase local groundwater treatment capacity
	9. Increase local extraction capacity

For each of the 9 evaluation criteria listed, the project being evaluated is placed on a row and compared to other regional (comparison) projects listed on columns. Pairwise comparison scores are assigned as follows:

- A score of 0 is assigned if the evaluation project is worse the comparison project
- A score of 0.5 is assigned if the evaluation project is equal to the comparison project
- A score of 1.0 is assigned if the evaluation project is better than the comparison project

The full pairwise comparison scores are presented in separate tables for each evaluation criterion in Appendix B of this report. The combined pairwise analysis scores assigned by member agencies (aggregated from all 9 evaluation criteria) are shown in Table 6 6.

Table 6 6: Combined Pairwise Benefit Evaluation Scores Assigned by Member Agencies

	Project 1: CIC - Main Basin	Project 2: GRIP	Project 3: GRIP+	Project 4: Chino Basin	Sum
Project 1: External Partnership with Covina Irrigation Company (Main SG Basin)	X	3.25	2.75	3.667	9.667

[2] *Compliance with State 2030 goal for 42 GPCD reduces total member agency demand by approximately 5 TAF/year*

	Project 1: CIC - Main Basin	Project 2: GRIP	Project 3: GRIP+	Project 4: Chino Basin	Sum
Project 2: Three Valleys Groundwater Reliability Improvement Program (GRIP)	5.75	X	3.5	4.833	14.083
Project 3: Three Valleys Storing Water in Main SG Basin (GRIP+)	6.25	5.5	X	4.833	16.583
Project 4: Chino Basin Conjunctive Use with Three Valleys	5.333	4.167	4.167	X	13.667

The average benefit scores assigned by member agencies to each project are also shown by each evaluation criterion in Table 6-7. Note that each project can attain a maximum score of 3 per criterion (if it scores 1 when compared with the other three comparison projects). Since there are 9 evaluation criteria, the maximum sum of benefit scores per project is 27.

Table 6-7: Project Benefit Evaluation Scores Assigned by Member Agencies to Each Criterion

Project	Crit.1	Crit.2	Crit.3	Crit.4	Crit.5	Crit.6	Crit.7	Crit.8	Crit.9.	Sum
Project 1: External Partnership with Covina Irrigation Company (Main SG Basin)	1.000	1.667	1.000	0.917	1.417	0.417	1.833	0.500	0.917	9.667
Project 2: Three Valleys Groundwater Reliability Improvement Program (GRIP)	1.583	1.500	1.583	1.500	1.333	1.750	1.333	1.750	1.750	14.083
Project 3: Three Valleys Storing Water in Main SG Basin (GRIP+)	1.667	1.500	2.167	2.167	1.417	2.083	1.500	2.250	1.833	16.583
Project 4: Chino Basin Conjunctive Use with Three Valleys	1.750	1.333	1.250	1.417	1.833	1.750	1.333	1.500	1.500	13.667

The results show that member agencies identified Project 3: Three Valleys Storing Water in Main San Gabriel Basin (GRIP+) as the project that would deliver the broadest set of regional benefits. Project 1: External Partnership with Covina Irrigation Company (Main SG Basin) is identified the project that would deliver the least amount of regional benefits.

6.2.2 Evaluation of Project Risks

A qualitative risk analysis was used to compare the regional projects on multiple risk categories. The risk categories include 1) Costs Risk, 2) Implementation Risk, 3) Operations Risk, and 4) Stakeholders Risk. Various elements of risk were identified for consideration when assessing each risk category as shown in Table 6-8.

Table 6-8: Project Risk Categories with Associated Elements of Risk

Risk Category	Risk Elements
Costs	Risk of capital cost overruns
	Risk of partner agencies not paying their share
	Risk of not securing external financing and funding
	Risk of increasing long-term operations and maintenance costs
Implementation	Risk of project duration and schedule overruns
	Risk of land not being available
	Risk of running into constructability issues
	Risk of having limited implementation options
	Risk of permitting complications such as permit conditions and denials
	Risk of the project not being thoroughly planned
Operations	Risk of yield variability and reliability
	Uncertainty of operating partnerships
	Risk of inter-dependent projects not coming through
	Risk of environmental and water quality regulations (e.g., PFAS)
	Lack of redundancy for emergency operations/asset failures
Stakeholders	Lack of ratepayer support
	Risk of not garnering Three Valleys and member board support
	External stakeholder opposition
	Opposition from environmental/special interest groups

A risk score is computed to each regional project based on the Severity and likelihood scores assigned by member agencies for each of the four categories of risk. The risk score is determined as a product of the Severity score and the Likelihood score.

*Risk = Severity * Likelihood*

Severity is a measure of how adversely the occurrence of a category of risk would impact a given project. Severity scores assigned to each risk category range from 1 to 4 as follows:

1. Low Severity = Low to no effect on project
2. Medium Severity = Minor to modest impacts
3. High Severity = Significant or substantial impacts
4. Very High Severity = Extreme potential impacts

Likelihood is a measure of whether a risk category is likely to materialize on a given project. Likelihood scores assigned to each risk category range from 1 to 4 as follows:

1. Very Unlikely = Risks will not materialize
2. Unlikely = Risks probably will not materialize
3. Likely = Risks probably will materialize
4. Very Likely = Almost certain risks will materialize

Table 6-9: Results of Project Risk Evaluation by Risk Categories.

Project	Risk Scores	Costs	Implementation	Operations	Stakeholders
Project 1: External Partnership with Covina Irrigation Company (Main SG Basin)	Severity	2.00	2.00	2.00	1.71
	Likelihood	2.14	2.29	2.14	1.71
	Risk	**4.28**	**4.58**	**4.28**	**2.92**
Project 2: Three Valleys Groundwater Reliability Improvement Program (GRIP)	Severity	3.00	3.14	2.57	3.14
	Likelihood	2.71	3.00	2.86	3.00
	Risk	**8.13**	**9.42**	**7.35**	**9.42**
Project 3: Three Valleys Storing Water in Main SG Basin (GRIP+)	Severity	2.50	2.33	2.33	2.67
	Likelihood	2.50	2.33	2.33	2.50
	Risk	**6.25**	**5.43**	**5.43**	**6.68**
Project 4: Chino Basin Conjunctive Use with Three Valleys	Severity	2.20	2.00	2.20	2.20
	Likelihood	2.40	2.40	2.20	2.00
	Risk	**5.28**	**4.80**	**4.84**	**4.40**

The results show that member agencies identified Project 1: External Partnership with Covina Irrigation Company (Main San Gabriel Basin) as the lowest risk project. Conversely, Project 2: Three Valleys GRIP was identified as the highest risk project.

6.2.3 Summary of Project Benefit-Risk Results

The final preferred project rankings are determined by combining the results of the project benefit evaluation and the risk analysis. For each project, the total risk scores from all four risk categories are divided by the maximum possible risk score of 64 to create a risk index. Similarly, the total benefit scores from all nine evaluation criteria are divided by the maximum possible benefit score of 27 to create a benefit index. The integrated benefit-risk ratio is computed by dividing the benefit index by the risk index as shown in Table 6-10.

Table 6-10: Project Ranking Results for Benefit-Risk Assessment

Regional Project	Sum of Risk (max = 64)	Risk Index	Sum of Benefits (max = 27)	Benefit Index	Benefit - Risk Ratio	Preferred Project Rank
Project 4: Chino Basin Conjunctive Use with Three Valleys	19.32	0.302	13.67	0.506	1.677	1
Project 3: Three Valleys Storing Water in Main San Gabriel Basin (GRIP+)	23.81	0.372	16.58	0.614	1.651	2
Project 1: External Partnership with Covina Irrigation Company (Main San Gabriel Basin)	16.08	0.251	9.67	0.358	1.425	3
Project 2: Three Valleys Groundwater Reliability Improvement Program (GRIP)	34.35	0.537	14.08	0.522	0.972	4

The results show that 'Project 4: Chino Basin Conjunctive Use with Three Valleys' has been identified by member agencies as best suited to provide the best combination of high benefits with lower risk. Project 3 (GRIP+) and Project 1 (CIC - Main San Gabriel Basin) are ranked second and third, respectively. Project 2 (GRIP) is viewed as having the lowest benefits relative to its associated risks.

7 Summary and Recommendations

7.1 Summary

The Three Valleys region relies on a variety of sources for its water supply including groundwater (41%), imported water (48%), purchased water (4%), surface water (3%), and recycled water (4%). The region's water supplies are vulnerable to regional and statewide droughts and climate change which can cause disruptions in water availability. The region actively manages changes in annual water supply availability by using groundwater basin storage accounts to store excess water for use during periods of drought and other disruptions. Water stored in these storage accounts currently amounts to approximately 58 percent of the region's annual water supply requirements.

Future uncertainties such as aging infrastructure and climate change could also impact the region's water supply uncertainty. Projections of future water budgets indicate that the Three Valleys region will require up to 15.4 TAF/year of additional imported water supply due to the impacts of climate change. This deficit could be partially mitigated through full implementation of the state's indoor residential water use targets for 2030 which would result in water conservation savings of up to 5.6 TAF/Year. However, the region needs to develop additional infrastructure to maintain current levels of service and build up a recommended year of total water supply in storage in local groundwater basin storage accounts.

Three Valleys has worked with member agencies to identify 26 infrastructure projects including 2 projects to enhance Storage capacity, 4 pipeline reliability projects, 12 projects to enhance well extraction capacity, and 8 water treatment infrastructure projects. The estimated total cost of the 26 proposed projects is over $660 million. Treatment and wells projects are the most common type of projects proposed because they are generally the most cost-effective source of supply (in terms of cost per acre-foot) for agencies with existing, unused pumping rights. While storage projects are generally expensive, they can greatly improve water supply reliability and reduce dependence on imported water during periods of drought.

Implementation of these projects will require a mix of local, state and federal funds. A list of current state and federal funding programs has been developed to align with the types of water supply and infrastructure projects proposed by Three Valleys and its member agencies. These grant funding programs are generally more likely to fund regional projects which involve multiple partnering agencies using shared infrastructure to provide benefits to a wider group of communities, including disadvantaged communities where possible. To enhance the region's competitiveness when pursuing state and federal grant funding opportunities, this WRMP has identified four regional projects which could leverage regional infrastructure to meet the needs of multiple member agencies.

7.2 Next Steps

The regional infrastructure needs and plans included in this WRMP were derived from information compiled by staff of member agencies. While this information has helped to highlight common areas of infrastructure need, it likely reflects current system performance and reliability concerns. To more accurately capture the impact of aging infrastructure on the extent and timing of future infrastructure

needs, the Three Valleys region should undertake a comprehensive assessment of water infrastructure to:

- Quantify the number and characteristics of existing wells, pipelines, pumping, and treatment assets
- Establish the remaining life and replacement schedule of existing assets
- List all existing infrastructure that are no longer functioning or in use
- Assess the timing of future changes in infrastructure performances and water supply reliability if the aging infrastructure is not replaced.

The region also needs to continue development of the regional projects identified in this WRMP. Actions that could be taken to advance the development of these regional projects could include:

- Initiating conceptual planning to establish project components, physical and environment constraints, establish project costs, and review project alternatives
- Engage member agencies to recruit project participants, establish participation agreements, and seek approval of agency boards to seek implementation funds
- Initial development of funding proposals and engaging funding agencies to solicit early input on project fundability

8 References

Three Valleys Municipal Water District (2021), 2020 Urban Water Management Plan.

Three Valleys Municipal Water District (2024), Climate Change Vulnerability Assessment

Three Valleys Municipal Water District (2024), 2024 Regional Drought Contingency Plan.

Appendix A – List of Mitigation Projects

Agency/Organization	Project/Program Name	Project/Program Description
Three Valleys	Filter Drain Valves	Upgrade of existing under drain system within each of the eight existing filter basins. The upgrade will include granular activated carbon, which would also be able to address constituents of emerging concern, especially for the portion of groundwater that could be routed through the treatment plant. This project would be modeled after the recent Weymouth Filter Basin Upgrade.
Three Valleys	Padua Pump Station	The project would construct pump station and pipeline from San Gabriel MWD's pipeline to Three Valleys' Miramar distribution system to provide for reliability to the SWP dependent area's service from the Metropolitan Rialto Feeder.
Three Valleys	Sludge Pond Mixing Upgrade	Better mixing will prevent the growth of algae and other organic material and will increase the amount of water recovered when the sludge is sent to the belt filter press.
Three Valleys	Grand Avenue Well Improvement	Inspection and rehabilitation of the Grand Ave Well as needed. Additionally includes the installation of a VFD to increase Grand Ave Well's operational efficiency.
Three Valleys	Well 2 Improvement	Inspection and rehabilitation of Well 2 and installation of sunshade covers over the VFD to prevent overheating.
Three Valleys	PM-21 [Miramar] Bypass Magmeter	Miramar Treatment Plant's design capacity is 40 cubic feet [cfs]. Lower demands due to factors of water use efficiency and water shortage conditions requires the plant to operate at minimal flows of 8 cfs. This effort initiates a project with Metropolitan Water District to install a meter suitable for lower flow conditions, increasing meter accuracy and reduce potential for apparent water losses.
Three Valleys	Miramar Pumpback	Upgrade to the existing Miramar Pumpback system through a connection with Metropolitan's Weymouth Treatment Plant. This connection adds an alternative source of water, Colorado River water, to the Three Valleys service area which includes SWP dependent areas.
Three Valleys	Hydroelectric Facilities Efficiency Upgrades	The Miramar hydroelectric generators are nearing 40 years of service and require a reassessment of its structural and mechanical integrity. This project will upgrade current hydroelectric facilities and provide repairs if found.
Three Valleys	Groundwater Reliability Improvement Program[a]	Partnership with the City of Glendora and the Puente Basin Water Agency (PBWA), a joint powers authority between Walnut Valley Water District and Rowland Water District, to implement a regional distribution network and local supplies by utilizing 9,000 AF/year of stranded City assets.

Agency/Organization	Project/Program Name	Project/Program Description
Three Valleys	Renewable Energy Project	Installation of solar panels and battery storage to enhance sustainable energy production.
Three Valleys	Miramar System Condition Assessment	The Miramar distribution pipeline, initially constructed during the 1950s and 1980s, is reaching over 40 years of age and requires an assessment to determine its current condition.
Cal Poly Pomona	VOC Treatment at Well 2	Install VOC treatment at Cal Poly Pomona's Well No. 2. Well No. 2 has known VOC contamination. Cal Poly Pomona would need to use this well as an additional source of water for the RO Water Treatment Plant in producing more potable water.
Cal Poly Pomona	Install Additional RO Train at ROWTP	Install an additional RO train to an existing Cal Poly Pomona Water Treatment Plant to utilize the additional water source from Well No. 2 to produce additional potable water for local use. See Spadra GSP.
Cal Poly Pomona	Repurpose Farm Well #4 water	Over time campus farm operation will diminish and consider repurposing the Farm Well #4 to use for either irrigation or potable water. Advance RO treatment considerations to produce provide potable water for the old Lanterman Hospital property or connect via a pipeline to convey water back onto the main campus for irrigation use; a distance of about 1.25 miles.
Cal Poly Pomona	Future wells w/Three Valleys as injection (recycled water) and extraction - 2 sites	Partner with 3Vs and City of Pomona to develop an injection/extraction well on 3Vs two well sites available at Corporate Center Dr next to I57 & I71 freeways. Treatment of recycled water may be upgraded to advanced treatment by LA County Sanitation District. Use advance treated recycled water to inject into Spadra basin for storage.
Rowland Water District & Walnut Valley Water District (through Puente Basin Water Agency)	Six Basins Groundwater Project	Two new wells are being activated in the Six Basins Groundwater Basin to offset imported water supplies.
Rowland Water District & Walnut Valley Water District (through Puente Basin Water Agency)	Covina Irrigating Company Interconnection	Pump surplus Covina Irrigating Company well and surface water into the Badillo-Grand pipeline via a new interconnect.
Walnut Valley Water District (through Spadra Basin GSA)	Spadra Basin Optimization Scenario 3	Underground recharge gallery, seven injection wells, five production wells, expansion of CPP RO plant, all related pipelines.
City of Covina Water Department	Grand Avenue Water Main Replacement Project	The existing water main was installed in 1939 and is in bad condition. The planned work includes replacement of approximately 1.25 mi of 12-inch- diameter steel from San Bernardino Road to Southerly City Limit including the upgrade of existing services and fire hydrants.

Agency/Organization	Project/Program Name	Project/Program Description
City of Covina Water Department	Water Loss Reduction - through Pipeline Replacement	Auditing reports available for last few years.
City of Covina Water Department	Hurst Tract Water Main Replacement Project from Cypress Avenue to Covina Boulevard and Grand Avenue to Brightview Drive	Existing water main, valves, hydrants and services have exceeded their useful life. All water mains, valves, hydrants and services are to be replaced.
City of Covina Water Department	Edna Place Pipe Improvements Project Grand Avenue to Barranca Avenue	Existing water main, valves, hydrants and services have exceeded their useful life. All water mains, valves, hydrants and services are to be replaced.
City of Covina Water Department	Navilla and Forestdale Main Replacement Project from Puente Street to Rowland Avenue and From Grand to Barranca Avenue	Existing water main, valves, hydrants and services have exceeded their useful life. All water mains, valves, hydrants and services are to be replaced.
City of Covina Water Department	Azusa Avenue Main Installation Project from Badillo Street to Edna Place	Existing water main, valves, hydrants and services have exceeded their useful life. All water mains, valves, hydrants and services are to be replaced.
City of Covina Water Department	Fourth Avenue Water Main Replacement Project from Badillo Street to San Bernardino Road Cypress Avenue Water Main Replacement Project from Citrus Avenue to Barranca Avenue	Existing water main, valves, hydrants and services have exceeded their useful life. All water mains, valves, hydrants and services are to be replaced.
City of Covina Water Department	Cypress Reservoir Water Booster Improvement Project 1051 E. Cypress Street	Install new backup generator, MCC panels, and switchgear.
City of Covina Water Department	Rancho La Merced Water Improvement Project (Design Only) Rancho La Merced	

Agency/Organization	Project/Program Name	Project/Program Description
City of Covina Water Department	Water Master Plan & Rate Update City-Wide	Water Master Plan update & cost study for next 5 years.
City of Covina Water Department	San Joaquin Road and Rambling Road Main Replacement from Covina Hills to Navilla Place	Existing water main, valves, hydrants and services have exceeded their useful life. All water mains, valves, hydrants and services are to be replaced.
City of Glendora	Well #7 (Vosburg) Replacement	Rehabilitation of Well #7 which is located at 201 South Virginia Ave in the City of Azusa almost 3 miles to the southwest of the City of Glendora. The city would conduct a water quality study to address contaminant concerns and well profiling to better understand flow contributions. Project to include design, public bid and construction.
City of Glendora	North Glendora Tank Replacement	This 318,000-gallon reservoir is crucial to the operation of Zone 19 and was installed in 1996 using bolted steel plate construction as this was an inexpensive and viable option for the remote and difficult to access location. Bolted steel tanks have a certain leak allowance in the design and this tank has had a small amount of leakage since installation. The tank is now 25 years old and is nearing the end of its expected service life of 30 years. Current leak rates vary from 35 to 50 gallons per minute depending on water level in the tank and weather conditions. This reservoir is one of two storage reservoirs that serve this pressure zone, the other is Glencoe Reservoir with a maximum capacity of only 212,000 gallons. Over the last few years, the area has seen some growth and there is an increased awareness of fire protection needs within the Urban Wildland Interface of which Zone 19 is entirely within. As a result, the combined storage of approximately 0.5 MG is insufficient for extended outages and for fire protection needs and a larger reservoir for this zone is needed.
City of Glendora	Well #14 Replacement	Well #14 is located along Little Dalton Wash just north of Leadora. The city would conduct a study to investigate low production and address contaminant concerns. This would include some well development work and well profiling to better understand flow contributions. Project to include design, public bid and implementation.

Agency/Organization	Project/Program Name	Project/Program Description
City of Glendora	Turf Removal for Large Commercial and Municipal Properties	As part of our on-going effort to encourage water conservation, The City offers multiple rebate incentives for customers. There are two primary programs that are currently being highlighted as outlined below: 1) Turf Removal Program: Installation of drought tolerant landscaping, synthetic turf, and other non-irrigated ground cover. 2) Rebate Program for the purchasing of water efficient devices, such as toilets, sprinkler nozzles, irrigation controllers, etc.
City of Glendora	Redrilling Wells 10 and 11 for Exploration	
City of Glendora	Pipeline Intertie Replacements	
City of La Verne	Connections to Weymouth WTP	Connection to Weymouth without PWR.
City of La Verne	Well Treatment 6th and White, Lincoln and Mills - Ion-Ex Plant	Ion exchange treatment to reduce blending.
City of La Verne	La Verne Heights Well #1 Replacement-Ion-Ex	Low production on LVH#1.
City of La Verne	Conjunctive Use Concepts (Six Basins, Pomona Basin, Live Oak Basin)	
City of La Verne	AMI	Automated meter reading.
City of Pomona	Groundwater Quality Improvement	The project includes well head treatment and well equipping for wells that are currently stranded: - Well 34 – TCP Treatment [GAC} is required for the well (1,200 gpm) - Well 20 – Re-equip the existing well. (700 gpm) - Well 29 – Install NO3 treatment and rebuild well. (600 gpm) - Well 30 – Drill new well onsite. (800 gpm)
City of Pomona	Anion Exchange Plant	Increasing reliance on groundwater, preserves ability to operate wells.
City of Pomona	Reservoir 5 (per PDR)	Increasing reliance on groundwater, reduce reliance on MET/SWP.
City of Industry	Surface Water Storage Project	

Agency/Organization	Project/Program Name	Project/Program Description
City of Industry	Water Distribution System Reliability Project	
Suburban Water System	201 PFOA/PFAS treatment	Plan, design and construct ground water treatment facilities to remove PFOA/PFAS from ground water sources.
Suburban Water System	Plant 410 Treatment Plant	Construction of a 1,000 gpm (1.4 MGD) treatment plant to remove Manganese from a potable water well.
Suburban Water System	Plant 128 Pump Station and Reservoir Replacement	Remove and replace reservoir and pump station. The existing 0.5MG reservoir is nearly 100 years old and does not meet current seismic requirements. It will be replaced with a 0.5 MG above ground steel reservoir. The pump station is does not meet the reliability requirements and the electrical equipment is unsafe.
Valencia Heights Water Company	Grand Ave waterline replacement	Replace approximately 1300 feet of old steel 12-inch waterline with 12- and 16- inch c-900 PVC.
Valencia Heights Water Company	Reservoir rehab and retrofitting #4a	Repaint and recoat interior and exterior of reservoir and retrofit inlet and outlets to improve water quality and add earthquake shut off valves.
Valencia Heights Water Company	Reservoir rehab and retrofitting #6b	Repaint and recoat interior of reservoir and retrofit inlet and outlets to improve water quality and add earthquake shut off valves.
Valencia Heights Water Company	Reservoir rehab and retrofitting #6a	Repaint and recoat interior of reservoir and retrofit inlet and outlets to improve water quality and add earthquake shut off valves.
Valencia Heights Water Company	Reservoir rehab and retrofitting #4a	Repaint and recoat interior and exterior of reservoir and retrofit inlet and outlets to improve water quality and add earthquake shut off valves.
Valencia Heights Water Company	Golden Bough Waterline Replacement	Replace approximately 1800 feet of old steel 6-inch waterline with 8-inch c-900 PVC.

Appendix B – Results of Pairwise Benefit Evaluation for each Metric

1. Metric: reduce dependency on imported water during drought years.					
	Project 1: CIC - Main Basin	Project 2: GRIP	Project 3: GRIP+	Project 4: Chino Basin	Sum
Project 1: External Partnership with Covina Irrigation Company (Main SG Basin)	X	0.5	0.25	0.25	1.000
Project 2: Three Valleys Groundwater Reliability Improvement Program (GRIP)	0.5	X	0.583	0.5	1.583
Project 3: Three Valleys Storing Water in Main SG Basin (GRIP+)	0.75	0.417	X	0.5	1.667
Project 4: Chino Basin Conjunctive Use with Three Valleys	0.75	0.5	0.5	X	1.750

2. Metric: Provides benefits to two or more agencies.					
	Project 1: CIC - Main Basin	Project 2: GRIP	Project 3: GRIP+	Project 4: Chino Basin	Sum
Project 1: External Partnership with Covina Irrigation Company (Main SG Basin)	X	0.583	0.5	0.583	1.667
Project 2: Three Valleys Groundwater Reliability Improvement Program (GRIP)	0.417	X	0.5	0.583	1.500
Project 3: Three Valleys Storing Water in Main SG Basin (GRIP+)	0.5	0.5	X	0.5	1.500
Project 4: Chino Basin Conjunctive Use with Three Valleys	0.417	0.417	0.5	X	1.333

3. Metric: Increase total basin storage in the 3Vs region to a target of one year of supplemental storage equivalent to TVMWD's annual import from Metropolitan, or about 60 TAF.					
	Project 1: CIC - Main Basin	Project 2: GRIP	Project 3: GRIP+	Project 4: Chino Basin	Sum
Project 1: External Partnership with Covina Irrigation Company (Main SG Basin)	X	0.25	0.25	0.5	1.000
Project 2: Three Valleys Groundwater Reliability Improvement Program (GRIP)	0.75	X	0.25	0.583	1.583
Project 3: Three Valleys Storing Water in Main SG Basin (GRIP+)	0.75	0.75	X	0.667	2.167
Project 4: Chino Basin Conjunctive Use with Three Valleys	0.5	0.417	0.333	X	1.250

4. Increase Three Valleys PUT capacity by 15 TAF/year.					
	Project 1: CIC - Main Basin	Project 2: GRIP	Project 3: GRIP+	Project 4: Chino Basin	Sum
Project 1: External Partnership with Covina Irrigation Company (Main SG Basin)	X	0.25	0.25	0.5	1.000
Project 2: Three Valleys Groundwater Reliability Improvement Program (GRIP)	0.75	X	0.25	0.583	1.583
Project 3: Three Valleys Storing Water in Main SG Basin (GRIP+)	0.75	0.75	X	0.667	2.167
Project 4: Chino Basin Conjunctive Use with Three Valleys	0.5	0.417	0.333	X	1.250

5. Metric: Increase climate resilience – need to meet additional 15 TAF/year					
	Project 1: CIC - Main Basin	Project 2: GRIP	Project 3: GRIP+	Project 4: Chino Basin	Sum
Project 1: External Partnership with Covina Irrigation Company (Main SG Basin)	X	0.583	0.5	0.333	1.417
Project 2: Three Valleys Groundwater Reliability Improvement Program (GRIP)	0.417	X	0.417	0.5	1.333
Project 3: Three Valleys Storing Water in Main SG Basin (GRIP+)	0.5	0.583	X	0.333	1.417
Project 4: Chino Basin Conjunctive Use with Three Valleys	0.667	0.5	0.667	X	1.833

6. Metric: Increase operational flexibility with additional Three Valleys conveyance facilities to transmit water from West to East, through a shared program with member agencies.					
	Project 1: CIC - Main Basin	Project 2: GRIP	Project 3: GRIP+	Project 4: Chino Basin	Sum
Project 1: External Partnership with Covina Irrigation Company (Main SG Basin)	X	0.083	0.083	0.25	0.417
Project 2: Three Valleys Groundwater Reliability Improvement Program (GRIP)	0.917	X	0.25	0.583	1.750
Project 3: Three Valleys Storing Water in Main SG Basin (GRIP+)	0.917	0.75	X	0.417	2.083
Project 4: Chino Basin Conjunctive Use with Three Valleys	0.75	0.417	0.583	X	1.750

7. Metric: Affordability of marginal cost of water produced compared to Metropolitan water					
	Project 1: CIC - Main Basin	Project 2: GRIP	Project 3: GRIP+	Project 4: Chino Basin	Sum
Project 1: External Partnership with Covina Irrigation Company (Main SG Basin)	X	0.583	0.583	0.667	1.833
Project 2: Three Valleys Groundwater Reliability Improvement Program (GRIP)	0.417	X	0.5	0.417	1.333
Project 3: Three Valleys Storing Water in Main SG Basin (GRIP+)	0.417	0.5	X	0.583	1.500
Project 4: Chino Basin Conjunctive Use with Three Valleys	0.333	0.583	0.417	X	1.333

8. Metric: Increase local groundwater treatment capacity					
	Project 1: CIC - Main Basin	Project 2: GRIP	Project 3: GRIP+	Project 4: Chino Basin	Sum
Project 1: External Partnership with Covina Irrigation Company (Main SG Basin)	X	0.333	0	0.167	0.500
Project 2: Three Valleys Groundwater Reliability Improvement Program (GRIP)	0.667	X	0.417	0.667	1.750
Project 3: Three Valleys Storing Water in Main SG Basin (GRIP+)	1	0.583	X	0.667	2.250
Project 4: Chino Basin Conjunctive Use with Three Valleys	0.833	0.333	0.333	X	1.500

9. Metric: Increase local extraction capacity					
	Project 1: CIC - Main Basin	Project 2: GRIP	Project 3: GRIP+	Project 4: Chino Basin	Sum
Project 1: External Partnership with Covina Irrigation Company (Main SG Basin)	X	0.167	0.333	0.417	0.917
Project 2: Three Valleys Groundwater Reliability Improvement Program (GRIP)	0.833	X	0.417	0.5	1.750
Project 3: Three Valleys Storing Water in Main SG Basin (GRIP+)	0.667	0.583	X	0.583	1.833
Project 4: Chino Basin Conjunctive Use with Three Valleys	0.583	0.5	0.417	X	1.500

Appendix C – Three Valleys Regional Drought Contingency Plan

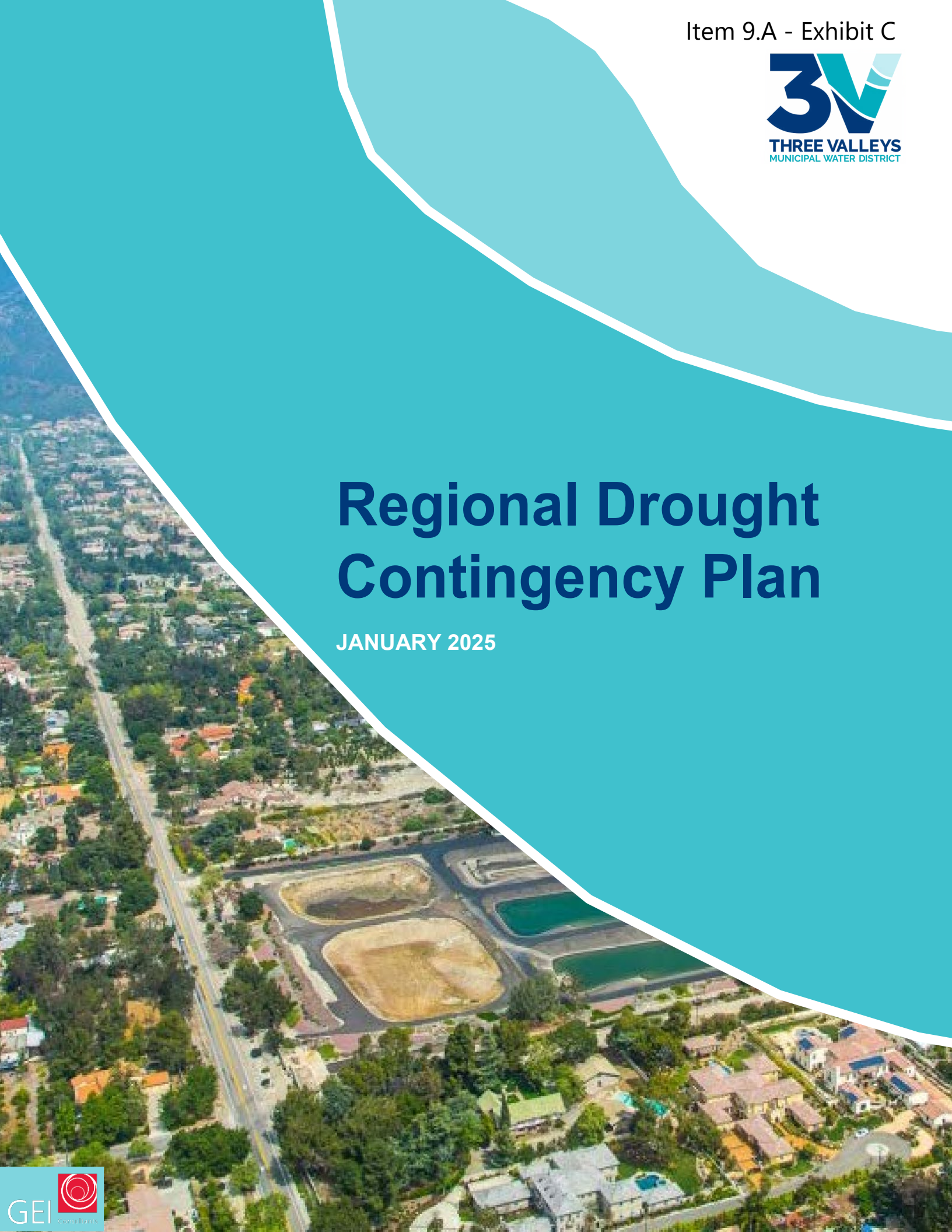
(Available upon request from Three Valleys as a separate attachment)

Item 9.A - Exhibit C

THREE VALLEYS
MUNICIPAL WATER DISTRICT

Regional Drought Contingency Plan

JANUARY 2025



GEI consultants

Table of Contents

Figures

Tables

Acronyms and Abbreviations

1,2,3-TCP	1,2,3-Trichloropropane
AF	acre-feet
AF/year	acre-feet per year
CDEC	California Data Exchange Center
CRA	Colorado River Aqueduct
CWW	California Water Watch
DBCP	Hexavalent Chromium, Arsenic, 1,2-Dibromo-3-chloropropane
DCP	Drought Contingency Plan
DMF	Drought Monitoring Framework
DWR	California Department of Water Resources
ET	evapotranspiration
FERIX	Flood Emergency Information Exchange
GAMA	Groundwater Ambient Monitoring and Assessment
GEI	GEI Consultants, Inc.
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
GSWC	Golden State Water Company
HUC	Hydrologic Unit Code
IRP	Metropolitan 2020 Integrated Water Resources Plan
Main Basin	Main San Gabriel Basin
Metropolitan	Metropolitan Water District of Southern California
MCL	Maximum Contaminant Level
PFA	polyfluoroalkyl substances
PCE	Trichloroethene
TAF	thousand acre-feet

TAF/year	thousand acre-feet per year
TCE	Trichloroethene
TDS	Total Dissolved Solids
Three Valleys	Three Valleys Municipal Water District
RACI	Responsible, Accountable, Consulted, Informed
Reclamation	United States Bureau of Reclamation
RWD	Rowland Water District
SGMA	Sustainable Groundwater Management Act
SWP	State Water Project
SWS	Suburban Water Systems
UWMP	2020 Urban Water Management Plan
VIC	Variable Infiltration Capacity
Watermasters	groundwater basin watermasters
WRMP	Water Resource Master Plan
WSAP	Water Supply Allocation Plan
WSCP	Water Shortage Contingency Plan
WVWD	Walnut Valley Water District

1 Introduction

Three Valleys Municipal Water District (Three Valleys) was formed in 1950 and provides water supply and water resource management to over 500,000 people through its member agencies in a 133 square mile area in eastern Los Angeles County. Three Valleys delivers wholesale water to its 13 member agencies, which includes Boy Scouts of America, California State Polytechnic University at Pomona, Cities of Covina, Glendora, La Verne, Pomona, Golden State Water Company (Claremont and San Dimas systems), Mount San Antonio College, Rowland Water District, Suburban Water Systems, Valencia Heights Water Company, and Walnut Valley Water District.

Three Valleys is one of 26 member agencies of the Metropolitan Water District of Southern California (Metropolitan), who sources around 35 percent of their water from the State Water Project (SWP), with another 25 percent sourced from the Colorado River Aqueduct (CRA). Both of these supply sources are impacted by hydrology. As a result of extreme drought conditions, the SWP allocation for 2021 was 5 percent of requested supplies. Furthermore, in August 2021 for the first time in recorded history, the federal government declared a water shortage at one of the Colorado River's main reservoirs, Lake Mead. This historic declaration came after years of severe climate change and long-term drought impacts. Consequently, the Governor of the State of California issued a statewide drought emergency in October 2021, urging Californians to advance their water conservation efforts. Thus, in November 2021, Three Valleys activated Stage 2 of their Water Shortage Contingency Plan (WSCP) for their entire service area, requiring up to a 20 percent reduction in water use. In June 2022, Metropolitan adopted the Emergency Water Conservation Program, implementing restrictions for member agencies reliant solely on SWP supplies, known as "SWP Dependent Areas." For Three Valleys, this includes the cities of Claremont and La Verne. In April of 2022, Three Valleys activated Stage 5 of their WSCP, urging up to a 50 percent reduction in water use, for their SWP Dependent Areas.

However, between late 2022 and early 2023, California experienced several atmospheric rivers that resulted in record snowfall and rainfall. Consequently, the California Department of Water Resources (DWR) announced a 100 percent SWP allocation for 2023. Despite this short-term improvement in SWP supply, the Colorado River watershed remains in a 23-year drought, the most severe in 1,200 years (https://www.theguardian.com/environment/2023/may /23/colorado-river-water-usage-deal-analysis). While Metropolitan lifted the emergency drought restrictions in March 2023, California remains under a statewide drought emergency, and ongoing climate change suggests that drought conditions will persist. As droughts become more frequent and climate change is expected to increase natural variability in the long term, coupled with increasing statewide demand, imported water may become increasingly scarce. A broader, more integrated Drought Contingency Plan (DCP) is needed to strengthen the region's water supply resilience to provide an adequate and reliable water supply into the future.

To increase water supply reliability and proactively address the region's concern with drought, in 2023 Three Valleys embarked on the preparation of a DCP, funded in part by the United States Bureau of Reclamation (Reclamation). The DCP has several elements in common with Three Valleys' Water Resource Master Plan (WRMP), such as the assessment of water shortage conditions based on current

and future water supply needs and anticipated impacts to supplies from climate change and other risks, along with the identification and review of projects to enhance the region's water supply portfolio. Therefore, the WRMP and DCP were largely prepared in parallel as a joint project with a coordinated schedule and approach. The elements of the DCP are described below in Section 1.1.

As part of this joint project, Three Valleys performed outreach and engagement with various stakeholder groups which is described in Section 1.2. Part of this outreach and engagement involved establishing a Drought Task Force, which as described in Section 1.3, was comprised of Three Valleys member agencies and local stakeholder representing diverse water needs and planning expertise to inform the DCP and WRMP development. Together with the Drought Task Force, Three Valleys developed several overarching objectives and guiding principles to inform development of the DCP, which was prepared with input from the Drought Task Force via several workshops and project information requests in 2023 and 2024. These objectives and principles, along with details related to the DCP development process and its elements are summarized in Section 1.4 and 1.5. The DCP was formally adopted by Three Valleys on Month XX, 2025. Details related to this adoption and final submittal to Reclamation are provided in Section 1.6.

1.1 DCP Elements

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

- Chapter 1: Introduction – this section describes the elements of the DCP, outreach and engagement performed during the development of the DCP, and regional drought goals and guiding principles used to develop the DCP. This section also describes the DCP development process, and information related to plan adoption and submittal.
- Chapter 2: Background – this section briefly describes the regional water suppliers, along with key water resource supplies and regional water demand to provide a critical foundation for the DCP.
- Chapter 3: Regional Drought Monitoring Framework (DMF) – the regional DMF establishes a process for monitoring near- and long-term water availability and developing a framework for predicting the probability of future droughts or confirming an existing drought.
- Chapter 4: Vulnerability Assessment – the vulnerability assessment aims to improve the understanding of climate change impacts on future water demand in Three Valleys' wholesale service area and the sources of Three Valleys' water supplies during normal and drought periods.
- Chapter 5: Mitigation Actions – this section describes projects or programs that can be implemented ahead of a drought to lessen the future impacts of drought.
- Chapter 6: Response Actions – this section describes near-term actions to address the demand side of the water balance in periods where water supply cannot meet demand.
- Chapter 7: Operational and Administrative Framework – the operational and administrative framework identifies who is responsible for implementing each element of the DCP and the process and schedule for monitoring, evaluating, and updating the DCP.

1.2 Outreach and Engagement

Three Valleys actively engaged with diverse stakeholder groups throughout the development of the DCP. This was a collaborative effort among Three Valleys, its 13 member agencies and the cities they serve, and other regional stakeholders that may be impacted by drought. The various stakeholder groups involved in the DCP and their roles are summarized in Table 1-1 below, which includes a RACI (Responsible, Accountable, Consulted, Informed) chart indicating the level of participation for each stakeholder in developing the DCP. Each stakeholder group and the methods of outreach and engagement are described in the following sections.

Table 1-1. Regional Drought Contingency Plan Key Stakeholders and Roles

Group	Level of Participation			
	R	A	C	I
Planning Lead				
Three Valleys Municipal Water District	X[1]	X[2]		
Drought Planning Task Force Members				
Three Valleys Member Agencies			X	
City Representatives (planning, schools, fire, law)			X	
Metropolitan Water District of Southern California				X[3]
Watermasters				X[3]
Other Interested Stakeholders				X[3]
General Public				X
Drought Contingency Plan Consultant				
GEI Consultants, Inc. (GEI)	X			

[1] Chief Water Resources Officer

[2] General Manager

[3] The stakeholders are expected to participate in the planning process at an "informed" level. However, they will also be provided the opportunity to review and comment on the DCP at various stages throughout the planning process.

1.3 Drought Task Force

As previously noted, the DCP was developed in parallel with the WRMP. As part of this consolidated effort, Three Valleys recruited, convened, and engaged a Drought Task Force comprised of 27 organizations represented by knowledgeable community leaders who can offer diverse, informed perspectives to support effective drought contingency planning. The members of the Drought Task Force are presented in Table 1-2. All Three Valleys' member agencies are part of the Drought Task Force.

Table 1-2 List of Stakeholders by Category

Three Valleys Regional DCP Stakeholders by Category
Member Agencies
Boy Scouts of America: Firestone Reservation
California Polytechnic University, Pomona

Three Valleys Regional DCP Stakeholders by Category
City of Covina
City of Glendora
City of La Verne
City of Pomona
Golden State Water Company (Claremont and San Dimas systems)
Mount San Antonio College
Rowland Water District
Suburban Water Systems
Valencia Heights Water Company
Walnut Valley Water District
Local Government
City of Claremont
City of Industry
City of San Dimas
City of West Covina
Los Angeles County Chief Executive Office
Local Education Agency
Charter Oak Unified School District
Glendora Unified School District
Hacienda La Puente Unified School District
Rowland Unified School District
Local Fire and Law Enforcement
Los Angeles County Fire
Los Angeles County Fire Department Station 118
Los Angeles County Sheriff's Department
Watermasters
Main San Gabriel Watermaster
Nonprofit Organizations
Day One
San Gabriel Valley Economic Partnership

As of September 25, 2024

1.3.1 Three Valleys Board of Directors

Three Valleys' Board of Directors (Board) is the formal decision-making body that adopts the DCP (and WRMP) and recommends it for submittal to Reclamation. To keep the Board informed, Three Valleys staff provided periodic updates during regularly occurring quarterly Board meetings throughout the development of the DCP.

1.3.2 General Public

To reach all customers within Three Valleys' service area, Three Valleys used outreach activities that are not specific to the Drought Task Force. This included receiving Regional DCP updates during regular meetings such as the Three Valleys Board of Directors meetings and the Three Valleys Member Agency Managers meetings, which can be found at https://www.threevalleys.com/home. The public can also check the Three Valleys website at https://storymaps.arcgis.com/stories/6e03e0070af84d7f93aba75a13398d01. This webpage offers another opportunity for interested individuals to learn about the DCP and WRMP planning efforts, view workshop materials, and subscribe to project updates.

1.4 Regional Drought Planning Objectives and Priorities

Early in the planning process for the DCP, key objectives and regional drought priorities were identified to ensure a comprehensive approach. The planning effort was guided by several essential objectives:

- Task Force Collaboration: Facilitate consistent communication and execute the process transparently and collaboratively with stakeholders.
- Planning Consistency: Align the DCP/WRMP with Metropolitan's Water Shortage Allocation Plan, Dry Year Yield policies, and other planning documents from Three Valleys and member agencies.
- Environmental Stewardship and Sustainability: Ensure that the needs of the present are met without compromising the needs of future generations.

Regional drought priorities were identified to guide and inform the DCP's development. These priorities serve as the foundation for the plan's key focus areas and overall approach. During the initial workshops, members of the Drought Task Force were invited to rank these priorities based on their perceived importance. Figure 1-1 illustrates the outcomes of this ranking effort, highlighting the collective priorities identified by the Drought Task Force. These objectives and priorities form the overarching framework that guides the planning effort and development for the DCP.

Figure 1-1. Regional Priorities Ranked by the Drought Task Force

1.5 DCP Development Process

As previously indicated, the DCP was prepared concurrently with the WRMP; however, this section specifically focuses on the DCP, which was developed with consideration of the objectives and regional priorities detailed in Section 1.4. The DCP is organized into five key steps:

- Development of a drought monitoring framework for predicting the probability of future droughts or confirming an existing drought
- A vulnerability assessment to evaluate the risks within the planning area from drought and other factors
- Identification of potential mitigation actions to be implemented ahead of drought to address potential risks
- Identification of potential response actions to be implemented during drought
- An operational and administrative framework to identify the roles, responsibilities, and procedures necessary to implement the DCP.

A planning schedule for the preparation of the DCP is presented in Figure 1-2.

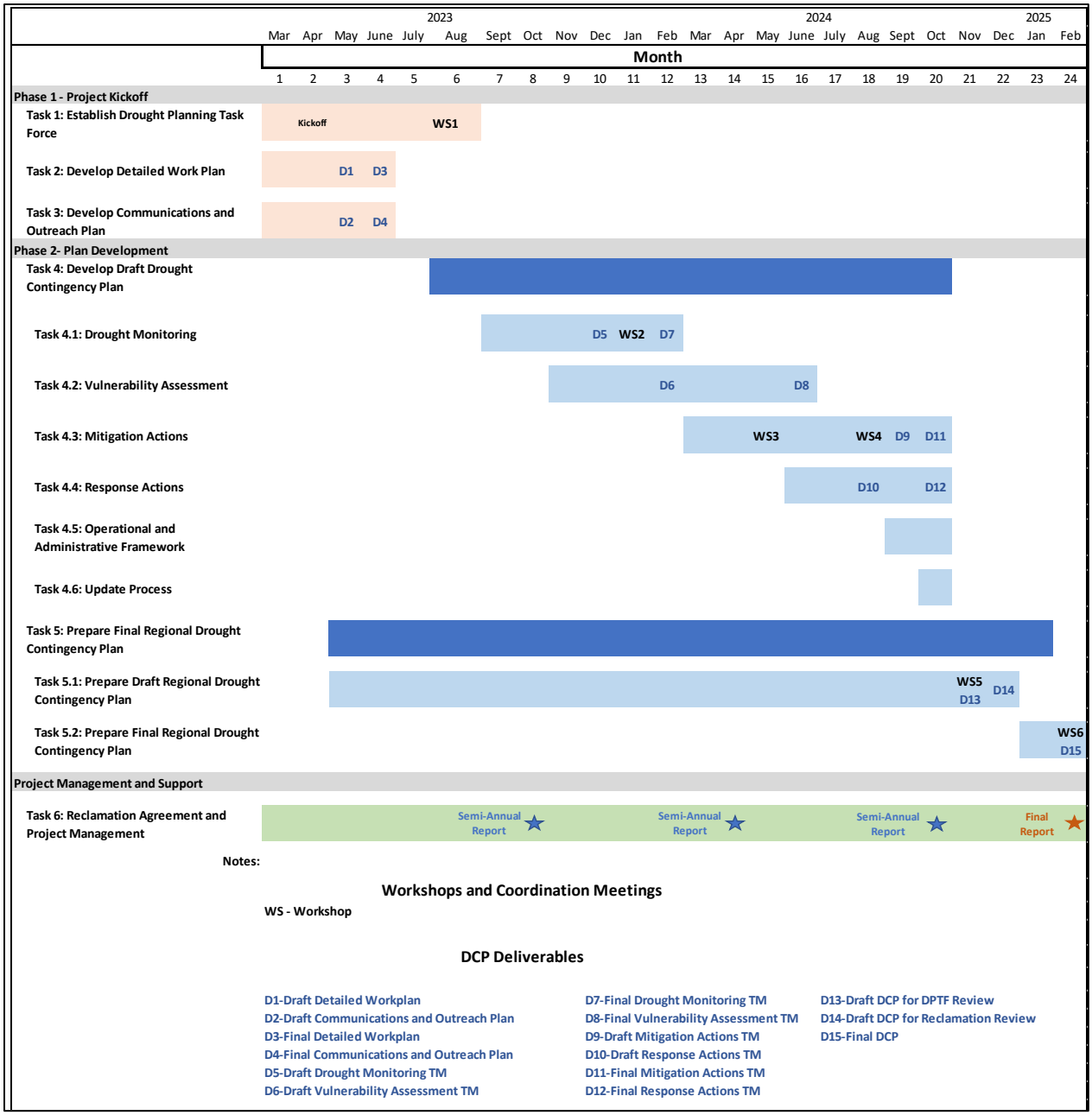


Figure 1-2. Three Valleys Municipal Water District Drought Contingency Plan Schedule

As previously mentioned, the development of DCP involved collaboration with the Drought Task Force and other interested parties. To facilitate participation, Three Valleys and the Drought Task Force members provided multiple opportunities for public input. Various communication channels were utilized, including the Three Valleys website, regular member agency meetings, and Drought Task Force workshops. A schedule of workshops is provided in Table 1-3. The timing of the workshops was strategically aligned with the DCP planning schedule, ensuring that input can be gathered during the most relevant phases of the planning process.

Table 1-3. Drought Planning Task Force Workshop Dates and Topics

Description	Anticipated Date
Drought Task Force Kickoff/Workshop #1	
• Provide DCP overview to Three Valleys Member Agency Managers Meeting (DCP Kickoff Meeting) • Email Workshop 1 invitation to full stakeholder list, along with a description of the DCP development process and opportunity to participate via the Drought Task Force • Review Plan schedule and milestones along with information requests that will be provided to the Drought Task Force over the course of the Plan development (Drought Task Force Workshop 1)	April 2023 (DCP Kickoff Meeting) August 2023 (Drought Task Force Workshop 1)
Drought Task Force Workshop #2	
• Review and develop a common understanding of the estimated water supply demands, water supplies conditions, and forecasted shortage conditions • Review the Drought Monitoring Technical Memorandum • Review the Vulnerability Assessment Technical Memorandum • Summarize project description request and review project evaluation criteria	January 2024
Drought Task Force Workshop #3	
• Present the summary of project descriptions received from Drought Task Force • Review the project screening and evaluation process and the draft findings from the screening and evaluation of the projects	May 2024
Drought Task Force Workshop #4	
• Review the Mitigation Actions Technical Memorandum • Review the Response Actions Technical Memorandum	August 2024
Drought Task Force Workshop #5	
• Review the draft Regional DCP	November 2024
Drought Task Force Workshop #6	
• Review the draft-final Regional DCP and discuss next steps	February 2025

1.6 Plan Adoption and Submittal

The final DCP was formally adopted by Three Valleys on Month Day, 2025. A copy of the Adoption Resolution is included in Appendix A . Three Valleys made a copy of the final DCP available on its website within 30 days after the adoption.

2 Background

To provide a critical foundation for the DCP, Chapter 2 defines the services areas for the member agencies within the region (see Section 1 for a list of the member agencies), along with regional water supplies and associated infrastructure and projected regional demands.

2.1 Water Supplier Service Area

Wholesale water within the region is supplied by Three Valleys by importing and distributing water obtained from Metropolitan to its 13 member agencies.

2.1.1 Three Valleys Municipal Water District

Three Valleys is a wholesale water agency that serves over 500,000 people in a 133 square mile area in eastern Los Angeles County via 13 member agencies. The estimated population within the Three Valleys wholesale service area in 2020, along with future population projections documented in Three Valleys' 2020 Urban Water Management Plan (UWMP), is presented in Table 2-1.

Table 2-1. Population projections for the Region

	2020	2025	2030	2035	2040	2045
Three Valleys	513,623	523,167	532,888	542,790	552,204	561,782

Three Valleys' member agencies retail the water directly to their customers, or wholesale it to other water systems for resale. Three Valleys' member agencies produce water from local sources; however, when water demands exceed these local supplies, the member agencies may rely on Three Valleys to supply their supplemental water needs. Three Valleys' service area includes the Cities of Claremont, Covina, Diamond Bar, Glendora, Industry, La Verne, Pomona, San Dimas, Walnut, West Covina, and unincorporated areas of Los Angeles County (including Charter Oak and Rowland Heights) (Figure 2-1).

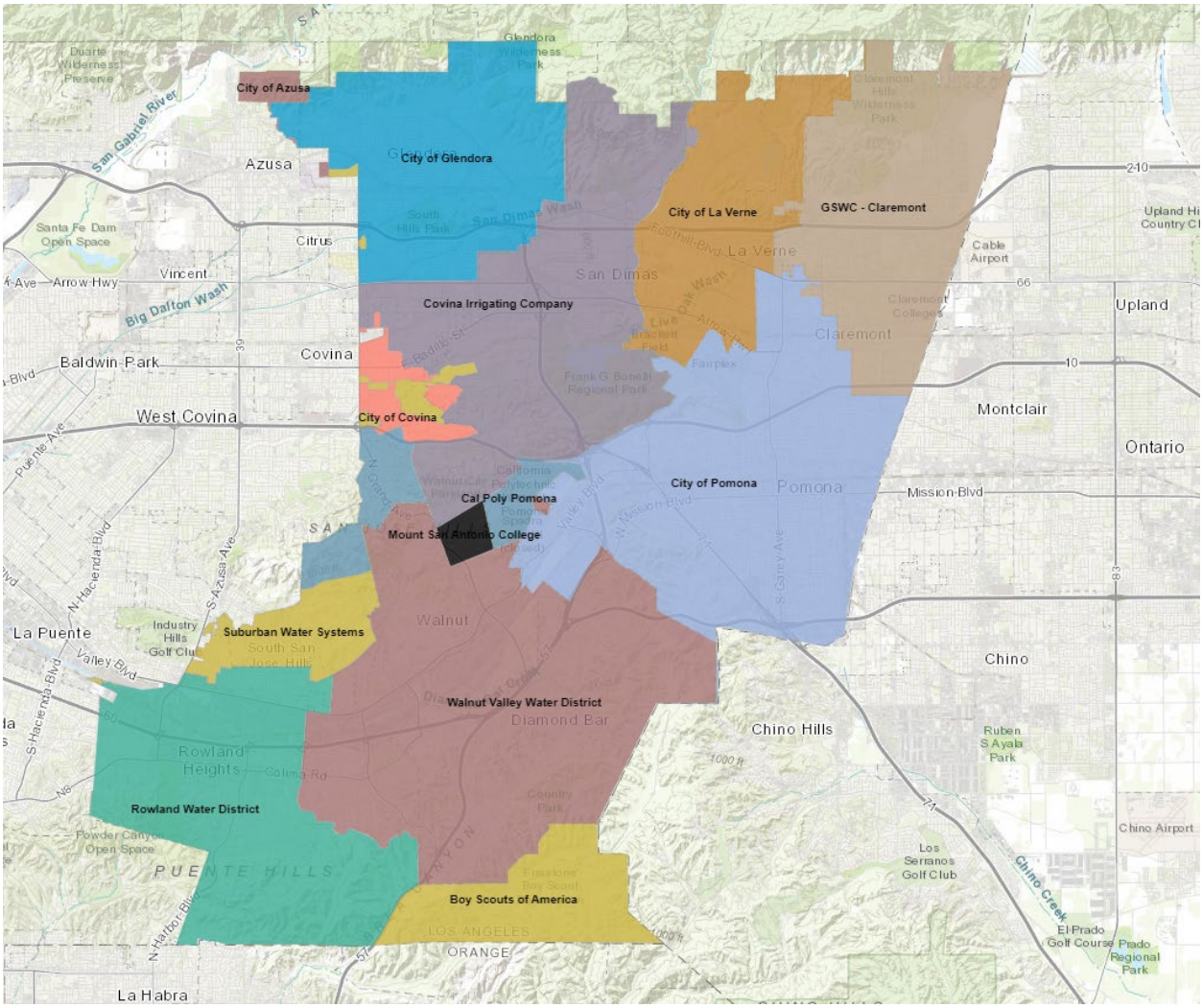


Figure 2-1. Three Valleys Municipal Water District Service Area

Three Valleys is one of 26 member agencies of Metropolitan. Three Valleys' water supply sources consist of untreated imported water purchased from Metropolitan, treated imported water purchased from Metropolitan, and groundwater from the Six Basins groundwater basin, with imported water from Metropolitan accounting for the majority of Three Valleys' supply. Water purchased from Metropolitan comes from the CRA and the SWP. The 13 member agencies use a combination of imported water, groundwater, recycled water, and surface water. Several of these agencies are in SWP dependent areas, meaning they cannot receive Colorado River supplies from Metropolitan, and are solely dependent on imported water from the SWP.

2.1.2 Boy Scouts of America

Boy Scouts of America is one of three institutions that receive imported water from Three Valleys. They own and operate the Firestone Scout Reservation, a campground and wilderness facility located in the southern part of the Three Valleys' service area.

2.1.3 California State Polytechnic University at Pomona

California State Polytechnic University is one of three institutions that receives imported water from Three Valleys, located within the City of Pomona.

2.1.4 City of Covina

The City of Covina has a service area of approximately 7 square miles, encompassing the majority of the City of Covina, a portion of the City of West Covina and an unincorporated portion of Los Angeles County. In 2020, the City of Covina served a population of approximately 29,287 through about 8,500 municipal connections.

2.1.5 City of Glendora

The City of Glendora's service area covers approximately 11 square miles encompassing the majority of the City of Glendora and a portion of the Cities of San Dimas, Azusa and an unincorporated portion of Los Angeles County. In 2020, the City of Glendora served a population of approximately 45,551 through about 13,468 municipal connections.

2.1.6 City of La Verne

The City of La Verne has a service area of approximately 8.56 square miles bounded on the west by the City of San Dimas, on the south by the Puddingstone Recreation area, on the east by Fulton Road and the prolongation of Williams Avenue, and on the north by the Los Angeles National Forest. In 2020, the City of La Verne served a population of approximately 31,321 through about 8,800 municipal connections.

2.1.7 City of Pomona

The City of Pomona's service area covers approximately 22.9 square miles encompassing the majority of the City of Pomona and portions of the Cities of La Verne, Claremont, and Chino Hills. In 2020, the City of Pomona served a population of approximately 153,988 through about 30,041 municipal connections.

2.1.8 Golden State Water Company (Claremont and San Dimas systems)

Golden State Water Company (Claremont system) provides water service to the City of Claremont, portions of the Cities of Montclair, Pomona, and Upland, and adjacent unincorporated areas of Los Angeles County, which encompasses approximately 9.2 square miles. The San Dimas system serves portions of the Cities of La Verne, Walnut, and Covina, and adjacent unincorporated areas of Los Angeles County, covering approximately 13.7 square miles. In 2020, Golden State Water Company served a population of approximately 36,713 through about 11,076 municipal connections in the Claremont system. In the San Dimas system, Golden State Water Company served a population of approximately 53,120 through about 16,033 municipal connections.

2.1.9 Mount San Antonio College

Mount San Antonio College is one of three institutions that receives imported water from Three Valleys, located within the City of Walnut.

2.1.10 Rowland Water District

Rowland Water District's water service area covers approximately 17.2 square miles encompassing portions of the Cities of Industry, La Puente, and West Covina, and unincorporated areas of Los Angeles County including Rowland Heights and Hacienda Heights. In 2020, Rowland Water District served a population of approximately 59,283 through about 13,202 municipal connections.

2.1.11 Suburban Water Systems

Suburban Water Systems has a service area of approximately 41.7 square miles encompassing the Cities of Glendora, Covina, West Covina, La Puente, Walnut, Whittier, La Mirada, La Habra, and Buena Park as well as sections of unincorporated Los Angeles County and Orange County. Suburban Water Systems' service area is currently divided into two main service areas: the San Jose Hills Service Area, and the Whittier/La Mirada Service Area. In 2020, Suburban Water Systems served a population of approximately 298,367 through about 42,512 municipal connections. This includes approximately 175,529 residents in the San Jose Hills service area and approximately 122,838 residents in the Whittier/La Mirada service area.

2.1.12 Valencia Heights Water Company

Valencia Heights Water Company is a mutual water company serving portions of the City of West Covina and unincorporated areas of Los Angeles County. Valencia Heights Water Company serves less than 3,000 customers and does not supply more than 3,000 acre-feet of water annually, and thus is not required to prepare a UWMP.

2.1.13 Walnut Valley Water District

Walnut Valley Water District's water service area covers approximately 29 square miles covering the City of Diamond Bar and portions of the Cities of Industry, Pomona, Walnut, and West Covina, as well as unincorporated areas of Los Angeles County including Rowland Heights. In 2020, Walnut Valley Water District served a population of approximately 99,956 through about 27,100 municipal connections.

2.2 Regional Water Supply

This section summarizes all 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

An overview of the water sources used by each agency within Three Valleys' service area is shown in Table 2-2. This summary highlights the diversity of water supply portfolios among the water agencies in the region. As a result, each agency is impacted differently by drought, driving a need for regional solutions that are flexible and adaptable to different community needs.

Based on the historical water use, all of Three Valleys' member agencies rely on imported water as a major supply source. Imported water constitutes the largest portion of the region's supply, accounting for about 51 percent of the total from 2018 to 2022 (Figure 2-2).

Table 2-2. Current Water Sources by Agency

Agency	Groundwater	Imported Water	Surface Water	Recycled Water
Boy Scouts of America		X		
Cal Poly Pomona	X	X		X
City of Covina*		X	X	
City of Glendora*	X	X	X	
City of La Verne	X	X		
City of Pomona	X	X	X	X
Golden State Water Company (Claremont)	X	X		
Golden State Water Company (San Dimas)*	X	X	X	
Mount San Antonio College		X		
Rowland Water District	X	X		X
Suburban Water Systems*	X	X	X	X
Valencia Heights Water Company*	X	X	X	X
Walnut Valley Water District	X	X		X

*Purchases water from Covina Irrigating Company which produces water from local surface and groundwater sources and treats imported water from Three Valleys.

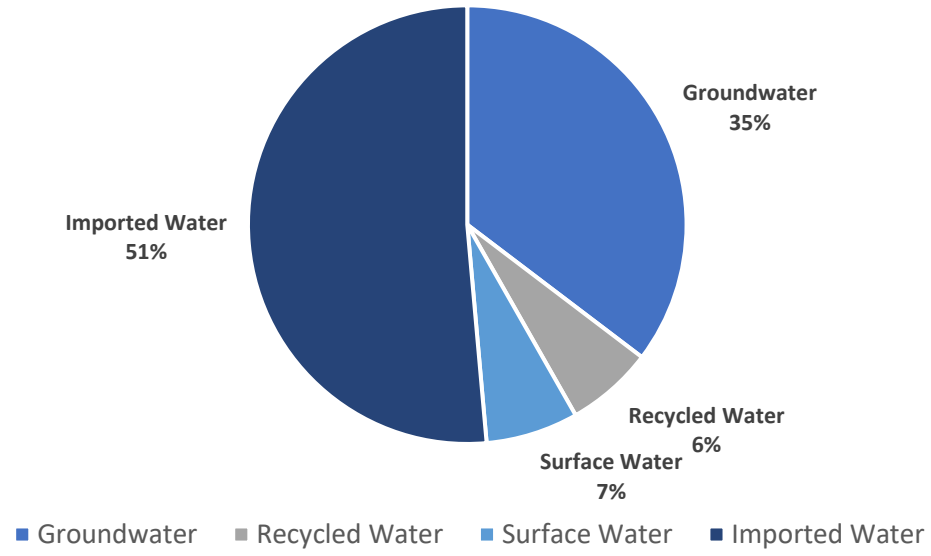


Figure 2-2. Percent Regional Water Use by Source

Based on water use data aggregated from Three Valleys' Local Supply Production Surveys (which are compiled form member agency data) and Three Valleys' Water Sales records, the total water supply within the region has ranged from approximately 104,000 acre-feet (AF) to more than 121,000 AF from 2018 to 2022 as shown in Figure 2-3.

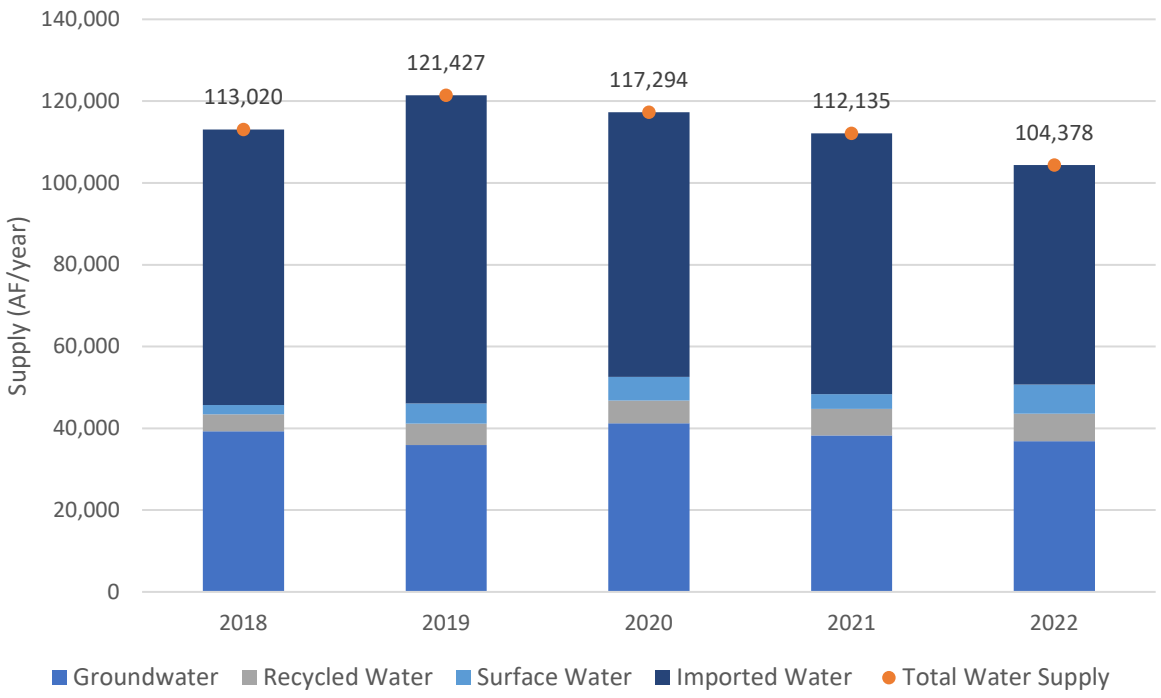


Figure 2-3. 2018-2022 Regional Water Supply by Source

2.2.2 Sources of Supply

This section describes each of the water supplies available to the region.

2.2.2.1 Imported Water

Three Valleys purchases both untreated and treated imported water from Metropolitan and wholesales it to its member agencies. Currently, Three Valleys receives a Tier 1 water supply allotment from Metropolitan of 80,688 acre-feet per year (AF/year). Metropolitan imports water from the SWP which is owned and operated by DWR and conveys water from the Bay-Delta to Southern California via the California Aqueduct, and from the Colorado River through the CRA which is owned and operated by Metropolitan. Generally, Metropolitan sources around 35 percent of its water from the SWP, 25 percent sourced from the CRA, and the remainder sourced from Metropolitan local supplies.

Three Valleys supplies treated imported water directly to its member agencies through service connections from the Metropolitan distribution system, but it does not provide water directly to retail customers. Untreated imported water is sent to Three Valleys' Miramar Water Treatment Plant for processing before being distributed to the member agencies. This untreated water is also used to replenish portions of the Six Basins and is delivered to the Main Basin to meet Replacement Water obligations specified in the Main Basin Judgment. Furthermore, Three Valleys obtains untreated imported water supplies from Metropolitan for delivery to the Covina Irrigating Company, which treats these deliveries at its William B. Temple Treatment Plant before supplying other member agencies within the Three Valleys' region.

Each year, Metropolitan member agencies communicate their anticipated water needs for the next five years, allowing Metropolitan to collaborate with them on forecasts for long-term future water supply. Imported water sources are described further in Section 3.2.1.

2.2.2.2 Groundwater

The region primarily uses local groundwater from six different groundwater basins: the Six Basins, Chino Basin, Main San Gabriel Basin (Main Basin), Spadra Basin, Central Basin, and Puente Basin. Five basins (Six Basins, Chino Basin, Main Basin, Central Basin, and Puente Basin) are adjudicated groundwater basins; therefore, they are exempt from the requirement to designate a Groundwater Sustainability Agency (GSA) as mandated by the Sustainable Groundwater Management Act (SGMA). These basins are managed by their respective Watermaster to manage the ownership of water rights and water use with goals similar to that of SGMA. The Spadra Basin is a small, non-adjudicated subbasin of the San Gabriel Valley Basin, designated as a 'very low-priority' basin by DWR. However, the Walnut Valley Water District and the City of Pomona collectively formed the Spadra Basin GSA to manage the basin. Groundwater basin management activities are described further in Section 3.2.2.

According to the State Water Resources Control Board's Groundwater Ambient Monitoring and Assessment (GAMA) Program, groundwater from these basins has exhibited Maximum Contaminant Level (MCL) exceedances for numerous constituents, including 1,2,3-Trichloropropane (1,2,3-TCP),

Hexavalent Chromium, Arsenic, 1,2-Dibromo-3-chloropropane (DBCP), Perchlorate, Tetrachloroethene (PCE), Trichloroethene (TCE), Total Dissolved Solids (TDS), and Uranium. To remove these contaminants, agencies use a combination of blending and wellhead treatment, both of which are resulting in greater reliance on imported water.

2.2.2.3 Recycled Water

Several member agencies in the region also use recycled water to meet non-potable demands. Recycled water sources in the region are primarily from the Pomona Water Reclamation Plant and San Jose Creek Water Reclamation Plant, both owned and operated by the Los Angeles County Sanitation District.

2.2.2.4 Surface Water

Some member agencies in the region also use surface water to meet potable demands. The City of Pomona sources local surface water from San Antonio Creek, which is then purchased by Three Valleys to replenish the Six Basins. Additionally, some member agencies obtain surface water from the Covina Irrigating Company, which treats water from the San Gabriel River.

2.3 Regional Water Demand

In 2020, the wholesale demand from Three Valleys was nearly 77,000 AF. Over the past ten years, Three Valleys' total water demands have ranged from 57,472 AF/year to 76,723 AF/year, with an average of 67,327 AF/year. Retail water usage includes residential, commercial, industrial, agricultural, and institutional/governmental. Among those uses, residential generally accounts for 70 percent of total demand.

Based on aggregated water demand data from member agency UWMPs, the total water demand for 2020 was nearly 135,000 AF/year (see Table 2-3), with nearly 60 percent of that demand associated with from residential sources.

Table 2-3. 2020 Distribution of Water Demand (in Acre-Feet) for the Three Valleys Service Area

Use Type	Demand (AF/year)	Contribution to Demand (%)
Single-Family Residential	69,639	51.6%
Commercial	18,822	14.0%
Other	11,712	8.7%
Multi-Family Residential	10,233	7.6%
Losses	5,726	4.2%
Recycled Water Demand	6,463	4.8%
Institutional	6,026	4.5%
Landscape & Agriculture	4,789	3.6%
Industrial	1,434	1.1%
Total Demand from Member Agencies	**134,844**	**100%**

Source: Data aggregated from member agencies' 2020 UWMPs

Projections of future water demand due to growth, aggregated from the member agency 2020 UWMPs, are shown in Table 2-4. The cumulative annual growth rates are calculated based on the change in population from the baseline 2020 values. These growth rates, along with climate change factors, were used to develop new demand projections, which are discussed in Chapter 4.

Table 2-4. Three Valleys Service Area Water Demand Projections due to Growth

	FY 2020	FY 2025	FY 2030	FY 2035	FY 2040
Projected Demand from Member UWMPs (AF/year)	134,844	144,665	146,338	147,524	149,480
Implied Cumulative Annual Growth Rate (%)		100.95%	100.07%	100.15%	100.23%

Refer to Three Valleys' member agency UWMPs for additional details on water usage by sector within the region.

2.4 Land Uses within Service Area

Much of Three Valleys' service area is filled with urban development, leaving a relatively small balance of open space for future improvement and population growth. Still, the region is expected to experience some increase. As of 2023, residential (single-family and multi-family), commercial, and industrial uses account for the majority of land use, in Equivalent Dwelling Units, within Three Valleys' general service area, as shown in Figure 2-4.

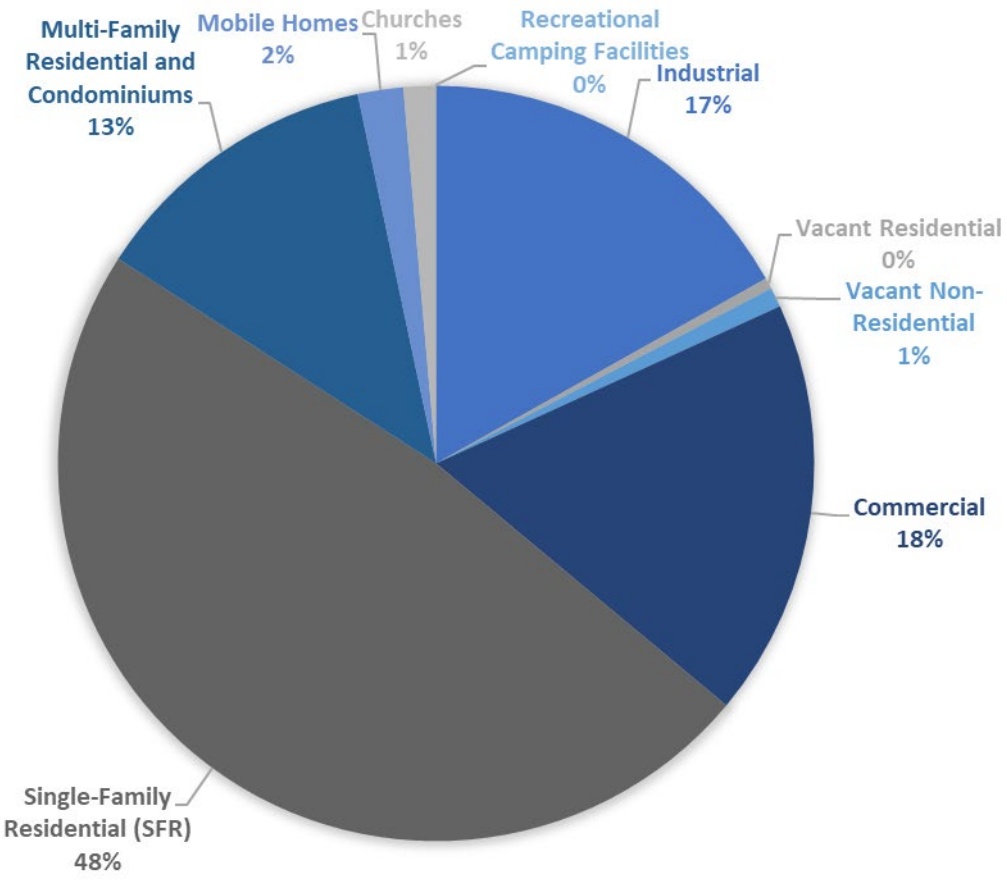


Figure 2-4. Three Valleys Land Use in Equivalent Dwelling Units

3 Drought Monitoring Framework (DMF)

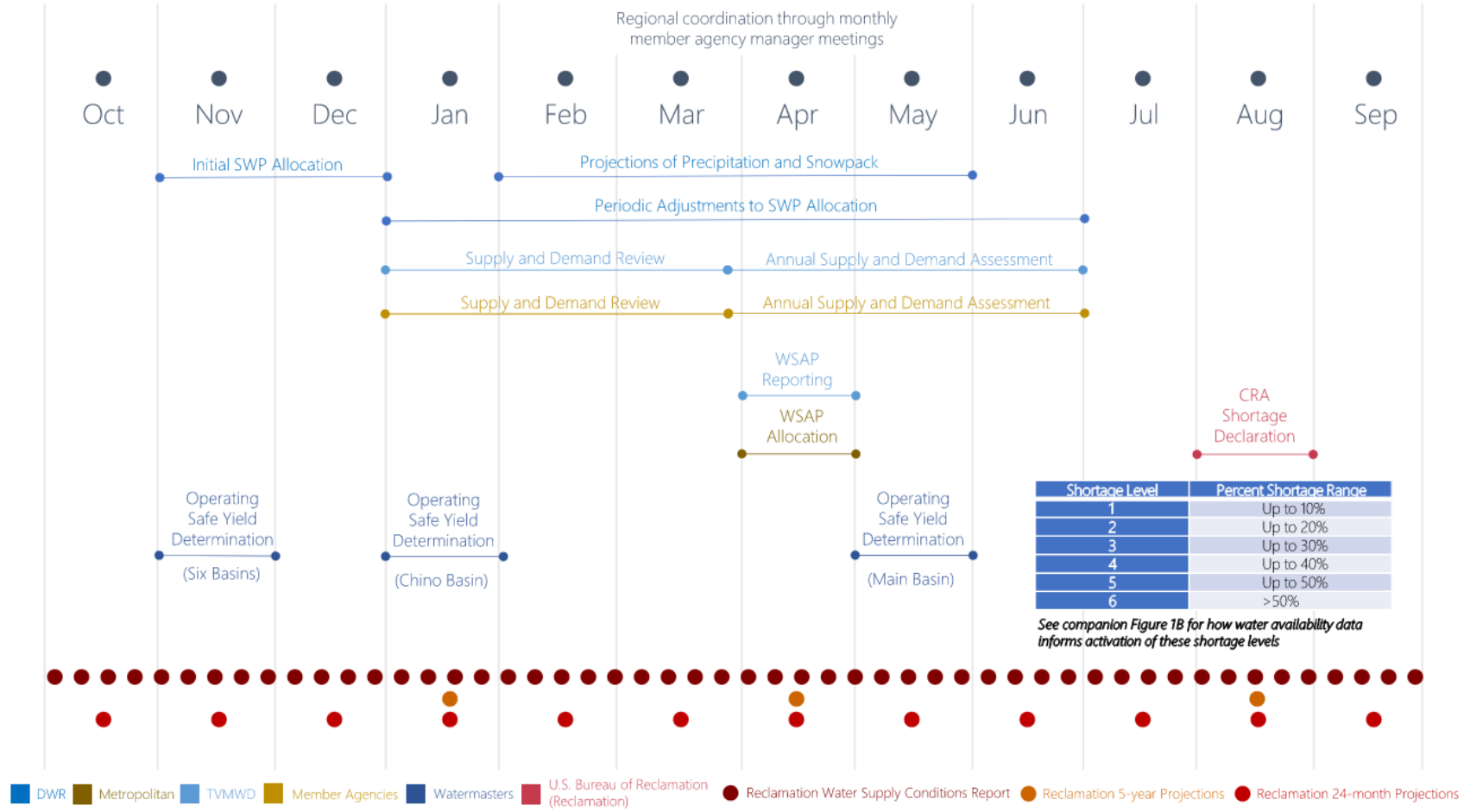
This chapter discusses the DMF, which establishes a process for monitoring near- and long-term water availability and develops a framework for predicting the probability of future droughts or confirming an existing drought. The DMF was informed through collaboration with the Drought Task Force.

3.1 DMF Primary Elements

The DMF includes three primary elements:

1. Monitoring for near- and long-term water availability: The region has access to considerable water availability data that is made available throughout the year by DWR, Metropolitan, Reclamation, and groundwater basin watermasters (watermasters). Key indicators for water availability include SWP allocations by DWR, CRA shortage declarations made by Reclamation, Water Supply Allocation Plan (WSAP) allocations by Metropolitan, and operating groundwater safe yield determinations made by watermasters in the region.
2. A process for predicting future droughts or confirming an existing drought: The region has existing processes and frameworks for predicting or confirming droughts. These processes and frameworks include Annual Supply and Demand Assessments (Annual Assessments) which are informed by water availability data and other factors, and a set of triggers that are used to initiate preparation for and response to water shortages.
3. Regional coordination: Regular and ongoing monthly meetings between Three Valleys and its member agencies are used to review and analyze water availability data, Annual Assessments, and to make decisions regarding declaring water supply shortages, instituting water restrictions, and pursuing additional supplies.

These elements are discussed in the following sections and the DMF is provided as Figure 3-1 and Figure 3-2.



Note: See companion

Figure 3-1. Drought Contingency Plan Regional Drought Monitoring Framework

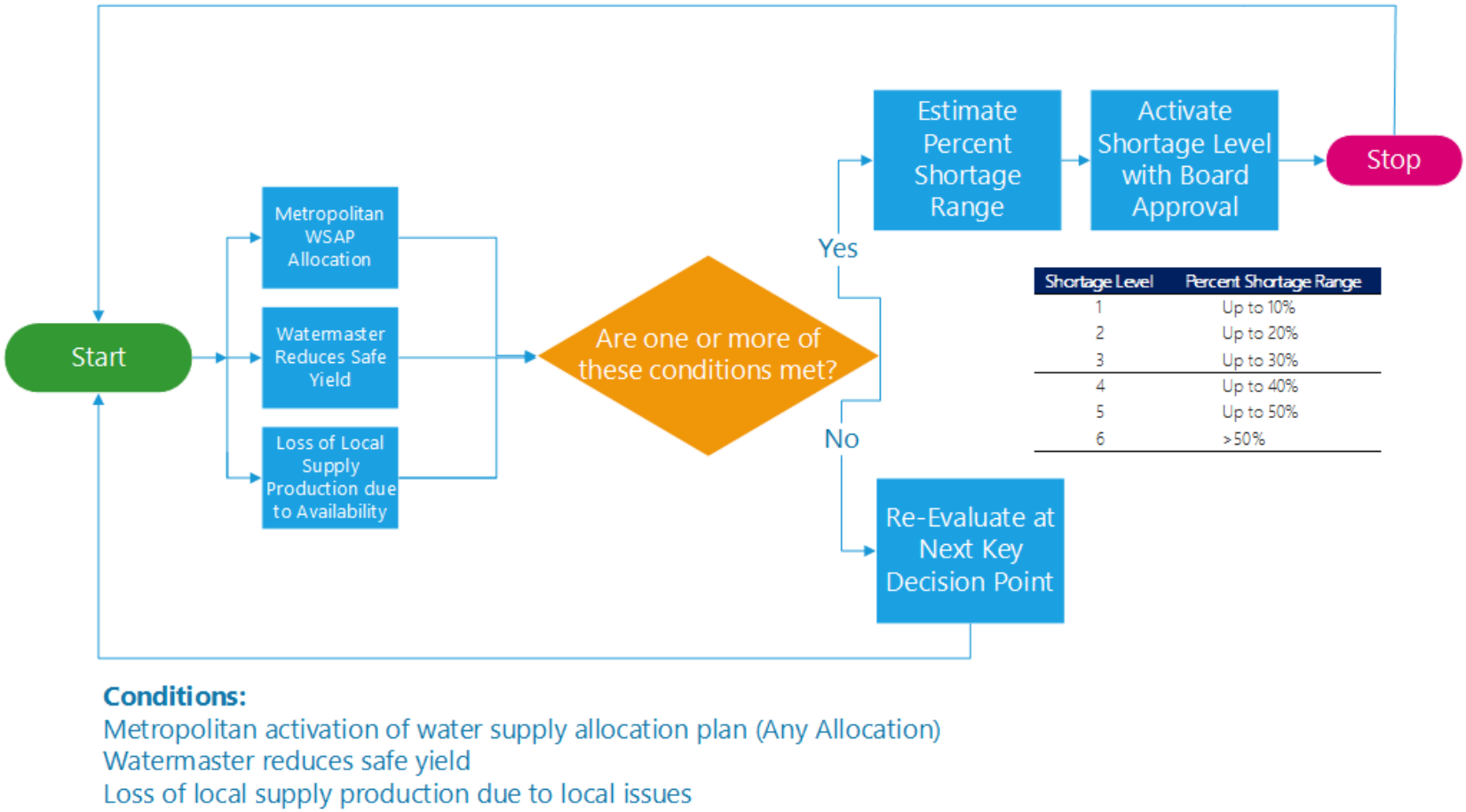


Figure 3-2. Drought Contingency Plan Regional Drought Monitoring Framework

3.2 Water Availability Data

As discussed in Section 3.1, imported water and groundwater data are key indicators for monitoring near- and long-term water availability in the region. This data is made available throughout the year by DWR, Metropolitan, Reclamation, regional watermasters, and others. This data directly informs the region's water supply projections and is used to develop Annual Assessments as described in Section 3.3.

3.2.1 Imported Water

The region's water supply portfolio consists of 50 to 60 percent imported water. Imported water supplied to the region through Three Valleys is purchased from Metropolitan, who can source these supplies from the Sacramento and San Joquin rivers via the SWP, and the Colorado River via the CRA.

3.2.1.1 State Water Project

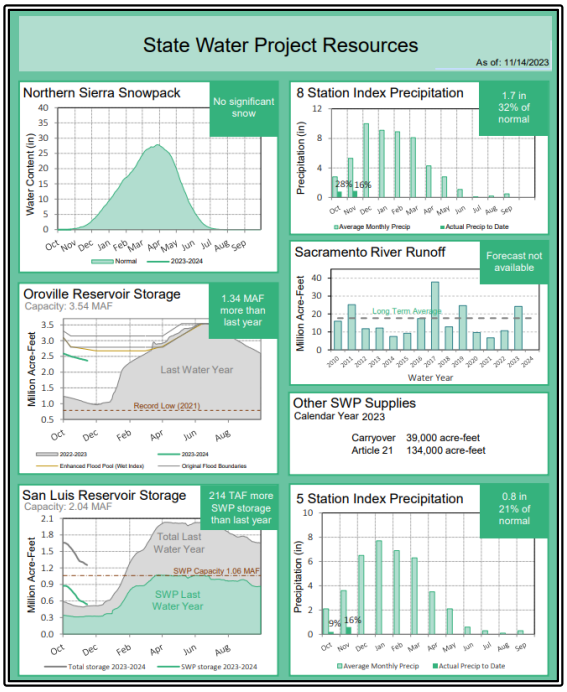
Roughly 30 percent of Metropolitan's water is imported from the SWP. The SWP is a water storage and delivery system of reservoirs, aqueducts, pumping plants, and power plants owned by the State of California. Water delivered by the SWP originates in the Sierra Nevada mountains in northern California and is pumped into the SWP from the Sacramento-San Joaquin River Delta near Stockton. Water from the SWP serves agencies within California's Central Valley, San Francisco Bay Area, central coast, and Southern California.

DWR administers long-term water supply contracts to 29 local agencies, including Metropolitan, for water service from the SWP. Each contract identifies the maximum volume of SWP water to be made available to each agency on an annual (calendar year) basis, also known as the "Maximum Table A amount." The available volume of SWP water to be delivered to each agency, or the "Table A Allocation," often differs each year, and is subject to refinement over the course of a water year as hydrologic conditions unfold and periodic adjustments to SWP allocations are made.

In determining available SWP supplies, DWR considers several factors including agency projected demands, existing storage in SWP facilities, estimates of future runoff, SWP operational and regulatory requirements, and water rights obligations. Estimates of future runoff are primarily based on DWR's forecasted projections of precipitation and snowpack. These forecasts are typically conducted using data collected by DWR's California Cooperative Snow Surveys program between February through May of each year. Consequently, initial SWP allocations, which are generally made around the November to December timeframe each year and are based on conservative dry hydrologic conditions, are subject to refinement between January to June based on forecasted and actual runoff conditions. These conditions start to become apparent generally around the February to March timeframe, with the outlook for imported water supplies from the SWP becoming more certain around April to May.

DWR's California Data Exchange Center (CDEC) provides access to historical and forecasted hydrologic and reservoir data used to inform water supply conditions. This data is collected through an exchange with various agencies including the National Weather Service, Reclamation, the U.S. Geological Survey, the U.S. Army Corps of Engineers, and other state and public agencies. Real-time

water availability data is also provided by DWR via the California Water Watch (CWW) website, which consolidates precipitation, reservoir conditions, streamflow, groundwater, and snowpack data in a single location.



Select data from CDEC and CWW are also used by Metropolitan to produce a water supply conditions report. This report consolidates key information related to reservoir storage, snowpack and snowfall, precipitation, and runoff to provide an overview of SWP resources. The report is generally updated by Metropolitan as forecasts are updated and made available throughout the water year.

3.2.1.2 Colorado River Aqueduct

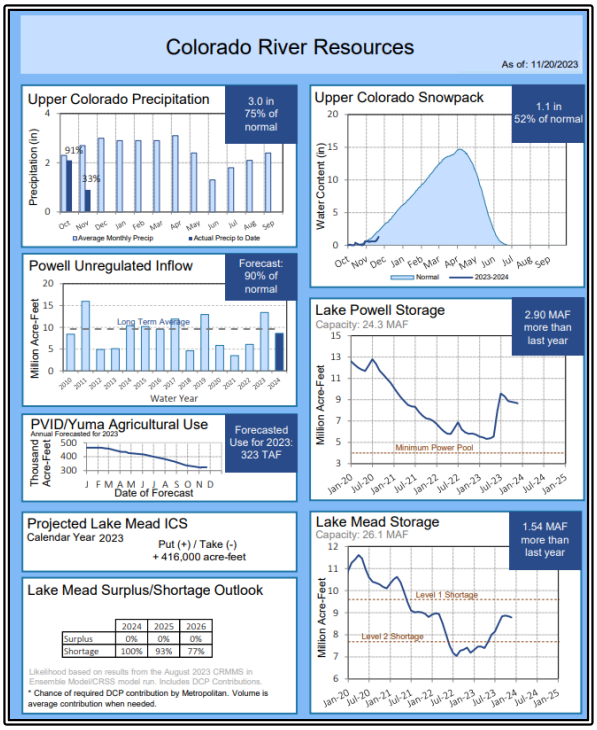
Roughly 25 percent of Metropolitan's water is sourced from the CRA. Built and operated by Metropolitan, the CRA carries water from the Colorado River system 242 miles across the desert to Southern California. Reclamation operates the Colorado River system, which provides water to users within seven western states – Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming. California's legal apportionment from the Colorado River is 4.4 million acre-feet on an annual basis. Roughly 70 percent of this allocation goes to the Imperial Irrigation District, with the remainder allocated to Metropolitan and the San Diego County Water Authority.

Similar to the SWP, hydrologic conditions have the potential to impact CRA diversions to California and users within the other six western states. CRA diversions to California are governed by the Lower Colorado River Basin DCP. The Lower Colorado River Basin DCP outlines five tiers and corresponding reductions to diversions for Arizona, California, Nevada, and Mexico. These tiers are triggered based on forecasts of reservoir levels in Lake Mead, the largest reservoir in the Colorado River Basin. These forecasts are reviewed, and shortage declarations are made for the following calendar year around August of each year.

Reclamation monitors levels in Lake Mead as an indicator of Colorado River Basin storage conditions. Monitoring is similarly done for Lake Powell, another significant reservoir for the Colorado River Basin. Projections of reservoir levels are made 24 months into the future and released on a monthly basis. These projections take into account forecasted hydrology, reservoir operations, and diversion and consumptive use schedules to model a single scenario of reservoir conditions. Reclamation also conducts five-year projections of future conditions in the Colorado River system which are typically updated every January, April, and August of each year.

Data that reflects water availability from the Colorado River Basin is also made available in Metropolitan's water supply conditions report. Conditions for the Colorado River Basin are generally

reflected in this report through a reporting of actual and projected precipitation and snowpack in the Upper Colorado River, unregulated inflow into Lake Powell, and storage in Lake Powell and Lake Mead.



3.2.1.3 Metropolitan Water Supply Allocation Plan

As stated in Section 3.2.1.1 and 3.2.1.2, roughly 55 percent of Metropolitan's imported water supply comes from the SWP and the CRA. Metropolitan's WSAP is Metropolitan's policy and formula for equitably allocating available water supplies to member agencies during extreme water shortages when Metropolitan determines it is unable to meet all its demands. Metropolitan's WSAP identifies ten levels of shortage designed to reduce demands by up to 50 percent of the WSAP's calculated base demand. Based on the shortage level established by Metropolitan, the WSAP provides a reduction allocation to a member agency for its Municipal and Industrial (M&I) retail demand and replenishment demand. The WSAP considers historical local water production, full service treated water deliveries, agricultural deliveries and water conservation efforts when calculating each member agency's allocation.

Three Valleys has developed a WSAP to implement Metropolitan's WSAP within the Three Valleys service area in a manner that is fair and equitable to Three Valleys' member agencies. Three Valleys' WSAP was prepared in collaboration with its member agencies and adopted in 2009. Three Valleys' WSAP limits how much water can be purchased during the fiscal year without incurring a penalty. The limit varies depending on a number of factors, but mainly local groundwater extracted during the fiscal year. Three Valleys' WSAP mirrors the 10 stages of Metropolitan's WSAP.

Metropolitan's and Three Valleys' WSAPs do not require Three Valleys' member agencies to reduce demands during shortage, rather they incentivize demand reduction through fees for excessive use. Metropolitan charges penalties for use above an allocation established by implementing one of the ten stages of its WSAP and Three Valleys' WSAP passes any penalties charged through to the member agencies that contributed to accruing the penalties. Demand reductions are voluntary and supplies beyond the allocation can still be purchased at higher penalty rates.

Metropolitan is responsible for recommending a WSAP shortage level for each allocation year which is defined as the period between July 1 to June 30. To facilitate this recommendation, Metropolitan tracks and reports on storage reserve levels and projected supply and demand conditions between January and March of each year. In April, Three Valleys along with other Metropolitan member agencies report their projected supplies for the coming allocation year. This information is incorporated in Metropolitan staff analysis of storage reserves and projected supply and demand

conditions in order to provide an allocation recommendation to the Board of Directors during their April meeting. The recommendation of a WSAP allocation directly informs Three Valleys and member agency Annual Assessments (*see* Section *3.3*).

3.2.2 Groundwater

Groundwater accounts for 35 to 45 percent of the region's water supply portfolio. Local groundwater supplies are provided from six different groundwater basins: Central Basin, Chino Basin, Main San Gabriel Basin (Main Basin), Puente Basin, Six Basins, and Spadra Basin, with the Chino Basin, Main Basin, and Six Basins providing the majority of the local groundwater supplies.

As previously mentioned, the Spadra Basin is managed by a GSA under SGMA. Under SGMA, groundwater basins are categorized into one of four priority categories: high-, medium-, low-, or very-low priority. SGMA requires medium- and high-priority basins to develop a Groundwater Sustainability Plan (GSP) with the goals of:

- Developing water budgets
- Assessing groundwater storage
- Developing sustainable management criteria, undesirable results to be avoided, and minimum thresholds to protect the basin for future supply.
- Identifying projects needed to ensure future sustainability of supplies and avoidance of undesirable results

While the Spadra Basin is designated as a very-low priority basin, a GSP was developed in early 2022 with the main objective of encouraging collaborative management of the Basin between all pumpers and maximizing beneficial use of the basin in a sustainable fashion under SGMA.

The remaining groundwater basins are adjudicated and managed by a watermaster. In general, each watermaster is responsible for managing and controlling the withdrawal and replenishment of water supplies into the basin; determining annually the operating safe yield (or the amount of groundwater that can be safely extracted); acquiring and spreading replenishment water as needed; and coordinating local involvement in efforts to preserve and restore the quality of groundwater in the basin. Annually, each adjudicated basin is generally required to report to DWR:

- Groundwater elevation data
- Groundwater extraction for the preceding year
- Surface water supply used for or available for use for groundwater recharge or in-lieu use
- Total water use
- Change in groundwater storage

To that end, each watermaster produces an annual report that identifies this information along with other information relevant to each basin, such as groundwater quality data.

The watermasters for those groundwater basins that provide the majority of the groundwater supplies for the region (Chino Basin, Main Basin, and Six Basins) reassess the operating safe yield of each basin on an annual basis. The Main Basin watermaster typically updates their 5-year outlook of the

operating safe yield on a fiscal year basis around May of each year. The Six Basins watermaster typically makes the determination of the operating safe yield for the subsequent calendar year by November of each year. The operating safe yield for the Chino Basin is recalculated around January of each year.

These frameworks provide the mechanisms to monitor groundwater availability in the near- and long-term to ensure that the groundwater basins relied upon by the region are sustainably managed into the future.

3.3 Annual Supply and Demand Assessments

Three Valleys and its member agencies who are defined as urban water suppliers[1] are required to submit an Annual Assessment on or before July 1 of each year. The Annual Assessment is an evaluation of the near-term outlook for supplies and demands and is instrumental in providing guidance to Three Valleys and its member agencies for decisions regarding:

- Potential declarations of a water supply shortage and implementation of water shortage stages
- Instituting mandatory water restrictions
- Promoting water use efficiency and conservation programs
- Water rates and drought rate surcharges, and
- The necessity of pursuing alternative water supplies

The Annual Assessment is generally initiated between January and March of each year. During this timeframe, Three Valleys and its member agencies review demands from the previous July to December time period along with groundwater basin conditions (as applicable), local hydrology, and the imported water supply outlook as projected during the initial SWP allocation announced in the November to December timeframe. Following this review, Three Valleys and its member agencies initiate the Annual Assessment following Metropolitan's decision to recommend a WSAP allocation in April, since this recommendation directly impacts the imported water supplies that will be made available to the region. The methodology for the Annual Assessment includes the evaluation of supplies, demands, and other factors that might affect the availability of water supplies:

- Water Supplies: Available water supply sources within the region are quantified based on a review of current production capacities, historical production, and existing water supply planning documents.
- Unconstrained Water Demand: Unconstrained demands (i.e., demands prior to any projected response actions) are estimated for the current year and the upcoming year (which is assumed to be a dry year). This estimation will include factors such as weather, existing and projected land uses and populations, actual customer consumption and water use factors,

[1] Urban water supplier is defined as a supplier, either publicly or privately owned, that provides water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually.

monthly urban water supplier monitoring reports, existing water shortage levels, and existing water conservation ordinances.

- Planned Water Use for Current Year Considering Dry Subsequent Year: The water supplies available to meet demands during the current year and the upcoming single dry year will be identified. This evaluation will include factors such as estimated water demands, weather, groundwater basin operating safe yields, water quality results, existing available pumping capacities, imported water allocations, contractual obligations, regulatory issues, use of emergency interconnections, and the costs associated with producing each water supply source.
- Infrastructure Considerations: The capabilities of the water distribution system infrastructure to meet the water demands during the current year and the upcoming (single dry) year are considered. Available production capacities (e.g., groundwater well capacities) and distribution system water losses are reviewed. In addition, capital improvement and replacement projects, as well as potential projects which may increase water system and production capacities are considered.
- Other Factors: Additional local considerations which may affect the availability of water supplies are also described.

As stated above, the Annual Assessments by Three Valleys and its member agencies are required to be completed by July 1 of each year.

Information from each Annual Assessment is required by DWR to be summarized in an Annual Shortage Report, which also must be submitted to DWR by July 1 of each year. The Annual Shortage Report summarizes information from the Annual Assessment and includes information on anticipated shortage, triggered shortage response actions, compliance and enforcement actions, and communication actions.

3.4 Triggers

In response to Three Valleys and member agency Annual Assessments along with water availability data which is made available throughout each year, Three Valleys and its member agencies may have a need to manage water supplies to minimize the impacts of potential shortages. To that end, Three Valleys and its member agencies that are considered urban water suppliers have each developed a WSCP. The WSCP serves as a framework for preparing for and responding to water shortages within each respective agency's service area boundary. Collectively as a region, Three Valleys and its member agencies that are defined as urban water suppliers identify six standard water shortage levels that correspond to a gap in supply compared to normal year availability. The six standard water shortage levels correspond to progressively increasing estimated shortage conditions (up to 10, 20, 30, 40, 50 percent, and greater than 50 percent shortage compared to the normal reliability condition) and align with the response actions that each water supplier will implement to meet the severity of the impending shortages. These six standard water shortage levels (Table 3-1) serve as the region's triggers for responding to supply shortages and initiating response actions to help manage available supplies.

Table 3-1. Regional Water Shortage Levels and Corresponding Shortage Ranges

Shortage Level	Percent Shortage Range
1	Up to 10%
2	Up to 20%
3	Up to 30%
4	Up to 40%
5	Up to 50%
6	>50%

As part of the development of this DCP, the region has developed a set of three key conditions that could suggest an imminent water shortage. If one or more of these conditions are met, Three Valleys and its member agencies will estimate the percent shortage range and activate the necessary shortage level as shown in Table 3-1. These conditions are as follows:

- Condition A: Metropolitan activates their WSAP (any allocation)
- Condition B: Reduced safe yield
- Condition C: Loss of local supply production

The region has also established triggers for initiating a surplus conditions stage. Currently, the region has existing mechanisms to purchase surplus water supplies for recharge into the local groundwater basins, where it can be held for use in future drought conditions. During the surplus conditions stage, Three Valleys and its member agencies will initiate coordination to ensure the region is maximizing its ability to recharge all available surplus waters for use during future dry years. The triggers that the region will use to activate the surplus conditions stage are provided in Table 3-2.

Table 3-2. Surplus Conditions Stage Triggers

Surplus Water Source	Entity Source is Available To	Stage Trigger
SWP – Table A (Metropolitan)	Three Valleys	+50% allocation
SWP – Article 21 (Metropolitan)	Three Valleys	Any allocation

3.5 Regional Coordination

Three Valleys and its member agencies have an existing mechanism in place to facilitate the coordination and information sharing associated with monitoring near- and long-term water availability. Each month, Three Valleys holds a member agency manager's meeting where each of its member agency general managers and support staff are invited to attend. The meetings serve as a forum to review water availability data, discuss the need for triggering water shortage levels, and coordinate drought responses and messaging.

The cities of Claremont and La Verne are known as "SWP Dependent Areas" – meaning that they are solely dependent on imported water from the SWP and cannot receive CRA supplies. Consequently, at the height of the last drought in 2022, Claremont and La Verne activated a Stage 5 shortage level,

indicating a 50 percent shortage condition. During the timeframe that these agencies were in Stage 5, additional meetings outside of the regular member agency manager's meeting took place to facilitate increased coordination and information sharing. During the implementation phase of this DCP, Three Valleys will increase the frequency of meetings with any member agency or agencies that are in Stage 5 or above. These meetings will take place at least twice monthly.

4 Vulnerability Assessment

The study of climate change impacts on water resources continuously produces new models and updates to local and regional datasets. This continuous improvement necessitates a focused selection of data sources and analysis methods that are most applicable to local conditions. The scope of this vulnerability assessment is specifically geared towards enhancing the understanding of the impacts of climate change on future water demand in Three Valleys wholesale service area and the sources of Three Valleys water supplies during normal and drought periods.

This chapter describes the retrieval and analysis of climate data provided by DWR to project the impact of climate change on future water supplies and demands within the Three Valleys service area. The DWR climate data combines findings from 20 global climate models that closely represent California's climate processes. To account for biases in the climate model results, climate projections are presented as relative changes from historical conditions rather than absolute values. This adjustment is achieved by referencing historical hydrologic data in the state, covering the period from 1915 to 2011. The resulting ratio of a simulated future value to its corresponding simulated historical value is termed a "change factor." The change factors are applied to baseline water supply and demand to project changes in the water budget within the Three Valleys service area.

4.1 Summary of Vulnerability Assessment Results

Overall, the results of the vulnerability assessments indicate:

- Minor decreases projected in average annual water supplies from the San Gabriel River basin during drought (single year and multi-year) years relative to baseline conditions due to shifts in precipitation from winter to fall and projected increases in surface water evaporation caused by increasing temperatures, particularly under the extreme warming climate scenario.
- A shorter rainy season with potential for higher intensity precipitation events resulting in higher peak flows of shorter duration. The net impact on annual groundwater recharge will be minimal if flow diversion facilities and recharge basins maintain adequate capability to handle the increased flow rates.
- Projected increases in outdoor water uses under normal, single dry, and multi-year drought conditions, caused by projected temperature increases, which lead to higher evapotranspiration (ET) rates for landscaping, irrigated crops, and native vegetation. Average annual outdoor water use by customers within the Three Valleys service area could increase by up to six percent under the most severe (Dry Hot) climate change scenario.
- A comparison of Three Valleys and Metropolitan’s water budget projections under future climate conditions shows similar total demand projections, with Three Valleys showing increased reliance on imported surface water (supplied by Metropolitan) in its future projections. This increased reliance in Three Valleys projections occurs because local water supplies are projected to remain nearly constant while water demand increases due to future growth and increased climate-related water deficits. This highlights the need to develop mitigation actions to reduce future reliance on imported surface water.

These results are described in greater detail throughout Chapter 4 which provides:

- A description of the area that is the subject of the vulnerability assessment
- A description of the analysis approach and the data sources
- Narrative discussions regarding the climate change factors calculated for local supply and demand conditions in various scenarios
- Discussion of the water supply and demand projections resulting from the vulnerability assessment
- A comparison of Three Valleys water supply and demand projections resulting from the vulnerability assessment with the regional projections developed as part of the ongoing Metropolitan 2020 Integrated Water Resources Plan (IRP) process

4.2 Details of Vulnerability Assessment Results

4.2.1 DCP and Water Resources Master Plan Requirements for Climate Change Analysis

As part of the DCP, a vulnerability assessment is essential to understand the characteristics and potential risks associated with future droughts and to formulate appropriate mitigation and response actions. Since future droughts cannot be predicted solely based on observed past drought information, it becomes necessary to include a climate change analysis. This analysis incorporates historical and future climate projections to assess the hydrological impacts of climate change on drought conditions, ultimately leading to the development of a more effective plan. The DCP necessitates both qualitative and quantitative assessments of potential drought conditions derived from climate change information to evaluate potential risks to critical resources.

Imported water projections are also a crucial element for development of the Water Resources Master Plan and DCP. Projections for imported water in the Three Valleys service area were developed by Metropolitan as part of their 2020 UWMP Drought Risk Assessment and the Metropolitan 2020 IRP. Metropolitan's 2020 UWMP Drought Risk Assessment (dated June 2021) indicates that Metropolitan has adequate supplies to meet imported water demands in its State Water Project-dependent areas (including Three Valleys) during normal, single dry years, and 5-year drought periods before 2045 (Metropolitan 2020 UWMP, Table 2-4 and Table 2-5). However, the UWMP analysis was conducted assuming historical climate conditions.

The Metropolitan 2020 IRP considered a range of more extreme potential future scenarios, including: low demand with stable imported supplies, high demand with stable imported supplies, low demand with reduced imported supplies, and high demand with reduced imported supplies. The IRP analysis revealed that service reliability issues could occur more frequently and lead to increasingly severe deficits of imported supplies under the high future demand scenarios in the 2045 period. Options for managing these potential future imported water supply deficits will be explored more extensively as part of the analysis for the DCP. The climate change analysis developed for Three Valleys, as described herein, enhances knowledge of the relative vulnerability of different water supplies for the service area and supports the development of mitigation actions to reduce or eliminate future deficits.

4.2.2 Prior Climate Studies

Climate change is primarily caused by the increasing global concentrations of greenhouse gases, resulting in higher temperatures, disruptions in the hydrologic cycle, and increased precipitation variability. This section provides a summary of the regional impacts of climate change, which were analyzed in California's Fourth Climate Change Assessment (2018). California produces periodic assessments of the potential impacts of climate change in the state and reports on potential adaptation responses as required by Executive Order #S-03-05. California's Fourth Climate Change Assessment includes a Statewide Summary Report (Bedsworth et al., 2018), nine regional summary reports, a climate justice summary report, and over 40 technical reports that translate climate science into actionable adaptation and resilience policies and plans. The Los Angeles Regional Report (Hall et al., 2018) summarizes climate science, impacts, and adaptation information for Ventura, Los Angeles, Orange, San Bernardino, and Riverside counties. This study projects regional increases in average maximum temperatures of approximately 4 to 5 degrees Fahrenheit (°F) by the mid-21st century and 5 to 8°F by the late 21st century. The hottest days of the year could be up to 10°F warmer for many locations in the region by the late 21st century.

California's report also projects slight changes in average annual precipitation and the frequency of extreme dry and wet years. However, there could be intensified rainfall leading to more severe atmospheric river events and up to a 25 to 30 percent increase in rainfall on the wettest days of the year. While these assessments offer insights into the regional climate impacts' magnitude, they do not provide information at a scale directly applicable to local watersheds, water supplies, and demands.

4.2.3 Vulnerability Assessment Objectives

The objectives of this vulnerability assessment are to:

1. Identify the appropriate datasets for use in this analysis
2. Project the magnitude of climate-driven changes in water supply and demand for the Three Valleys service area
3. Estimate the projected future impacts by applying climate change factors to the water supply sources and water demands in the Three Valleys service area

Temperature increases and changes in precipitation patterns due to climate change are expected to alter the balance between local water supply and demand within the Three Valleys service area and other parts of the state. Rising temperatures will result in higher consumptive water use, both for irrigated agriculture and for maintaining landscaping in residential, commercial, and recreational areas. This increased consumptive water use will be compounded by greater evaporation from open spaces and water bodies, as well as by water consumption by native vegetation outside of urban zones. Furthermore, population growth in the planning area may further drive increased demand.

Annual precipitation in Southern California exhibits significant variability, with a substantial portion of regional rainfall occurring during the winter months from November to April. There are typically years characterized by significantly above-average precipitation as well as those with notably below-average precipitation. During wet years, seasonal precipitation serves to replenish aquifers, streams,

rivers, and reservoirs, all of which constitute vital water supply sources. Conversely, during dry years, there is heightened reliance on groundwater reserves to compensate for the deficit. Climate change is expected to intensify year-to-year precipitation variability in the region, as well as in other areas of the state that serve as sources of imported water.

4.2.4 Baseline Water Budget

Estimates of baseline water supply are compiled from Three Valleys' Local Supply Production Surveys and Three Valleys' Water Sales records. The Local Supply Production Survey data are compiled from member agency data documents, annual groundwater production, recycled water use, and surface water use. Three Valleys' Water Sales records detail the amount of imported water delivered for direct consumptive use and water delivered for replenishment. The sum of consumptive use and replenishment water supply is the net demand on Metropolitan.

The 5-year period from 2018 to 2022 is adopted as the baseline period for the water budget analysis. This is the most recent 5-year period for which complete water supply data are available from member agencies. In addition, this 5-year period includes a severe drought period with low water availability from 2018 to 2019 as well as a period with high water availability from 2020 to 2021. The total average baseline water supply is shown in Table 4-1.

Table 4-1. Baseline Water Supply Sources in Acre-Feet

Supply (AF)	2018	2019	2020	2021	2022	Average
Groundwater	39,291	35,885	41,260	38,268	36,876	**38,316**
Recycled Water	4,134	5,246	5,518	6,473	6,722	**5,619**
Surface Water	2,252	4,981	5,825	3,622	7,119	**4,760**
Imported Water Consumed	51,342	57,435	59,569	63,377	53,450	**57,035**
Imported Water Replenished	16,001	17,880	5,122	395	211	**7,922**
Total Local Supply	45,676	46,112	52,603	48,362	50,717	**48,694**
Total Imported Water	67,343	75,315	64,691	63,772	53,661	**64,956**
Total Water Supply	113,019	121,427	117,294	112,135	104,378	**113,651**
Contribution of Imported Water to Total Water Supply	**59.6%**	**62.0%**	**55.2%**	**56.9%**	**51.4%**	**57.0%**

Note: AF = acre-feet.

Source: Data aggregated from Three Valleys' Local Supply Production Surveys and Three Valleys' Water Sales records.

The total water demand for 2020, aggregated from member agency UWMPs, is shown in Table 2-3. These demand estimates are much higher than the actual water use baseline. The combination of conservation measures and water use restrictions that has been imposed for most of the past 15 years due to recurring regional droughts has likely contributed to actual water use being lower than estimated water demand.

Projections of future water demand due to growth, aggregated from member agency 2020 UWMPs, are shown in Table 2-4. The cumulative annual growth rates are calculated based on the change in population from the baseline 2020 values. The aggregated demand and associated future projection

are not directly used in the vulnerability assessment because these values exceed the actual baseline water use. Instead, the growth rates are used with the actual baseline water use of 113,651 AF/year and climate change factors to develop new demand projections in subsequent steps.

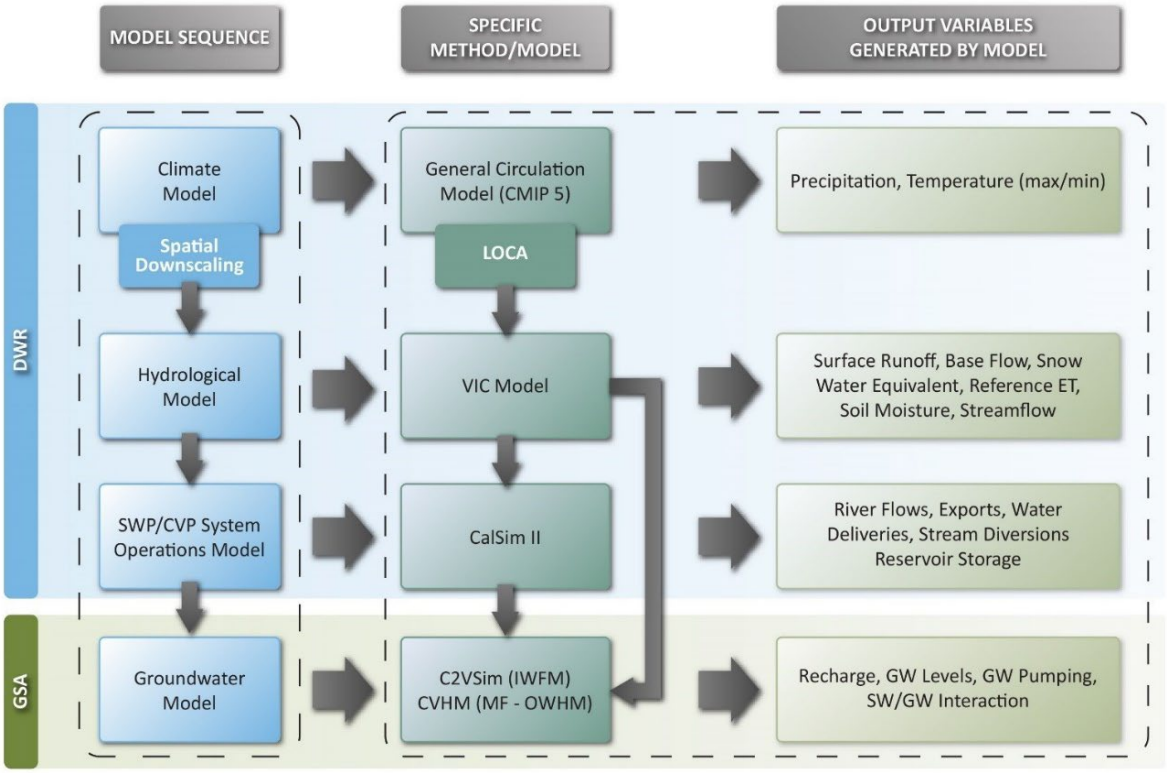
4.2.5 Description of Climate Data Sources

DWR has compiled statewide climate change datasets for utilization in water resource planning. Climate conditions in California under historical and future scenarios are presented in the following datasets:

- Year 2030 future conditions, reflecting projected climate and sea level conditions for a 30-year period centered around 2030
- Year 2070 future conditions, reflecting projected climate and sea level conditions for a 30-year period centered around 2070
- Year 1995 historical conditions, representing climate and sea level conditions for a 30-year period centered around 1995

The 2030 and 2070 climate projections rely on an ensemble of 20 global climate models selected by the DWR Climate Change Technical Advisory Group as the most suitable for assessing and planning California's water resources. This dataset contains data from 1915 through 2011 for the entire state of California at a spatial resolution of 1/16th degree (approximately 3.75-mile grid cells) and a monthly temporal resolution.

Figure 4-1 provides an overview of the modeling processes utilized by DWR, highlighted in blue background. The bottom row of the image highlighted in green, illustrates how individual groundwater sustainability agencies are expected to utilize the data in groundwater models to simulate groundwater conditions to achieve sustainability objectives.



DWR: Department of Water Resources; GSA: Groundwater Sustainability Agency; SWP: State Water Project; CVP: Central Valley Project; LOCA: Localized Constructed Analogs; VIC: Variable Infiltration Capacity; CalSim: SWP & CVP Operations Model; C2VSim: California Central Valley Groundwater - Surface Water Simulation Model; IWFM: Integrated Water Flow Model; CVHM: Central Valley Hydrologic Model; MF - OWHM: MODFLOW One Water Hydrologic Flow Model; ET: Evapotranspiration, SW: Surface Water; GW: Groundwater; CMIP 5: Coupled Model Intercomparison Project

Figure 4-1. Overview of Modeling Processes Used by DWR in Creating the Statewide Climate Datasets (Source: DWR, 2018)

DWR has also processed the climate datasets through a hydrologic model known as the Variable Infiltration Capacity (VIC) model. This model is used to simulate future hydrologic conditions and route runoff to the outlet of subbasins defined by each eight-digit Hydrologic Unit Code (HUC) in California. Streamflow change projections from the VIC model are provided as a monthly time series from 1915 through 2011. As depicted in Figure 4-2, the VIC model takes input climate variables, such as precipitation and temperature, and performs a series of hydrologic computations within each cell to produce variables like soil moisture, ET, and surface runoff within each cell. Subsequently, a streamflow routing algorithm known as RVIC is employed to direct runoff from each cell to its associated subbasin outlet.

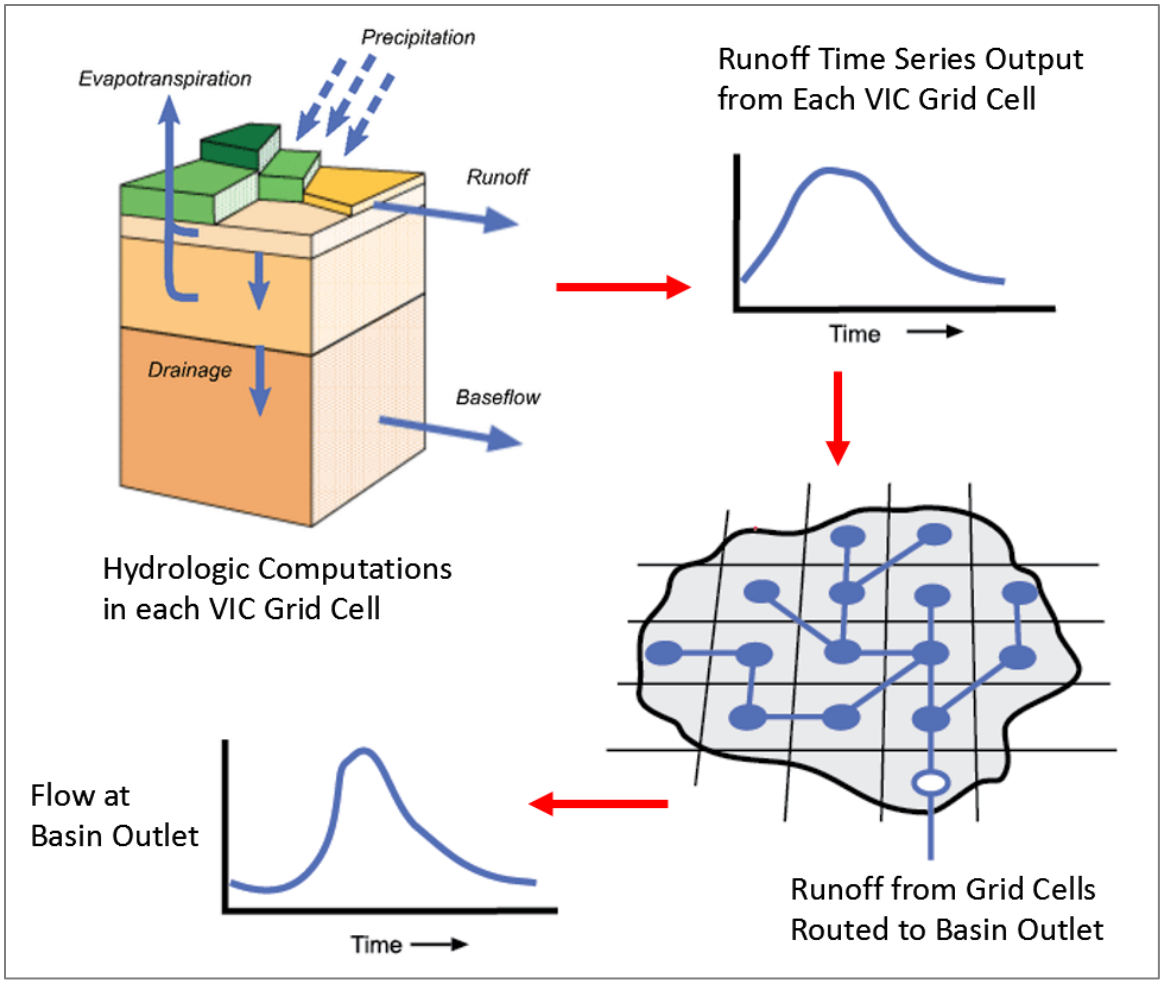


Figure 4-2. Schematic of the VIC Model Showing Hydrologic Computations Within Each Grid Cell and Runoff Routing (Source: University of Washington Computational Hydrology Group, 2016)

DWR has utilized the VIC model to conduct hydrologic simulations under both historical climate conditions and projected future climate conditions in 2030 and 2070 across more than 8,000 grid cells statewide. Runoff from these grid cells has also been directed to the outlet of each eight-digit HUC watershed in the state for incorporation into water resource planning. As depicted in Figure 1, climate assessments involve a sequence of models, each of which introduces certain biases into the modeling process and the derived products. To minimize the impacts of these biases on decision-making processes, DWR presents the simulated climate projections as relative changes from historical conditions rather than absolute values. For instance, each monthly precipitation value simulated under 2030 conditions is divided by the precipitation value simulated for the same month under historical conditions using the same sequence of models. As stated previously, this resulting ratio of a simulated future value to the corresponding simulated historical value is referred to as a "change factor." DWR has computed monthly time series of change factors for precipitation and ET in each VIC grid cell and for streamflow in each HUC-8 watershed. These change factor datasets can be retrieved from the publicly accessible Sustainable Groundwater Management Act Data Viewer (https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer) for use in water resources planning. A

more comprehensive description of the methods used to compute the climate datasets is provided in a publication titled "Guidance for Climate Change Data Use During Groundwater Sustainability Plan Development" (DWR, 2018).

4.3 Climate Analysis Approach

4.3.1 Preprocessing Data for the Three Valleys Service Area

For the Three Valleys service area, the statewide climate datasets comprise 17 grid cells, each with a spatial resolution of 1/16th degree. Each grid cell contains 97 years of monthly time series (1915-2011) displaying projected precipitation and ET changes under 2030 and 2070 climate conditions relative to 1995 conditions. The portion of each grid cell within the Three Valleys service area is estimated by spatially intersecting feature layers of the climate grid with the Three Valleys service area boundary. Regional time series of projected precipitation and ET changes are computed from the cell time series by calculating an area-weighted average of data from grid cells that fall wholly or partially within the service area. Projections of future streamflow change were also obtained for the San Gabriel River (HUC-18070106) basin, which supplies surface water to portions of the service area as shown in Figure 4-3.

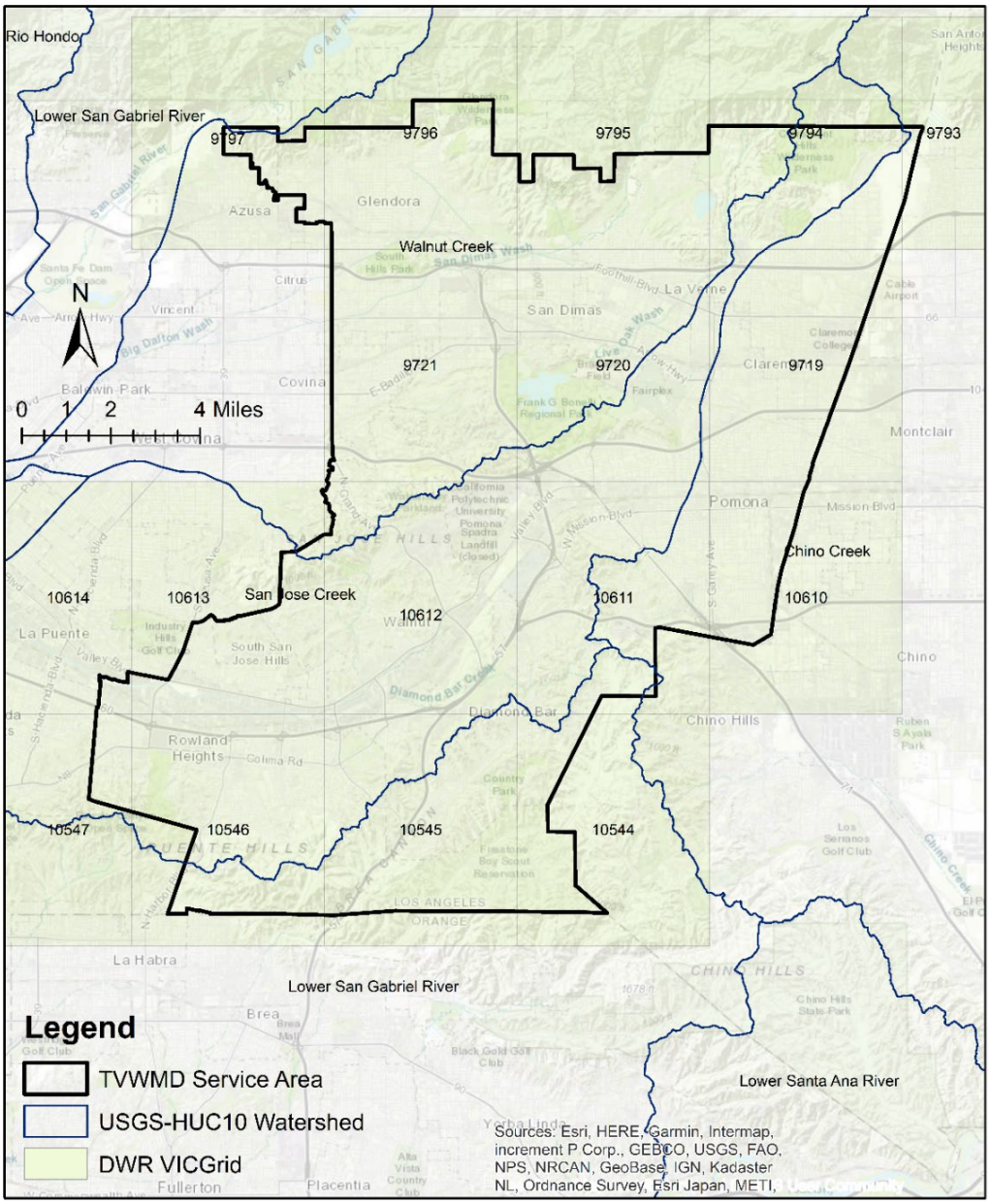


Figure 4-3. Climate Grid Cells and Watersheds Covering the Three Valleys Service Area

Three potential climate conditions were considered for this analysis:

- Drier future conditions with Extreme Warming (Dry Hot)
- Median future conditions (Median)
- Wetter future conditions with Moderate Warming (Wet Warm)

There are two extreme scenarios (Dry Hot and Wet Warm) that are derived from a set of ten global climate models. The first extreme scenario (Dry Hot) employs future projections from the ten global climate models with the least warming and least precipitation, while the second extreme scenario (Wet Warm) utilizes the ten global models with the most warming and highest precipitation.

4.3.2 Analysis of Normal, Single, and Multi-Year Dry and Wet Periods

Every urban water supplier is required to assess water service reliability in normal years, single-dry years, and multiple-dry years lasting 5 years. For imported water supplies, the normal, wet, and dry years used by Metropolitan, based on a historical analysis period of 1922 to 2004, are adopted for Three Valleys since it is the largest source of imported water. For local water supplies, year types are selected from the Glendora West Station gauge, which has extensive historical records from 1883 to 1998. The data are available online from the DWR Flood Emergency Information Exchange (FERIX) website at https://ferix.water.ca.gov/webapp/precipitation/. The analysis of year types for the Glendora West Station gauge and the State Water Project is presented in Table 4-2.

Table 4-2. Analysis Periods for Normal, Single, and Multi-Year Dry and Wet Periods

Year Type	Event Years for Three Valleys (Glendora West Station Gauge)	Event Years for State Water Project Imported Supplies
Normal	1922-1998	1922-2004
Single Dry-Year	1961	1977
5-Year Drought	1959-1963	1988-1992
Single Wet-Year	1978	1999
5-Year Wet	1978-1982	1995-1999

The results in Table 4-2 show that 1961 was the single driest year locally, with only 7.67 inches of rainfall. The driest 5-year period for local supplies spanned from 1959 to 1963. On the contrary, the single wettest year on record occurred in 1978, with 46.55 inches of rainfall. The wettest 5-year period was 1978 to 1982. Despite having similar periods of record, the extreme year types for imported supplies from the State Water Project occur during very different years. The results show that 1977 was the driest year for imported water supplies. The driest 5-year period for imported water supplies was from 1988 to 1992. The single wettest year for imported water supplies was 1999, and the wettest 5-year period was from 1995 to 1999.

These differences between when different year types occur for local and imported water sources have significant implications for managing droughts. Local entities may need to plan implementation of drought management strategies and water shortage operations that consider both local water supply conditions and imported water supply availability. Metropolitan has extensive storage facilities that can provide water supply to buffer short-term reductions in imported supplies from the State Water Project. However, water agencies in the Three Valleys service area must implement plans to enhance their resilience to local droughts and to capture excess water during exceptionally wet periods. The event years from the Glendora West Station gauge are used for assessing drought conditions and regional drought contingency planning.

Figure 4-4 shows the annual and 5-year rainfall from 1922 to 1998 for the Glendora West Station gauge with the wettest and driest 1-year and 5-year periods highlighted in blue and yellow, respectively.

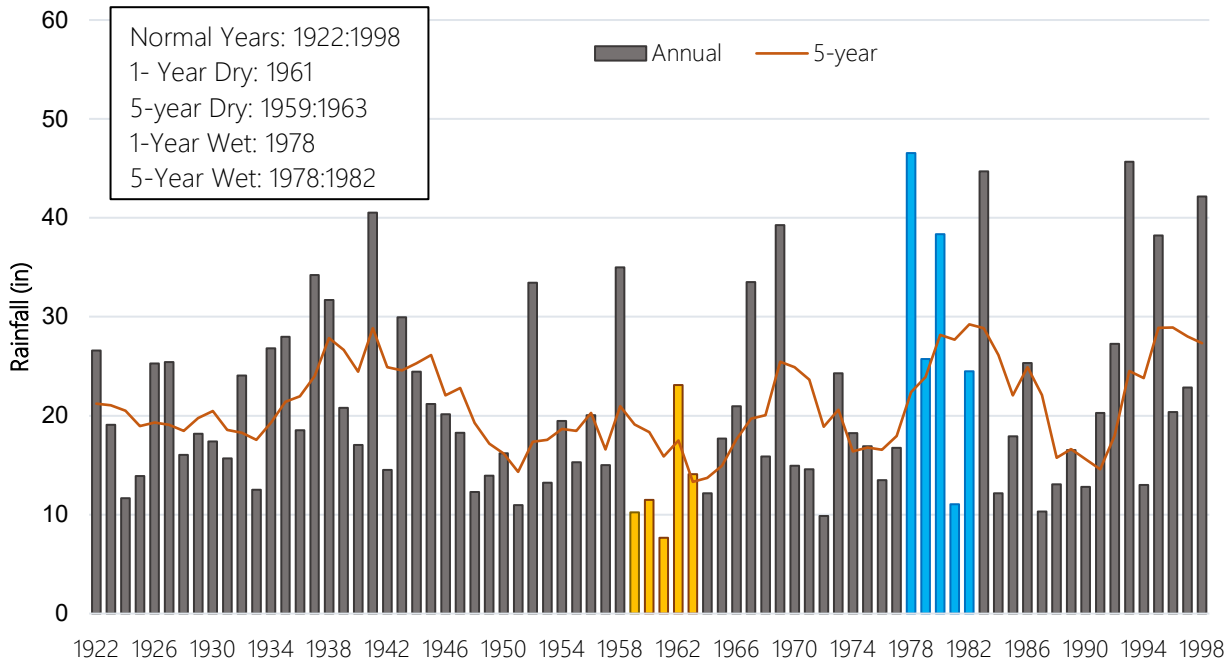


Figure 4-4. Annual Rainfall at Glendora West Station

4.3.3 Computing Water Supply Change Factors

Water sources used within the Three Valleys service area include imported water from Metropolitan, local groundwater from six different groundwater basins, recycled water, and surface water:

Imported water: Imported water accounts for roughly 50 to 60 percent of the region's water supply portfolio. Three Valleys receives imported water from Metropolitan and then distributes it to its member agencies. Treated imported water is directly provided to Three Valleys member agencies through the service connections linked to the Metropolitan distribution system. Untreated imported water is transported to the District's Miramar Water Treatment Plant, where it undergoes treatment before being distributed to member agencies. Untreated imported water may also be used to replenish local groundwater basins.

Groundwater: Groundwater accounts for roughly 35 to 45 percent of the region's water supply portfolio. The region has historically extracted groundwater from the Central Basin, Chino Basin, Main Basin, Puente Basin, Six Basins, and Spadra Basin. Groundwater systems are recharged through various water sources, including:

- Natural recharge: This constitutes the portion of precipitation that infiltrates into the underlying aquifer within the same grid cell where the precipitation occurs. Changes in natural recharge are directly linked to changes in precipitation within the grid cell.
- Artificial recharge (including injection systems): This involves diverting water from rivers and streams to replenish the underlying aquifer. As artificial recharge relies on surface water and other remotely sourced water supplies, it is influenced by cumulative flow changes in the source watersheds.

Recycled water and reclaimed water: Recycled and reclaimed water can also serve as a supply source for local use and groundwater recharge. Historically, recycled water has accounted for roughly 5 percent of the region's water supply portfolio. Supplies of recycled and reclaimed water, derived from indoor uses, are generally less susceptible to changes in climate.

Surface water: Surface water supplies from the San Gabriel River and San Antonio Creek account for roughly 5 percent of the region's water supply portfolio.

Precipitation change projections sourced from the climate change datasets provided by DWR are used to characterize future changes in natural recharge. Computations are based on a 97-year monthly time series of precipitation for the Three Valleys service area. These data are employed to calculate Water Supply Change Factors, which reveal the percentage changes in mean monthly and mean annual precipitation. These changes are assessed under future climate conditions for both 2030 and 2070 in relation to historical conditions under 1995 conditions. The Water Supply Change Factors for 2030 and 2070 are determined using various scenarios, encompassing normal years, single dry years, single wet years, and 5-year wet and dry periods.

Characterizing future changes in the San Gabriel River relies on streamflow projections generated by the VIC model under the climate conditions of 2030 and 2070. These streamflow projections serve as the basis for calculating Water Supply Change Factors, which indicate the percentage shifts in mean monthly and mean streamflow. These shifts are assessed in comparison to historical conditions set at 1995 conditions. Change factors are likewise computed for various scenarios, including normal years, single dry years, single wet years, and 5-year wet and dry periods. Each set of Water Supply Change Factors is interpolated at 5-year intervals from 2020 to 2045. To project climate change conditions up to 2030, data from 1995 to 2011 are utilized. Linear interpolation is applied to determine the climate change factors between 2020 and 2030. This interpolation is based on historical conditions from 2011 and projected conditions for 2030. Different climate change conditions are expected between 2030 and 2070 due to the implementation of policies and practices influencing the rate of climate change over this extended period. For the years between 2030 and 2070, linear interpolation is again employed in 5-year increments, using the difference in projected conditions between 2030 and 2070. Time series of Water Supply Change Factors are likewise interpolated at 5-year intervals for normal years, single dry years, single wet years, and 5-year wet and dry periods, applicable to local water sources from 2020 to 2045.

4.3.4 Computing Water Demand Change Factors

Climate impacts are calculated separately for indoor and outdoor water usage. Generally, outdoor water usage, particularly for landscape irrigation, is sensitive to climate change. Indoor water usage, however, is relatively insensitive to climate change. In warmer climates, plants require more water to support their growth, and people tend to increase landscape irrigation to ensure their health. This increased water demand is quantified in climate models using the ET rate, which accounts for the total water released from soil, plants, and water bodies into the atmosphere through evaporation and transpiration.

For the Three Valleys service area, the statewide climate datasets comprise 17 grid cells, each with a spatial resolution of 1/16th degree (approximately 3.75-mile grid cells). Each grid cell contains a 96-year monthly time series (1915 to 2011) displaying projected ET changes under 2030 and 2070 climate conditions. Initially, an area-weighted average of the ET data from these 17 cells is computed to create a single time series for the Three Valleys service area. This regional time series is then used to calculate Water Demand Change Factors, which indicate the percentage changes in mean monthly and mean annual ET under future 2030 and 2070 climate conditions compared to historical conditions in 1995. Similar values of 2030 and 2070 Water Demand Change Factors are determined for normal years, single dry years, single wet years, and 5-year wet and dry periods. The Water Demand Change Factors are computed for 5-year intervals from 2020 to 2045 through interpolation. Data from 1995 to 2011 are used as a baseline for projecting climate change conditions to 2030. Linear interpolation is employed to determine the climate change factors between 2020 and 2030, utilizing historical conditions from 2011 and projected conditions for 2030.

Several factors are likely to influence the rate of climate change between 2030 and 2070, including the implementation of policies and practices likely to impact the long-term rate of climate change. For the years between 2030 and 2070, linear interpolation is applied in 5-year increments, considering the differences in projected conditions for 2030 and 2070.

Similarly, the 5-year time series of Water Demand Change Factors is interpolated for normal years, single dry years, single wet years, and 5-year wet and dry periods. These factors are then applied to growth-adjusted indoor water use projections for the years 2020 to 2045.

4.4 Local Climate Change Results

4.4.1 Water Supply Change Factor Results

The projected precipitation under the Dry Hot, Median, and Wet Warm scenarios is presented in Figure 4-5 through Figure 4-7. Detailed projected changes in rainfall under all the climate change scenarios are presented in Appendix B (Table B1, Table B2, and Table B3).

All scenarios indicate that changes will become more extreme by 2045. The Dry Hot and Median scenarios predict a decline in annual precipitation, while the Wet Warm scenario projects higher annual precipitation. Specifically, annual rainfall is predicted to decrease by 6.5 and 2.7 percent by 2045 under the Dry Hot and Median scenarios, respectively. In contrast, the Wet Warm scenario predicts a 3.4 percent increase over the same period.

Under the Dry Hot scenario, monthly precipitation gradually declines during most months of the year, particularly during early fall (October through November) and winter to early spring (January to May) when significant amounts of precipitation occur. However, precipitation gradually increases in September, which is also a wet month.

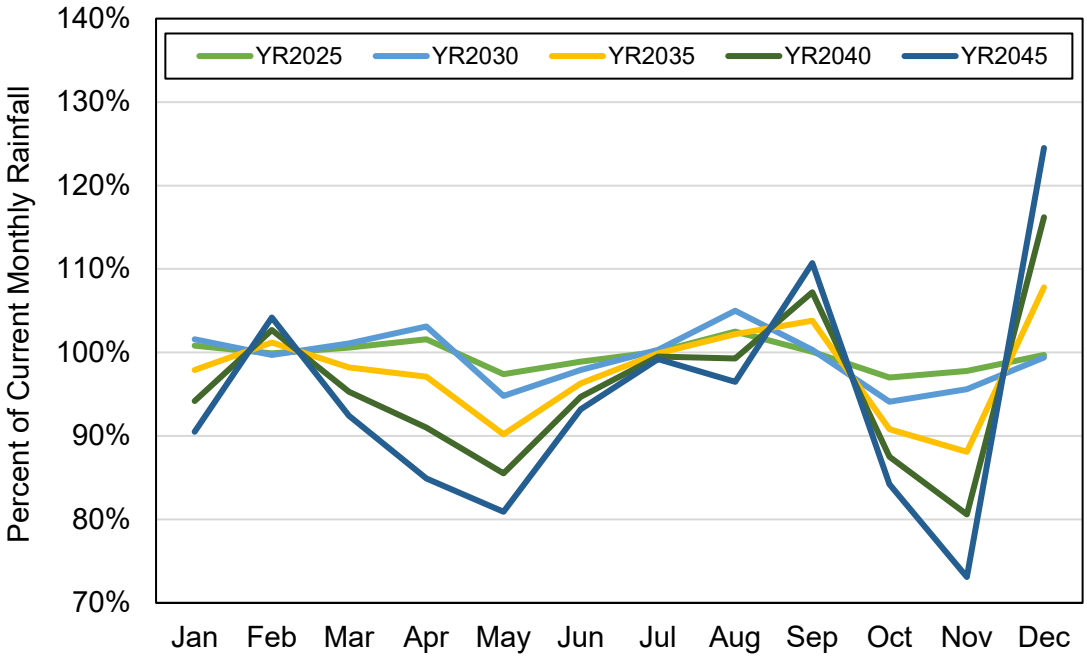


Figure 4-5. Projected Changes in Rainfall under Dry Hot Future Climate 2025 – 2045

The Median Future scenario would also result in decreases of up to 87 percent in May, October, and November, and increases of up to 106 percent during summer months from July to September.

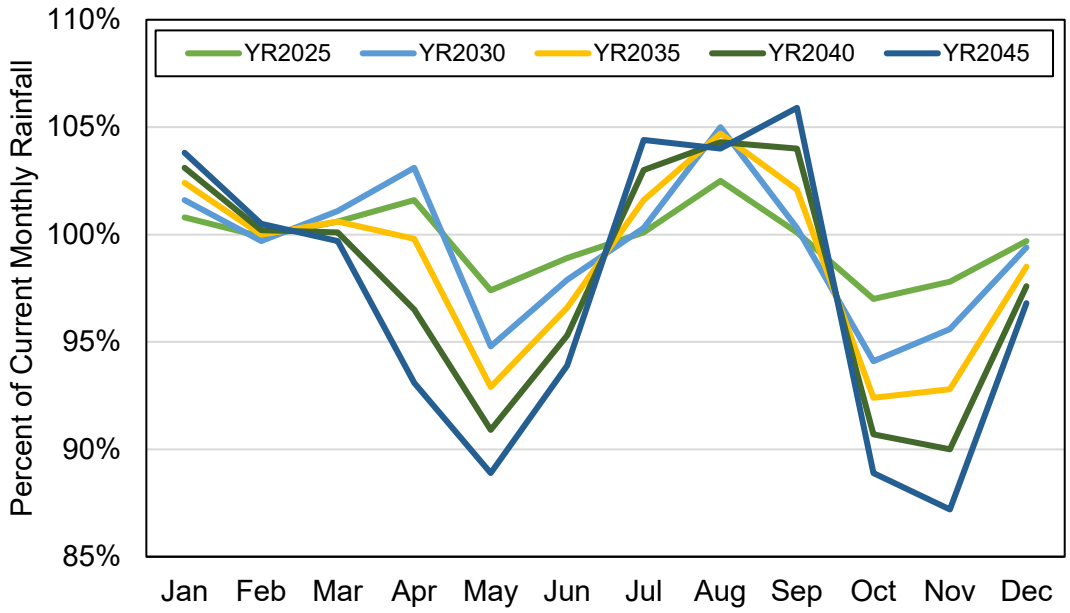


Figure 4-6. Projected Changes in Rainfall under Median Future Climate 2025 – 2045

The pattern of increasing September precipitation also occurs under the Wet Warm Future scenario (shown in Figure 4-7), with increases of up to 158 percent of current precipitation by 2045. The Wet Warm Future scenario would result in increases of up to 124 percent during February and March.

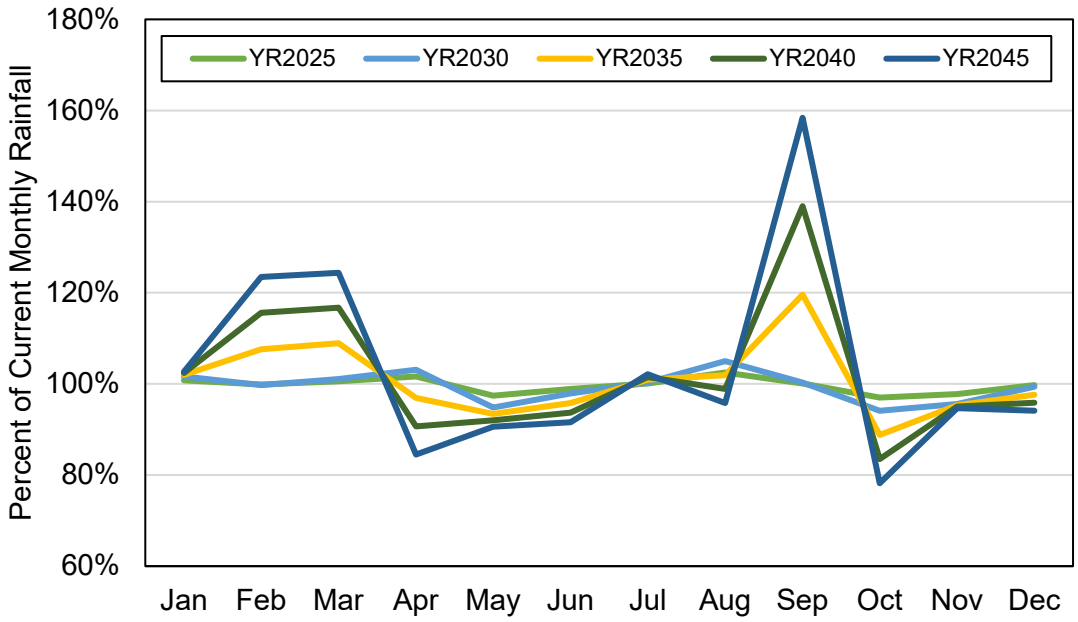


Figure 4-7. Projected Changes in Rainfall under Wet Warm Future Climate 2025 – 2045

Figure 4-8 shows the predicted changes in monthly absolute rainfall amounts under the various climate change scenarios for the year 2045. As shown in Figure 4-5 through Figure 4-7, the largest relative changes are projected to occur in April, May, and September. However, it is projected that the largest absolute changes will occur during the typically more humid months of February and March. Projections indicate an increase of up to 0.82 inches from the current climate during February under the Wet Warm Scenario by 2045.

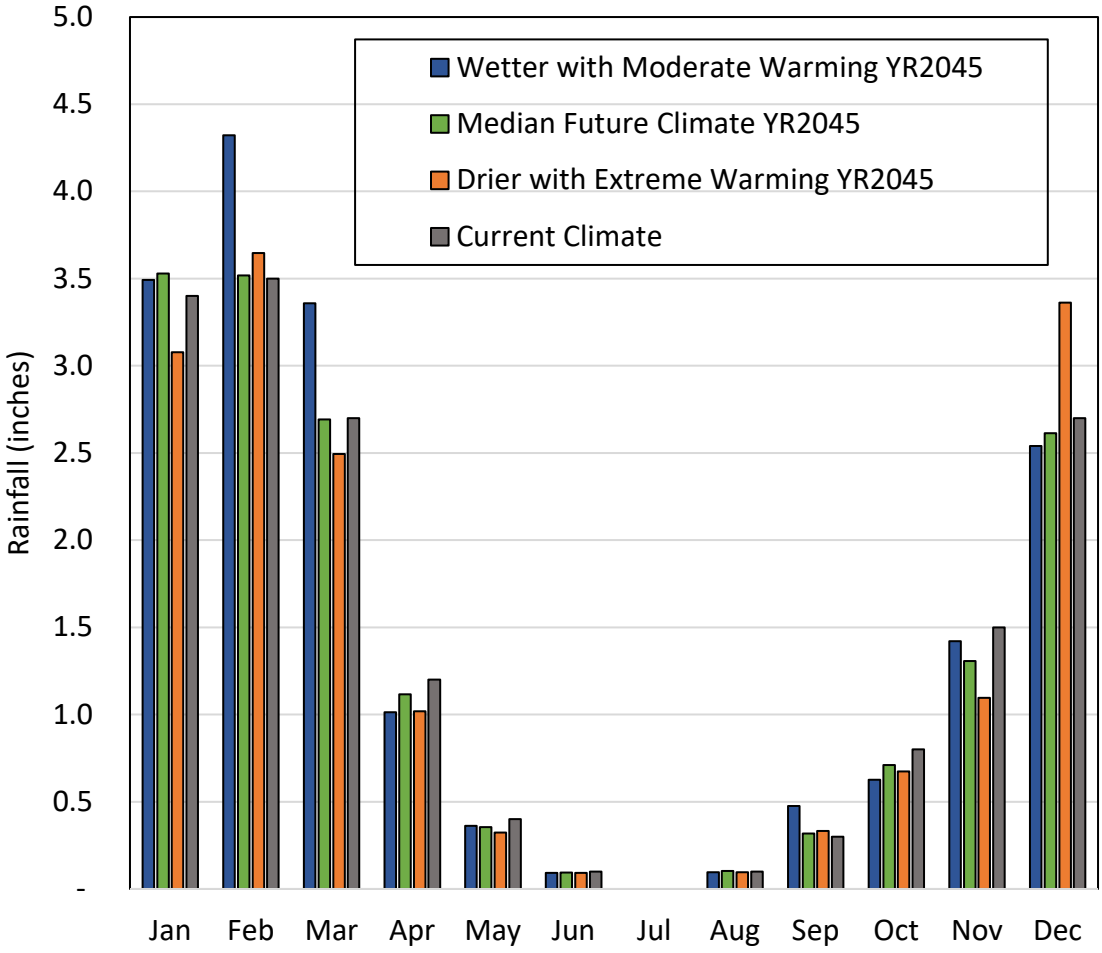


Figure 4-8. Projected Changes in Normal Year Rainfall – 2045

The pattern of change for natural groundwater supply is projected to be similar to rainfall. As shown in Figure 4-9, the most significant monthly increase in normal-year groundwater supply by 2045 is projected to occur during February and March under the Wet Warm scenario, and in December under the Dry Hot scenario. On an annual basis, the Dry Hot scenario predicts a net decrease of 1,110 AF/year in groundwater supply by 2045. The Median scenario would also result in a projected decrease of 780 AF/year of annual groundwater supply from the existing baseline supply of 38,316 AF/year. Under the Wet Warm scenario, groundwater supply is predicted to increase by 2,520 AF/year over baseline supply. These results indicate that there would be less water available from natural recharge under Median and Dry Hot Future scenarios while the Wet Warm scenario would increase natural yield above baseline conditions.

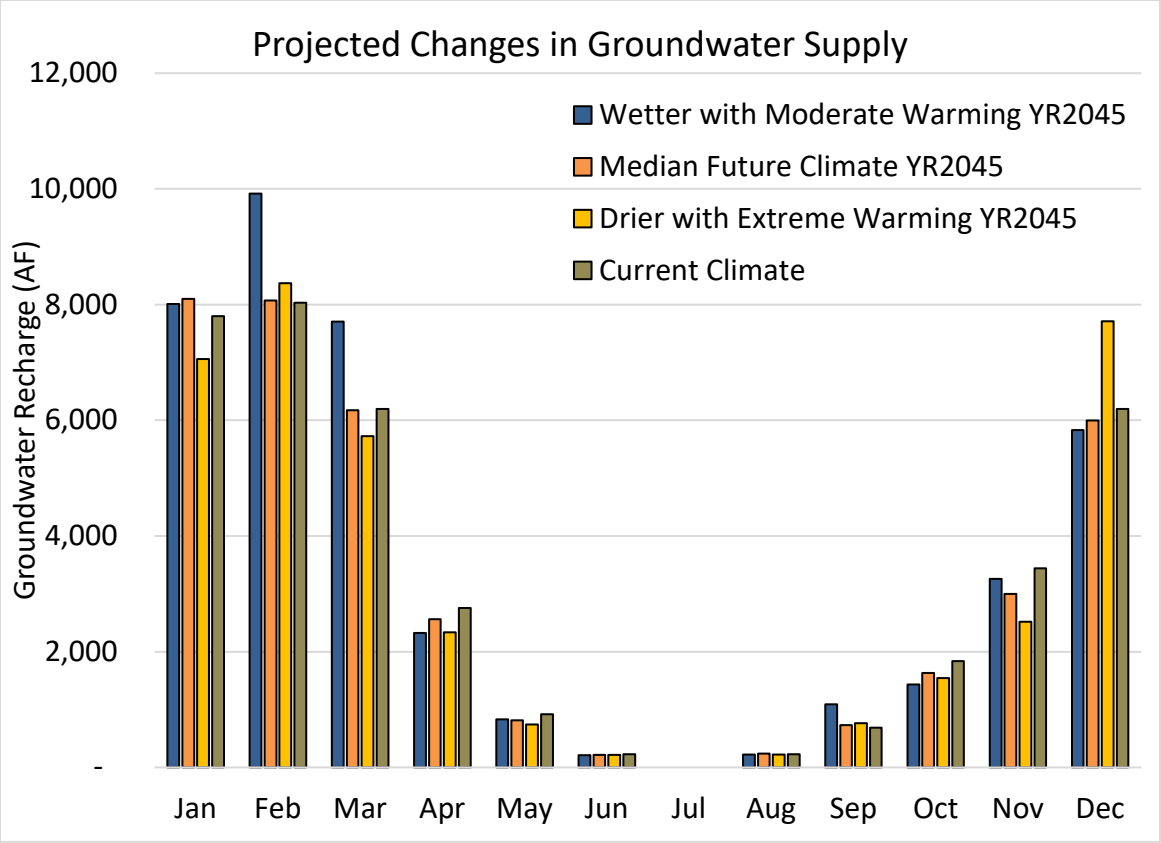


Figure 4-9. Projected Changes in Normal Year Groundwater Supply – 2045

Figure 4-10 displays the projected changes in normal-year flow for the San Gabriel River below Santa Fe Dam near Baldwin (USGS-11085000) by 2045. The Dry Hot and Median scenarios project a 10 percent and 2 percent decrease in annual flow by 2045 relative to the current climate, respectively, while the Wet Warm scenario projects an 18 percent higher annual flow by 2045.

Under the Dry Hot scenario, lower flow is projected during the high-flow months of February and March compared to the current conditions, with discharge decreasing by 20 cubic feet per second (cfs) in February and 21 cfs in March. Conversely, the Wet Warm scenario projects higher flows during the same period, with discharge increasing by 61 cfs in February and nearly 44 cfs in March. Projected flows under the Median scenario are generally consistent with flows projected under the current climate. No notable deviations in flow from the current climate are projected under any of the climate change scenarios between May to December. Detailed projected changes for San Gabriel River flow under all the climate change scenarios are presented in Appendix B (Table B4, Table B5, and Table B6).

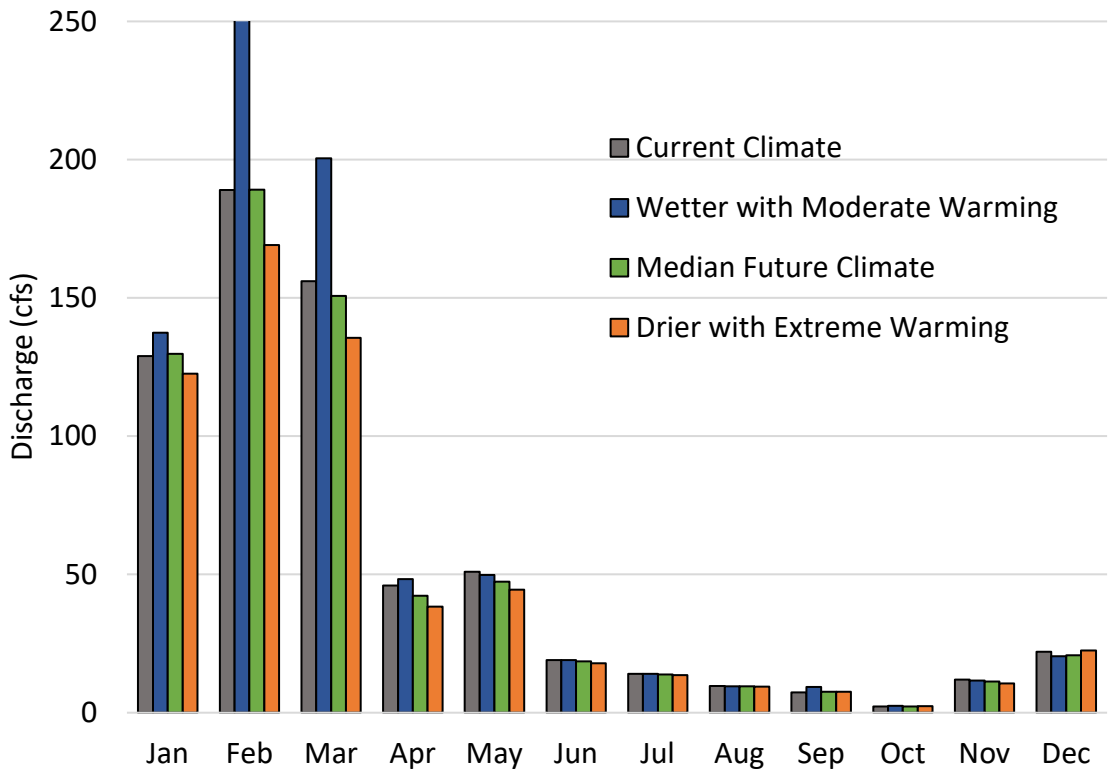


Figure 4-10. Projected Changes in Normal Year Flow by 2045: San Gabriel River Below Santa Fe Dam Near Baldwin (USGS-11085000).

Based on these results, river supplies, which are water sources for artificial recharge, are likely to become less reliable. Natural groundwater recharge will still occur in normal and dry years, but the timing of available water will change. Precipitation will increasingly fall during a shorter rainy season, with a longer dry season each year. Furthermore, the increase in temperatures over time will lead to greater evaporation from surface water bodies and land surfaces, reducing the volume of water available for diversion from rivers. This necessitates a greater understanding of the adequacy and operational constraints of natural and artificial recharge systems in the service area.

4.4.2 Water Demand Change Factors Results

Figure 4-11, Figure 4-12, and Figure 4-13 depict projected changes in outdoor demand from baseline conditions in 2020 under the various climate change scenarios. Water demand change factors are applied to outdoor water use, which has been adjusted for future population growth and conservation measures. Indoor water use is assumed to respond to future population growth and conservation measures as well, but it is not sensitive to climate change. All scenarios indicate an increase in annual outdoor water demand, with the average annual outdoor water demand projected to rise by 5.8 percent for the Dry Hot scenario, 3.4 percent for the Median scenario, and 1.5 percent for the Wet Warm scenario.

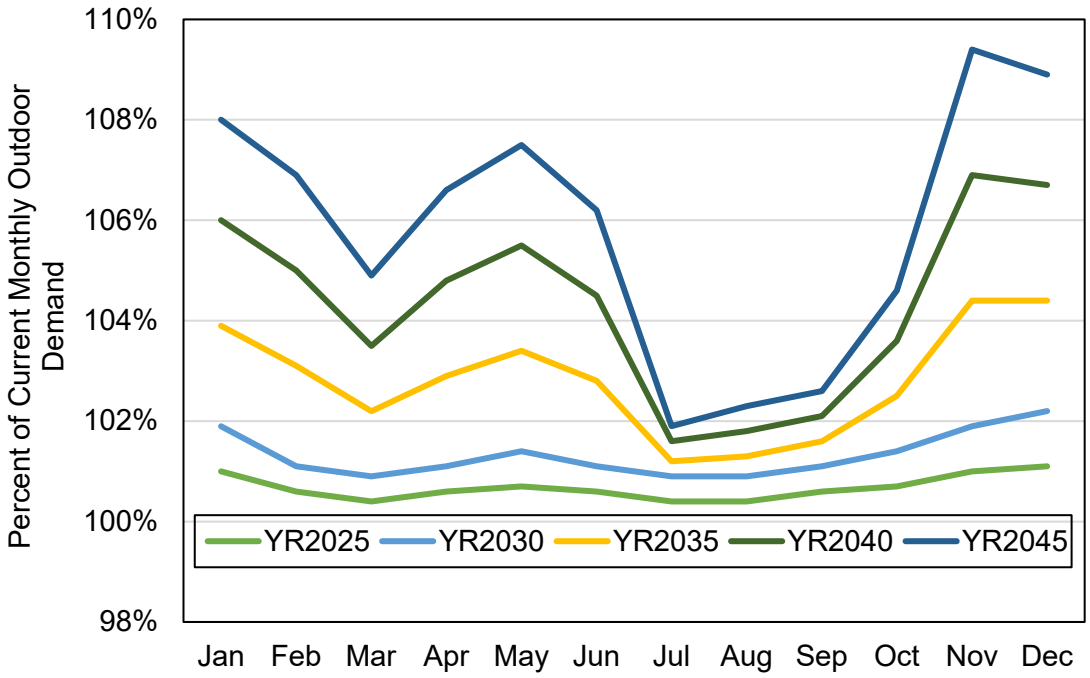


Figure 4-11. Changes in Outdoor Demand Under Dry Hot Future Climate 2025 - 2045

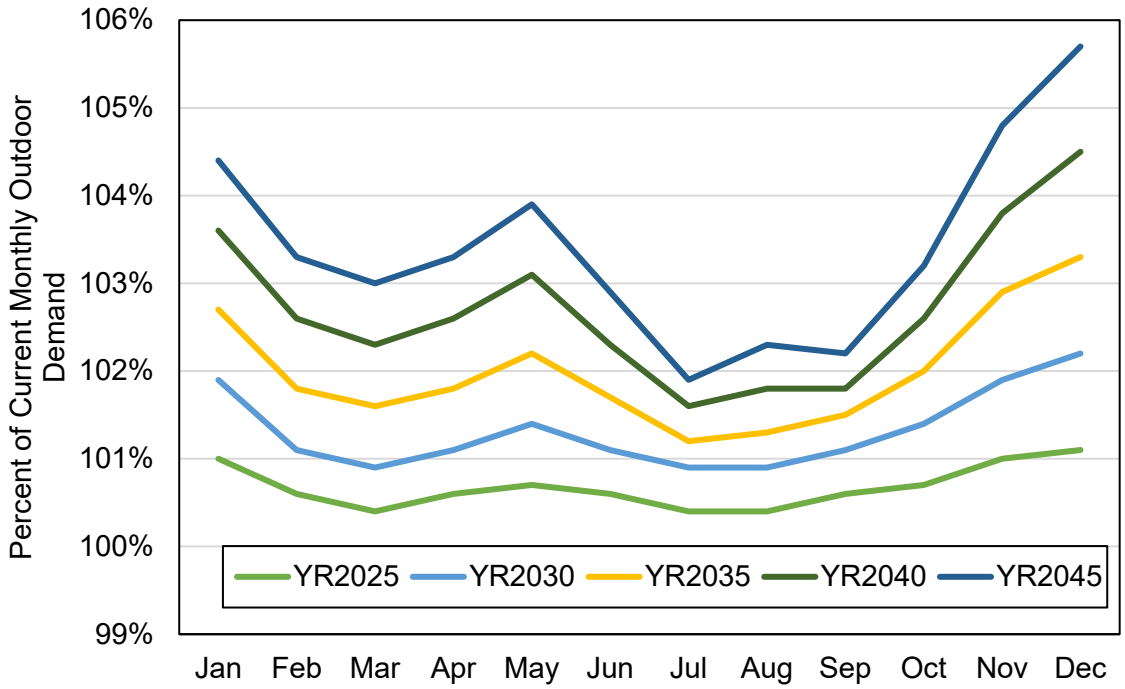


Figure 4-12. Changes in Normal Year Outdoor Demand Under Median Future Climate 2025 - 2045

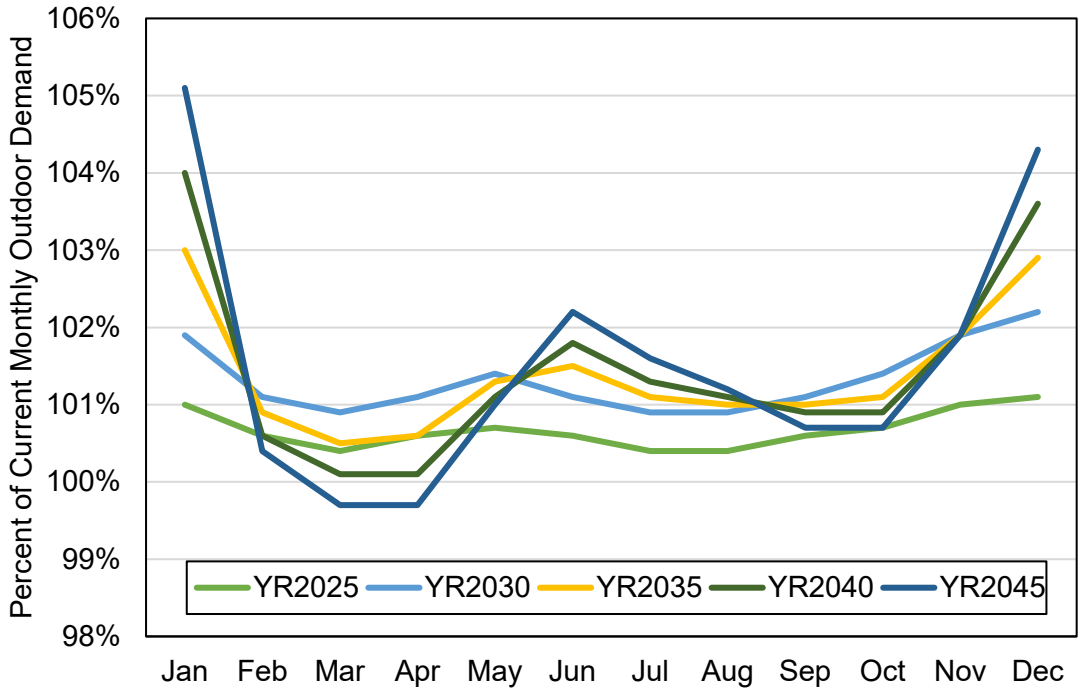


Figure 4-13. Changes in Outdoor Demand Under Wet Warm Future Climate 2025 – 2045

Figure 4-14 and Figure 4-15 illustrate the absolute value of outdoor water demand and total water demand under various climate change scenarios compared to current conditions and normal conditions in 2045. Over the next two decades, climate change is expected to have similar effects on outdoor water demand during both normal and drought years. This is because climate change data indicates that temperatures are expected to increase over time regardless of hydrological conditions. Considering these projected temperature increases, landscaping, irrigated agriculture, and native vegetation are expected to experience higher ET rates. While the relative changes may appear small, the absolute increase during the already high demand months of July and August is significant.

As compared to baseline conditions, the total annual demand is projected to increase by 15 percent by 2045 under the Dry Hot scenario; 13 percent under the Median scenario; and 11 percent under the Wet Warm scenario. The largest increases are projected to occur during the early summer months in June and July. Detailed projections of changes in outdoor water demand under all the climate change scenarios are presented in Appendix B (Tables B7, B8, and B9).

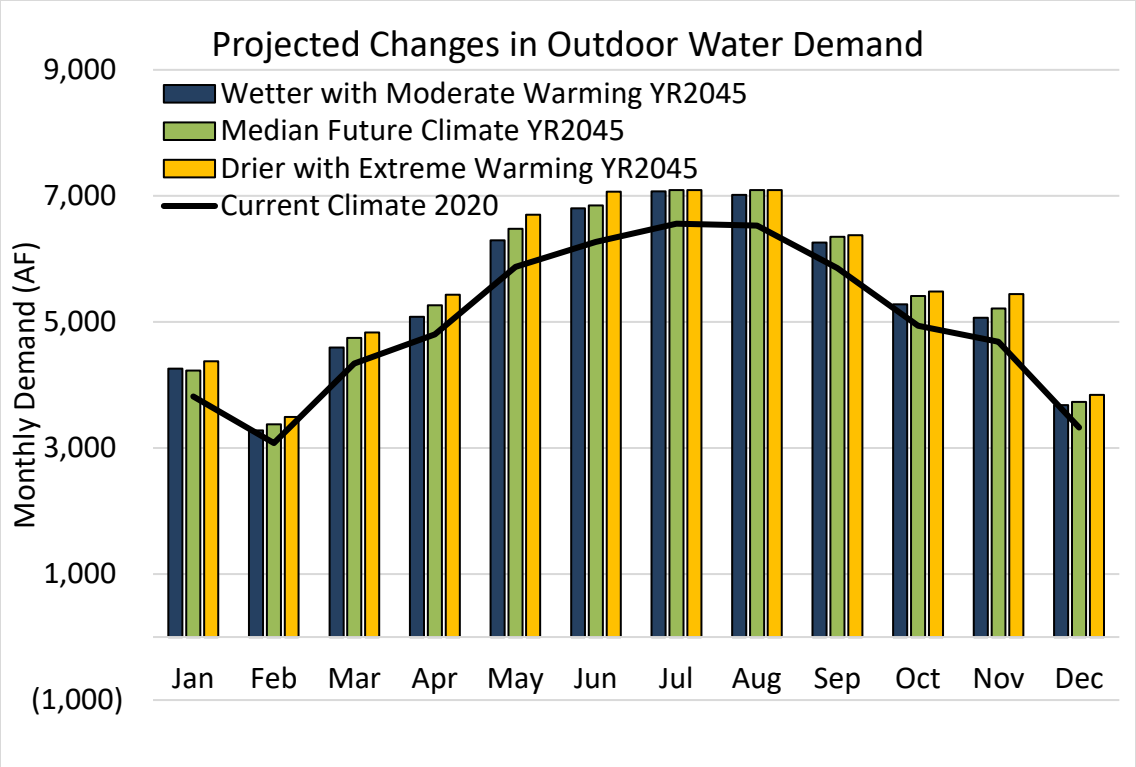


Figure 4-14. Projected Changes in Normal Year Water Demand 2045, Outdoor Water Demand

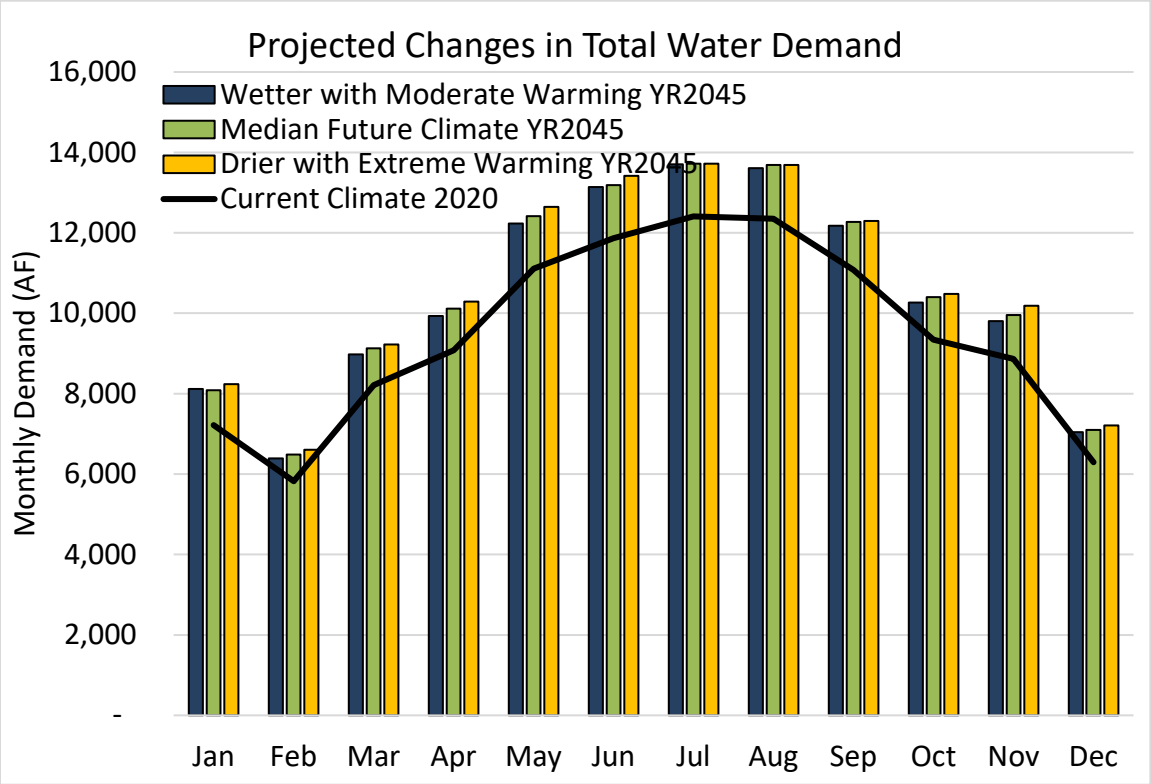


Figure 4-15. Projected Changes in Normal Year Water Demand 2045, Total Water Demand

4.5 Future Water Supply Budgets

The water budgets for the entire Three Valleys service area for each of the three climate change conditions are shown in Table 4-3 through Table 4-5. The water budgets developed for the Three Valleys service area include the following assumptions:

- Climate change factors are applied to local water supplies and demand.
- Projections for groundwater production are based on baseline groundwater supply and climate change factors.
- Recycled water projections are based on baseline data from the Three Valleys' Local Supply Production Surveys, growth rate projections from member agency UWMPs, and climate change factors.
- Surface water projections are based on baseline surface water supply and climate change factors.
- Demand projections are based on baseline water use, growth rate projections from member agency UWMPs, and climate change factors.
- Future requirements for imported water supplies are calculated as the difference between total projected demand and total local supplies.

Table 4-3. Three Valleys Service Area Water Budget – Drier Future Conditions with Extreme Warming

Source (AF/year)*	2018-2022	2025	2030	2035	2040	2045
Total Demand	113,651	120,346	121,219	123,062	125,472	128,004
Groundwater	38,316	38,282	38,234	37,895	37,551	37,202
Surface Water	4,760	4,741	4,718	4,579	4,440	4,301
Recycled Water	5,619	5,929	5,953	6,000	6,073	6,151
Total Local Supply	48,694	48,952	48,905	48,473	48,063	47,655
Net Imported Water Supply Required	64,957	71,394	72,314	74,589	77,409	80,349

*AF/year = acre-feet per year

Table 4-4. Three Valleys Service Area Water Budget – Median Future Climate Conditions

Source (AF/year)*	2018-2022	2025	2030	2035	2040	2045
Total Demand	113,651	120,346	121,219	122,590	124,513	126,557
Groundwater	38,316	38,282	38,234	38,007	37,763	37,535
Surface Water	4,760	4,741	4,718	4,698	4,678	4,658
Recycled Water	5,619	5,929	5,953	6,000	6,073	6,151
Total Local Supply	48,694	48,952	48,905	48,705	48,514	48,345
Net Imported Water Supply Required	64,957	71,394	72,314	73,885	75,999	78,212

*AF/year = thousand acre-feet per year

Table 4-5. Three Valleys Service Area Water Budget – Wetter Future Conditions with Moderate Warming

Source (AF/year)*	2018-2022	2025	2030	2035	2040	2045
Total Demand	113,651	120,346	121,219	122,220	123,723	125,376
Groundwater	38,316	38,282	38,234	39,101	39,983	40,837
Surface Water	4,760	4,741	4,718	5,012	5,304	5,598
Recycled Water	5,619	5,929	5,953	6,000	6,073	6,151
Total Local Supply	48,694	48,952	48,905	50,113	51,360	52,587
Net Imported Water Supply Required	64,957	71,394	72,314	72,107	72,362	72,790

*AF/year = thousand acre-feet per year

The Metropolitan 2020 IRP also developed projected water supply budgets based on its four projected climate change conditions previously described. Table 4-6 shows the Metropolitan 2020 IRP projected total demand for the Three Valleys service area, Table 4-7 shows the Metropolitan 2020 IRP projected local water supply for Three Valleys, and Table 4-8 shows the Metropolitan 2020 IRP projected imported water supply demand for Three Valleys, supplied by Metropolitan, for each of Metropolitan's 2020 IRP climate change scenarios. These IRP projections have a 10-year baseline period of 2010 to 2019, which is different from the 5-year baseline (2018 – 2022) period used by Three Valleys in the projection presented earlier in this document.

Table 4-6. Metropolitan 2020 IRP Projection of Three Valleys Service Area Demand

Projected Three Valleys Demand (AF/year)*	2020	2025	2030	2035	2040	2045
Scenario A	104,515	105,769	107,460	108,013	108,799	109,989
Scenario B	106,437	117,211	122,970	127,383	132,154	137,508
Scenario C	104,513	105,753	107,425	107,954	108,708	109,757
Scenario D	106,454	117,359	123,269	127,971	133,029	138,571

*AF/year = acre-feet per year

Table 4-7. Metropolitan 2020 IRP Projection of Three Valleys Local Water Supply

Projected Three Valleys Local Water Supply (AF/year)*	2020	2025	2030	2035	2040	2045
Scenario A	51,514	52,322	52,584	52,836	53,081	53,345
Scenario B	52,209	54,962	55,863	56,724	57,534	58,090
Scenario C	46,659	46,368	45,729	45,080	44,424	43,686
Scenario D	47,311	48,993	49,035	49,036	48,954	48,394

*AF/year = acre-feet per year

Table 4-8. Metropolitan 2020 IRP Projection of Three Valleys Imported Water Supply Requirement

Projected Three Valleys Imported Water Supply Requirement (AF/year)*	2020	2025	2030	2035	2040	2045
Scenario A	53,001	53,446	54,876	55,177	55,717	56,644
Scenario B	54,227	62,248	67,106	70,658	74,619	79,417
Scenario C	57,854	59,384	61,695	62,873	64,284	66,070
Scenario D	59,142	68,365	74,233	78,934	84,075	90,177

*AF/year = acre-feet per year

As shown in Figure 4-16, water demand calculated for Three Valleys in this climate change analysis is initially higher than the corresponding estimates for the Three Valleys service area in the Metropolitan 2020 IRP. However, the estimates converge by 2030, resulting in comparable long-term projections. Similarly, graphs of Three Valleys imported water supply requirements, in Figure 4-17, show that projections from this study are generally in agreement with projections for the service area in the Metropolitan 2020 IRP.

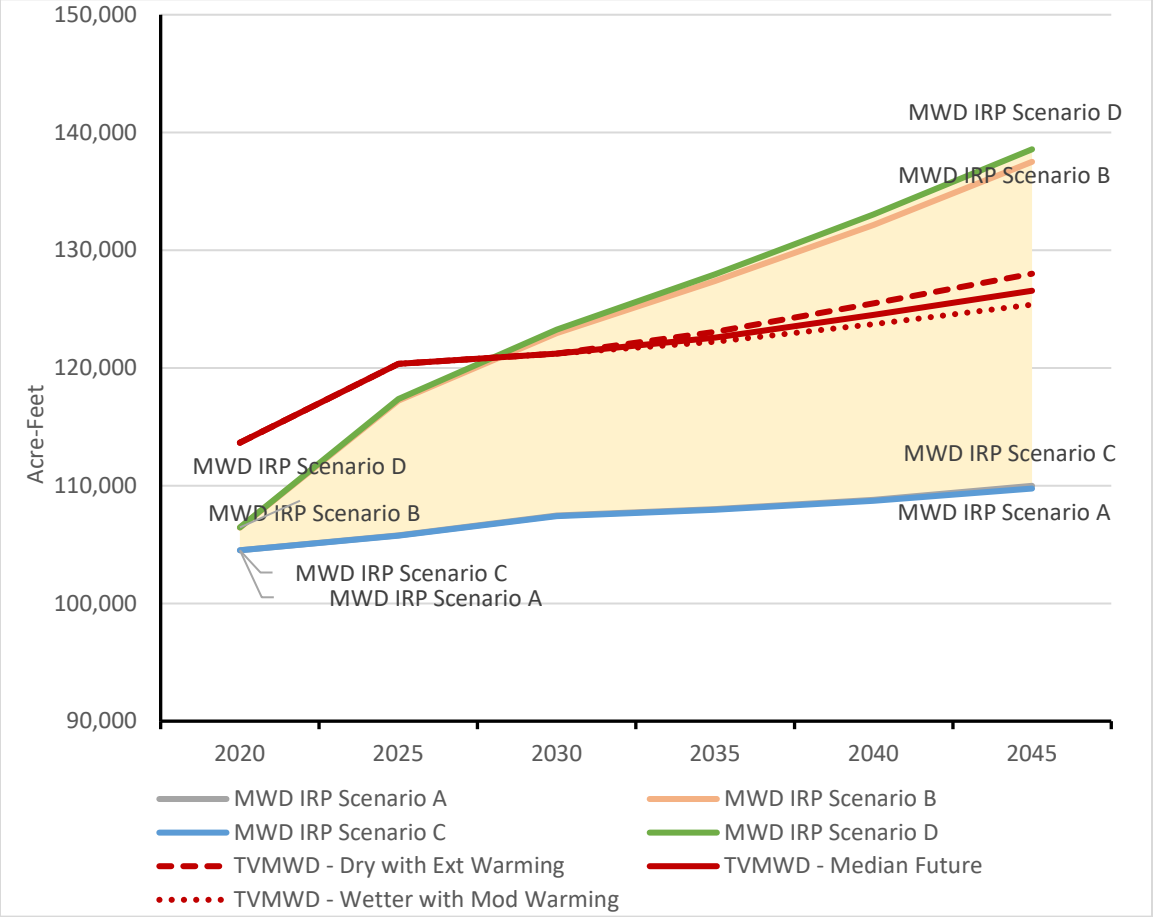


Figure 4-16. Comparison of Metropolitan 2020 IRP and Three Valleys Service Area Total Supply Requirements Under Future Climate Scenarios

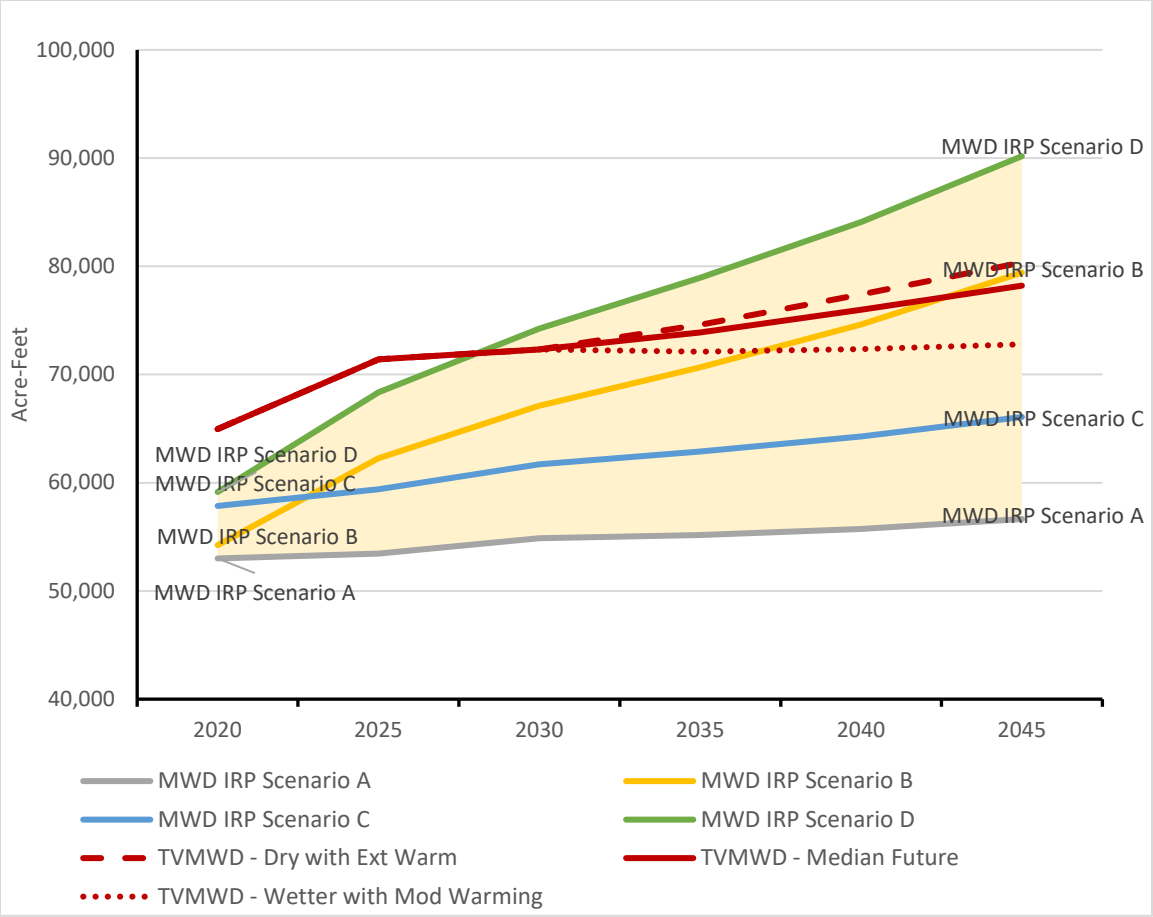


Figure 4-17. Comparison of Metropolitan 2020 IRP and Three Valleys Imported Water Supply Requirements Under Future Climate Scenarios

Based on the Metropolitan 2020 IRP data, Three Valleys will require additional imported water supplies of 3.6 TAF/year under Scenario A, 25.2 TAF/year under Scenario B, 8.2 TAF/year under Scenario C, or 31 TAF/year under Scenario D by 2045 relative to 2020 conditions. By comparison, the projections developed by Three Valleys indicate that between 2020 and 2045, annual imported water supplies requirements will increase by 15.4 TAF/year if future conditions are drier with extreme warming, 13.3 TAF/year under median future climate conditions, and 7.8 TAF/year if future conditions are wetter with moderate warming.

4.6 Applying Results to Local Water Analysis

4.6.1 Computing Future Water Supply and Demand

The monthly change factors developed as part of this analysis are useful for understanding how seasonal changes contribute to the annual changes (see Section 4.4). Additionally, monthly values are useful for planning management actions and mitigation actions in the DCP. The monthly water supply and demand change factors are presented in Appendix B, which comprises the following nine tables:

- Table B1: Monthly Rainfall Change Factors: Drier with Extreme Warming Scenario
- Table B2: Monthly Rainfall Change Factors: Median Scenario

- Table B3: Monthly Rainfall Change Factors: Wetter with Moderate Warming Scenario
- Table B4: Monthly San Gabriel River Flow Change Factors: Drier with Extreme Warming Scenario
- Table B5: Monthly San Gabriel River Flow Change Factors: Median Scenario
- Table A6: Monthly San Gabriel River Flow Change Factors: Wetter with Moderate Warming Scenario
- Table B7: Monthly Water Demand Change Factors: Drier with Extreme Warming Scenario
- Table B8: Monthly Water Demand Change Factors: Median Scenario
- Table B9: Monthly Water Demand Change Factors: Wetter with Moderate Warming Scenario

4.6.2 Constraints and Limitations

A planning-level climate impact analysis for the Three Valleys service area is presented in this chapter. This vulnerability assessment is intended to assist Three Valleys in preparing water supply and demand projections for the Water Resources Master Plan and DCP. These results should not be used in other applications, such as flood resilience planning, infrastructure design, or decision-making regarding the operation of any specific structure. Flood resilience planning requires the analysis of daily or finer temporal resolutions using statistical methods to determine how frequency distributions can best be fitted to extreme values. To design and operate infrastructures, there needs to be a deeper analysis and an additional ground-truthing of specific site characteristics, operational procedures, and regulations that are not included in this assessment.

The effects of climate change on water resources can also be indirect. The risks of wildfire in Southern California, for example, are predicted to increase as a result of climate change. As a result of wildfires, water resources may be affected by increased water usage for firefighting, altered surface vegetation and runoff patterns in burn areas, debris flows, and increased siltation of reservoirs and hydraulic structures. The vulnerability assessment does not capture these secondary impacts of climate change on water resources. It is also possible for future water supplies and demands to be affected by decisions made at the local, state, and federal levels. Policies and regulations that have not yet been implemented are difficult to anticipate and quantify. Thus, the purpose of this Vulnerability Assessment is not to anticipate the impact of future policy or regulatory decisions on future water supplies or demands.

4.6.3 Next Steps

The next step in the planning process is for Three Valleys to collaborate with member agencies to identify opportunities to enhance the region's resilience to projected future increases in imported water supply requirements. The region could develop a resilience portfolio including management actions such as conservation measures to reduce demand, water supply agreements and infrastructure, and augmented storage facilities and programs. The net climate resilience of the region's water budget could be measured in terms of the effectiveness of the portfolio of projects and management actions in reducing the projected future water supply deficit.

Member agencies could also undertake site-specific studies to assess the climate resilience of individual water systems. The climate change factors and analyses provided in Appendix B could be used to compute quantitative impacts of climate change on future supplies and demands during normal and drought years within each member agency's service area. Site-specific studies could identify opportunities to enhance the climate resilience of individual water systems through

management actions, infrastructure improvements, and system interconnections to enhance operational flexibility.

5 Mitigation Actions

Mitigation Actions are projects, programs, and strategies that are implemented prior to the occurrence of a drought to address potential risks and impacts and reduce the need for response actions. These actions are generally beneficial in increasing regional flexibility and resiliency during times of drought.

Within the framework of a DCP, these actions are generally developed in response to vulnerabilities identified through a Climate Change Vulnerability Assessment. As part of this DCP, Three Valleys performed a vulnerability assessment, which is detailed in Chapter 4. Overall, the results of the vulnerability assessments indicate:

- Minor decreases projected in average annual water supplies from the Main San Gabriel River basin during drought (single year and multi-year) years relative to baseline conditions due to shifts in precipitation from winter to fall and projected increases in surface water evaporation caused by increasing temperatures, particularly under the extreme warming climate scenario.
- A shorter rainy season with potential for higher intensity precipitation events resulting in higher peak flows of shorter duration. The net impact on annual groundwater recharge will be minimal if flow diversion facilities and recharge basins maintain adequate capability to handle the increased flow rates.
- Projected increases in outdoor water uses under normal, single dry, and multi-year drought conditions, caused by projected temperature increases, which lead to higher ET rates for landscaping, irrigated crops, and native vegetation[2]. Average annual outdoor water use by customers within the Three Valleys service area could increase by up to six percent under the most severe (Dry Hot) climate change scenario.
- An increase in dependence on imported water if mitigation actions are not implemented. A comparison of Three Valleys and Metropolitan's water budget projections under future climate conditions shows similar total demand projections, with Three Valleys showing increased reliance on imported surface water (supplied by Metropolitan) in its future projections. This increased reliance in Three Valleys projections occurs because local water supplies are projected to remain nearly constant while water demand increases due to future growth and increased climate-related water deficits. This highlights the need to develop mitigation actions to reduce future reliance on imported surface water.

In response to these findings, Three Valleys and the Drought Task Force compiled a suite of mitigations for inclusion into the DCP. The full suite of mitigation actions is identified in Section 5.1, Figure 5-1, and summarized in Table C-1 in Appendix C.

This suite of mitigation actions, developed in collaboration with the Drought Task Force, includes projects that are in various stages of implementation, from pre-planning, planning, design, to construction, and the timelines projected for these projects are estimations. Many of these actions are

[2] The projections do not make assumptions about the outdoor and indoor water use regulations required by the new regulatory framework, *Making Conservation a California Way of Life*.

consistent with existing planning programs and processes of the various regional stakeholders, such as Three Valleys' Capital Improvement Plan. However, numerous factors have the potential to impact implementation of these actions, such as funding availability, regulatory requirements, implementation complexities, and strategic planning priorities that are unique to each regional stakeholder. As such, inclusion of these actions into this DCP does not imply any commitment or obligation for future implementation. Furthermore, the mitigation actions presented are not intended to be exhaustive; thus, this chapter also provides guidance for establishing consistency with this DCP for projects that may be implemented in the future but are not included in the potential suite of mitigation actions. This guidance, along with additional insights on the mitigation actions, is detailed in Appendix C.

Implementing these potential mitigation actions could yield numerous regional benefits, including increasing local water supplies, improving operational flexibility, and enhancing water supply reliability. Several criteria were developed with consideration of these benefits to perform a preliminary review of the potential mitigation actions, which is described further in Section 5.2. The results of the preliminary review are provided in Table C-1 in Appendix C.

5.1 Identification of Potential Mitigation Actions

In June 2024, the Drought Task Force was sent invitations to schedule meetings for discussing potential projects, including mitigation actions for inclusion in the DCP. Organizations that reserved a time and were able to meet received a project information sheet tailored to their agency. In July 2024, Three Valleys and GEI held a total of eight individual meetings with the agencies to review, confirm, and update the mitigation actions.

The project information sheet asked each organization to respond to the following question:

> What projects or programs does your organization have in development that would potentially mitigate drought impacts in the future?

The respondents were asked to classify their responses into one of the five designated categories and, where applicable, provide a relevant metric:

- Water Supply Projects: Projects focused on enhancing water availability and accessibility. For example, by constructing or upgrading infrastructure such as pipelines or treatment plants, a region (or regions) within the Three Valleys service area have access to new, firm local supplies.
- Water Conservation Projects: Projects focused on reducing water usage and promoting efficient water management through measures such as implementing regulations, upgrading systems, or promoting public awareness.
- Groundwater Production Projects: Projects focused on extracting groundwater from underground sources to supplement water supplies, which may include drilling wells, installing pumps, and implementing sustainable groundwater management.
- Groundwater Storage Projects: Projects focused on storing excess water underground in natural aquifers for later use, particularly during times of drought, through recharge methods.

- Projects Increasing External Sources of Supply: Projects focused on enhancing water availability by sourcing water from external sources, which could involve constructing conveyance infrastructure or exploring alternative water transfers.

The project information form also asked each organization to assess whether the mitigation action has the potential to enhance regional water supply reliability. Relevant features that could contribute to improving water supply reliability include: infrastructure such as pipelines and pump stations; reduced reliance on imported water supplies; treatment of groundwater contaminants like polyfluoroalkyl substances (PFAs) or CECs; and system enhancements or repairs to storage facilities or other components.

Additionally, each organization was asked to provide as many key identifiers as possible for each mitigation action, including, but not limited to, the following:

- Project stage (conceptual, feasibility, design, construction)
- Implementation timeline/schedule (year)
- Estimated costs (capital and annual)
- Estimated annual water savings or estimation of the supplemental supplies created as a result of implementation

The data collected from the project information sheets submitted by participating agencies were analyzed to organized into six project types. The corresponding mitigation actions were categorized as follows:

1. System Interties: Create infrastructure to connect water systems and provide operational flexibility to respond to catastrophic supply interruption
2. New Extraction Wells: Develop new wells to increase supply reliability consistent with available supply and adjudicated rights
3. Enhanced Well Efficiency: Enhance the efficiency and reliability of existing wells through upgrades and modifications
4. Upgrade Aging Infrastructure: Upgrade aging urban infrastructure, including drinking water distribution systems, reservoirs, and conveyance
5. Groundwater Treatment Projects: Projects that protect and treat groundwater contamination
6. Conservation and Efficiency: Projects that promote water conservation and enhance water use efficiency

These findings were presented and discussed with the Drought Task Force during Workshop 4, held on August 27, 2024. The workshop aimed not only to address gaps in the data but also to gather additional feedback from other organizations. Though unrelated to the scope of this DCP, the project information forms served a similar purpose of identifying regional projects to address water supply reliability and resiliency. From the data collected and the input received during the workshop, a total of 54 projects, programs, and strategies were identified for the DCP (Figure 5-1). A summary of these mitigation actions and their key identifiers are provided in Table C-1 in Appendix C.

As previously discussed, implementation of the mitigation actions could be impacted by numerous factors including funding availability, regulatory requirements, implementation complexities, and planning priorities. The regular meetings of the Three Valleys member agencies, along with the Drought Task Force meetings, will be used to support implementation of the mitigation actions described in the DCP.

Three Valleys Drought Contingency Plan 2025

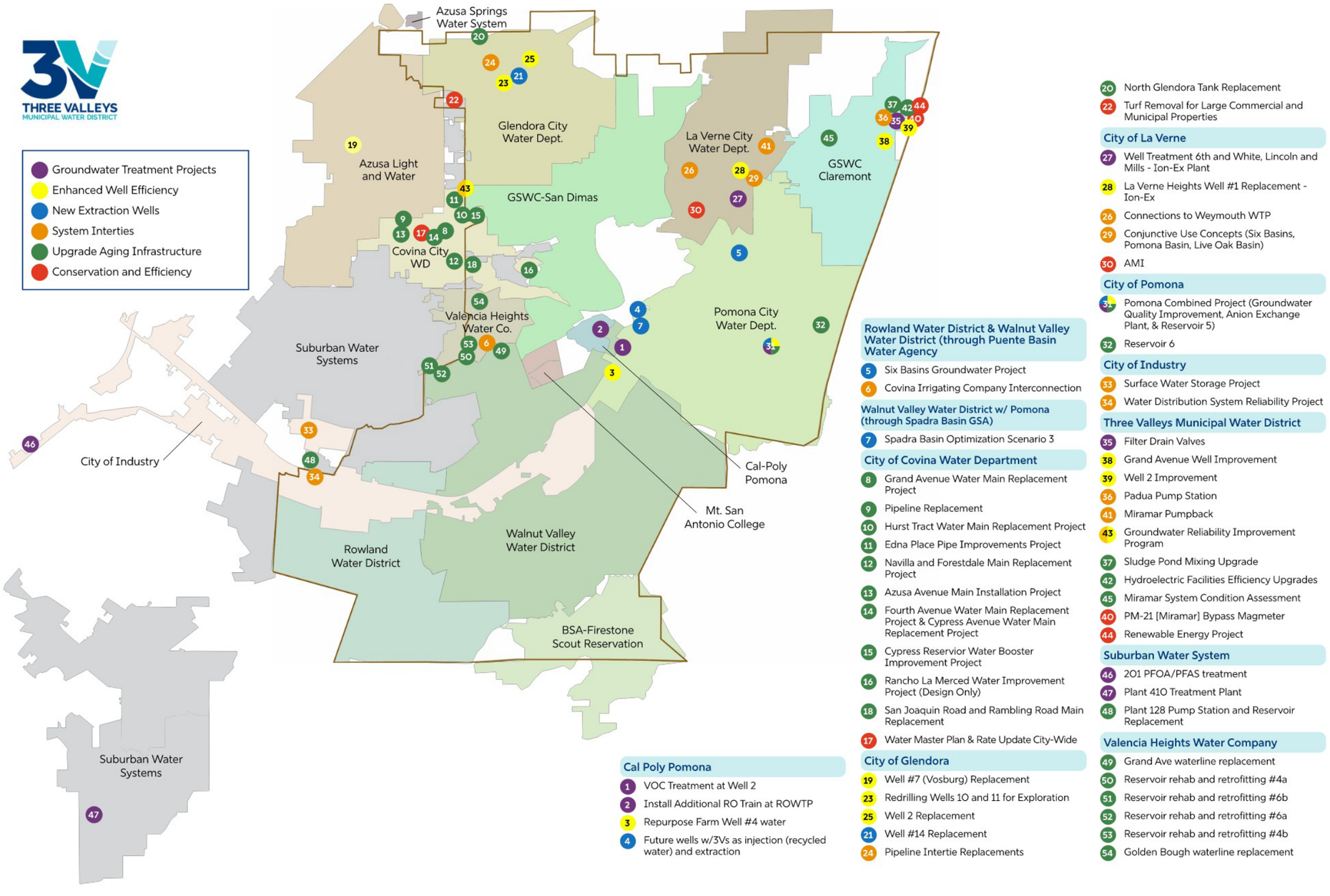


Figure 5-1. Potential Suite of Mitigation Actions for the DCP

Note:

1. GSWC = Golden State Water Company, BSA = Boy Scouts of America
2. Project #44 is included to account for all proposed mitigation actions. However, upon further review with Three Valleys, it was determined that Project #44 does not qualify as a drought mitigation action.

5.2 Preliminary Review of Potential Mitigation Actions

Each potential project was classified using the categorization for each criterion provided in Table 5-1. As a wholesaler, Three Valleys is not involved in the prioritization of agency projects. Prioritization of mitigation actions is agency driven and as part of the development of the DCP, Three Valleys provided each member of the Drought Task Force the opportunity to provide and prioritize their own projects. As such, this categorization does not represent a prioritization or ranking of the projects identified, nor is the provided criteria intended to be exhaustive. Rather, these criteria were developed to assist in the identification of the key aspects of each project for the purposes of this DCP. This preliminary review could be used in future planning efforts to further inform regional priorities. Long term, Three Valleys will continue to meet with retail agencies on a regular basis to support them in prioritizing resiliency projects to address agency-specific concerns and needs.

Table 5-1. Review Criteria and Ranking

Criteria	Categorization		
Timing/Schedule	Short-term action (1-2 years)	Mid-term action (2-4 years)	Long-term action (> 4 years)
Enhance Regional Water Supply Reliability and Resiliency	Meets 3 of the regional benefits	Meets 2 of the regional benefits	Meets 1 of the regional benefits
Regional Benefits	Regional action	Action involves multiple adjacent agencies	Single agency action

The preliminary review of the potential suite of mitigation actions with respect to the criteria and categorization identified above is provided in full in Table C-1 in Appendix C. Details with respect to timing/schedule and the potential benefits associated with these mitigation actions are described below.

The 54 potential projects were grouped into short-, mid-, and long-term actions (Figure 5-2). Note that the potential timelines for the projects that are included in the DCP are estimates and as noted previously, depend upon many factors, such as the ability to secure funding, procurement, implementation complexities and permitting challenges, regional priorities, and other factors. However, with the estimates provided, 21 of the potential projects (or 39 percent) identified are projected for implementation in the short-term (by the end of 2026). Implementation for 16 of the potential projects (or 30 percent) is projected in the mid-term (by the end of 2028), and 17 of the potential projects are projected for implementation in the long-term (2029 and beyond).

	Short-Term	Mid-Term	Long-Term
System Interties	34, 41	6, 24, 26	29, 33, 36, 43*
New Extraction Wells	4, 5		21, 31*
Enhanced Well Efficiency	3, 25, 40	39	19, 23, 28, 38
Upgrade Aging Infrastructure	10, 12, 14, 15, 16, 20, 45, 48, 51, 52	8, 11, 13, 18, 37, 49, 50	9, 32, 42, 53, 54
Groundwater Treatment Projects	1, 35	2, 46, 47	7, 27
Conservation and Efficiency	17, 22	30, 44	
TOTAL	**21**	**16**	**17**

**Categorized under multiple project types*

Figure 5-2. Potential Timeline for Mitigation Actions

Note:

2. Project #44 is included to account for all proposed mitigation actions. However, upon further review with Three Valleys, it was determined that Project #44 does not qualify as a drought mitigation action.

The identified regional benefits for enhancing regional water supply reliability and resiliency are listed below. To determine whether a mitigation action contributes to these benefits, categories were specified for each, also detailed below:

Regional Benefits:

1. Increasing Local Supplies
2. Enhancing Operational Flexibility
3. Enhancing Water Supply Reliability

Categories:

1. Increasing Local Supplies:
    a. New Extraction Wells
    b. Enhanced Well Efficiency
    c. Groundwater Treatment Projects
2. Enhancing Operational Flexibility:
    a. System Interties
    b. Upgrading Aging Infrastructure
    c. Conservation and Efficiency Measures

3. Enhancing Water Supply Reliability:
    a. Overall supply increase
    b. Reduction in drought imported water dependency
    c. Decrease in overall imported water dependency

Of the 54 projects, programs, and strategies identified, 69 percent of the projects have the potential to enhance operational flexibility, 35 percent have the potential to increase local supplies, and 26 percent have the potential to enhance water supply reliability (Figure 5-3). Additionally, 74 percent of the projects meet one of the regional benefits, 22 percent meet two of the regional benefits, and only 4 percent meet all regional benefits. Many of the projects identified have multiple benefits and thus the percentages identified in Figure 5-3 do not sum to 100 percent.

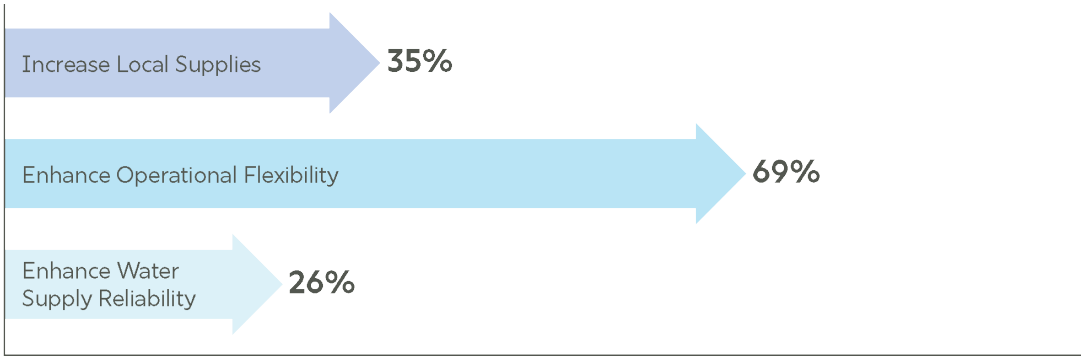
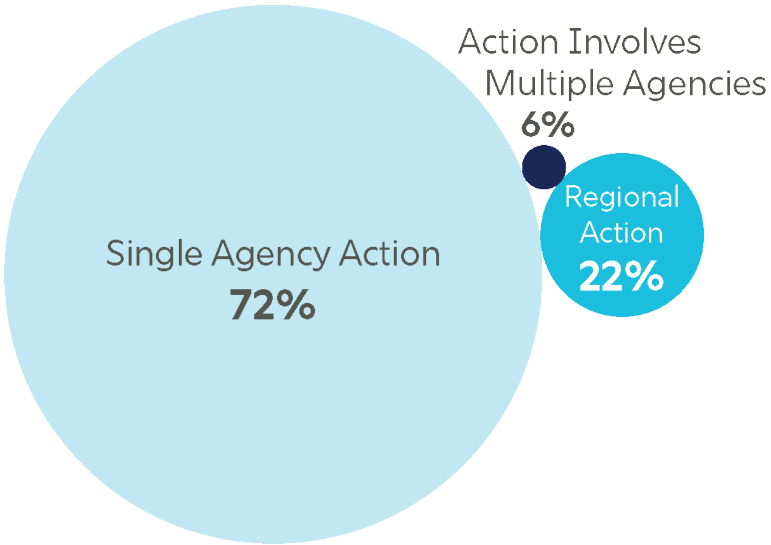


Figure 5-3. Potential Benefits of the DCP Mitigation Actions

Of the 54 identified projects, programs, and strategies, 72 percent are single-agency actions, 6 percent involve multiple agencies, and 22 percent are regional initiatives.

The suite of actions included in the DCP is based upon input provided by the Drought Task Force members. Future projects that meet the goals and objectives of the DCP may be considered in future updates of the DCP.



6 Response Actions

Response Actions refer to the measures taken during a drought to manage the limited water supply and mitigate immediate impacts. These actions are triggered by water shortage stages and can be quickly implemented to provide expeditious benefits.

Three Valleys and its member agencies that are considered urban water suppliers have each developed an UWMP WSCP. The WSCP serves as a framework for preparing for and responding to water shortages within each respective agency's service area boundary. Each agency's WSCP specifies drought response actions corresponding to different water shortage stages. Urban water suppliers adhere to six standard levels, which categorize increasing water shortage conditions—ranging from up to 10 percent to greater than 50 percent shortage compared to normal reliability (see Table 3-1)—and align with the response actions that a water supplier would implement to meet the severity of the impending shortages.

6.1 Development of Agency Drought Response Actions

The drought response actions of each agency reflect their individual water supply portfolios and the related water shortage conditions. As a result, water shortage conditions and corresponding response actions may differ across the region during drought periods. To promote a DCP that is flexible and responsive to each of the agencies within the region, Three Valleys and its retail water agencies will rely on the drought response actions provided in each agency's WSCP should a water shortage occur.

Additionally, throughout July, Three Valleys and GEI held individual meetings with each member agency to review and confirm the response actions detailed in their WSCPs and to explore any additional actions they had incorporated. These meetings also allowed agencies lacking UWMP WSCPs to contribute insights into their response actions.

Through their respective WSCPs and the additional insights and references provided during these meetings, Three Valleys and its member agencies have categorized drought response actions into four main types:

1. Demand Reduction Actions: Strategies aimed at mitigating supply shortages, such as public education campaigns, outdoor water use restrictions, and changes in rate structures.
2. Supply Augmentation Actions: Strategies designed to increase available water supplies, including transfers, exchanges, or purchases of additional supplies.
3. Operational Changes: Short-term operational adjustments to address water shortages, such as enhanced monitoring of customer usage rates or operational changes related to demand reduction and supply augmentation.
4. Additional Mandatory Restrictions: Mandatory restrictions corresponding to various water shortage levels and are generally associated with enforcement actions and penalties, which may include limits on outdoor water use in terms of volume, timing, and location.

These response actions are crucial in managing water resources effectively during drought conditions, and ensuring sustainable water use across the region. Demand reduction and supply augmentation

actions will help to enhance water availability, while operational changes and mandatory restrictions will further support conservation efforts. Each category is further discussed in the following sections.

Table 6-1 presents a comprehensive list of response actions used by each agency.

Table 6-1. Summary of Agency WSCPs Drought Response Actions

		City of Covina	City of Glendora*	City of La Verne	City of Pomona*	GSWC Claremont	GSWC San Dimas	RWD*	SWS	WVWD*	Cal Poly Pomona**	Three Valleys
Demand Reduction Actions	CII - Commercial kitchens required to use pre-rinse spray valves			x	x							x
	CII - Lodging establishment must offer opt out of linen service	x	x		x			x	x	x		x
	CII - Other CII restriction or prohibition	x			x	x	x		x			
	CII - Restaurants may only serve water upon request	x	x	x		x	x	x	x	x		x
	Distribution of water-saving items such as efficient toilets and urinals		x	x								
	Implement or Modify Drought Rate Structure or Surcharge		x		x	x	x	x				
	Increase Frequency of Meter Reading				x							
	Landscape - Limit landscape irrigation to specific days	x	x	x	x	x	x	x	x	x	x	x
	Landscape - Limit landscape irrigation to specific times	x	x	x	x	x	x	x	x	x	x	x
	Landscape - Other landscape restriction or prohibition	x	x		x							
	Landscape - Prohibit all landscape irrigation	x			x			x			x	

		City of Covina	City of Glendora*	City of La Verne	City of Pomona*	GSWC Claremont	GSWC San Dimas	RWD*	SWS	WVWD*	Cal Poly Pomona**	Three Valleys
	Landscape - Prohibit certain types of landscape irrigation		x	x	x	x	x			x	x	
	Landscape - Restrict or prohibit runoff from landscape irrigation	x	x	x	x	x	x	x	x	x		x
	Landscape training for waterwise gardening		x	x	x			x		x		
	Moratorium or Net Zero Demand Increase on New Connections				x			x				
	No irrigation within 48 hours after measurable rainfall		x			x	x				x	
	Other - Prohibit use of potable water for construction and dust control			x		x	x	x	x			
	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	x	x	x	x	x	x	x	x	x	x	x
	Other - Prohibit use of potable water for washing hard surfaces	x	x	x	x	x	x		x	x	x	x
	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	x		x	x			x	x	x		x
	Other - Require automatic shut-off hoses		x			x	x	x	x			x

		City of Covina	City of Glendora*	City of La Verne	City of Pomona*	GSWC Claremont	GSWC San Dimas	RWD*	SWS	WVWD*	Cal Poly Pomona**	Three Valleys
	Other water feature or swimming pool restriction	x		x	x			x		x		x
	Public education and outreach campaigns		x	x	x			x			x	x
	Water Features - Restrict water use for decorative water features, such as fountains	x	x	x	x	x	x	x	x	x		x
	Watering and other outdoor use restrictions		x	x	x							
	Other	x		x	x	x	x	x	x	x	x	x
Supply Augmentation Actions	Transfers	x	x		x	x	x	x		x		x
	Other			x								
Operational Changes		x	x	x	x	x	x	x	x			x
Additional Mandatory Restrictions					x					x		

Notes:

GSWC: Golden State Water District RWD: Rowland Water District WVWD: Walnut Valley Water District SWS: Suburban Water Systems

***** Provided additional response actions during one-on-one agency meetings, along with supplementary references such as the Water Shortage Ordinances.

******Does not have a UWMP WSCP but provided their WSCP prepared in March 2024, outlining demand reduction actions for their shortage stage level

6.2 Demand Reduction Actions

The most common demand reduction actions are shown in Figure 6-1. Three Valleys and its member agencies, listed in Table 6-1, have all specified limitations on landscape irrigation to specific days and specific times, and they require customers to promptly repair leaks, breaks, and malfunctions in a timely manner. The timing of these restrictions varies among agencies.

Additionally, 91 percent of these agencies prohibit the use of potable water for washing hard surfaces, restrict water use for decorative features like fountains, and prohibit runoff from landscape irrigation. Furthermore, 82 percent of agencies require restaurants to serve water only upon request. Sixty-four percent enforce additional measures, such as requiring lodging establishments to offer an opt-out option for linen service, prohibiting certain types of landscape irrigation, and restricting vehicle washing except at facilities using recycled or recirculated water.

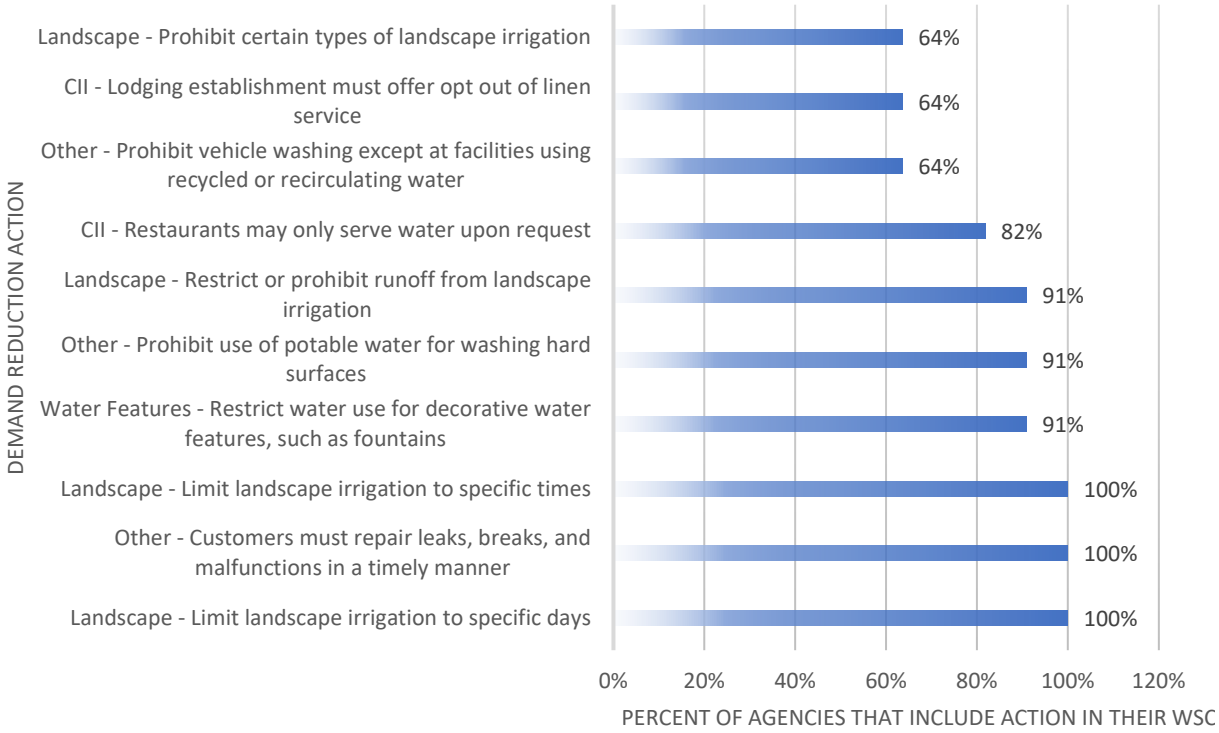


Figure 6-1. Most Commonly Included Demand Reduction Actions in Agency WSCPs

The quantitative estimates of how these demand reduction actions could reduce the shortage gap, based on the agencies water demands prior to 2015 (unconstrained demands), vary by agency and water shortage level; however, for those agencies that provide such estimates in their WSCPs, Table 6-2 illustrates these variations.

Table 6-2. Quantitative Estimates of Demand Reduction Volumes by Agency

		Shortage Level 1 (Up to 10%)	Shortage Level 2 (Up to 20%)	Shortage Level 3 (Up to 30%)	Shortage Level 4 (Up to 40%)	Shortage Level 5 (Up to 50%)	Shortage Level 6 (Up to >50%)
Demand Reduction Volume (AF)	City of Covina	527	1,055	1,582	2,110	2,637	>2,637
	City of Glendora	1,323	2,646	3,968	5,291	6,614	>6,614
	City of La Verne*	N/A	N/A	N/A	N/A	N/A	N/A
	City of Pomona	1,814	3,627	5,441	7,254	9,068	>9,068
	GSWC Claremont	1,163	2,327	3,490	4,654	5,817	>5,817
	GSWC San Dimas	984	1,968	2,952	3,936	4,920	>4,920
	Rowland Water District	797	1,595	2,392	3,190	3,987	>3,987
	Suburban Water Systems*	N/A	N/A	N/A	N/A	N/A	N/A
	Walnut Valley Water District	2,041	4,082	6,124	8,165	10,206	>10,206
	Three Valleys	5,240	10,479	15,719	20,959	26,198	>26,198
	Total	13,889	27,779	41,668	55,559	69,447	>69,447

*Do not provided estimate of AF reduction in their WSCP.

6.3 Supply Augmentation Actions

About 90 percent of agencies, including Three Valleys and its member agencies classified as urban water suppliers, have outlined specific supply augmentation actions in their WSCPs, such as transfers and other methods. None of the agencies plan to add new sources of water supply in the event existing sources of supply are not sufficient to meet customer demands; instead, these actions focus on increasing supplies from existing sources:

- *City of Covina* – City of Covina will consider increased purchases from Covina Irrigating Company using existing facilities to address customer demands. However, Covina plans to implement demand reduction measures in the event water supplies from existing sources are not sufficient to meet anticipated demands.

- *City of Glendora* – City of Glendora will consider increased production from the Main Basin to address customer demands. However, Glendora plans to implement demand reduction measures in the event water supplies from existing sources are not sufficient to meet these demands.
- City of Pomona – City of Pomona will consider increased production from the Six Basins and the Chino Basin to address customer demands. However, Pomona plans to implement demand reduction measures in the event water supplies from existing sources are not sufficient to meet anticipated demands.
- *GSWC Claremont* – GSWC Claremont will consider increased production from the Six Basins and the Chino Basin to address customer demands. However, GSWC Claremont plans to implement demand reduction measures in the event water supplies from existing sources are not sufficient to meet anticipated demands.
- *GSWC San Dimas* – GSWC San Dimas will consider increased production from the Main Basin to address customer demands. However, GSWC San Dimas plans to implement demand reduction measures in the event water supplies from existing sources are not sufficient to meet anticipated demands.
- *Rowland Water District (RWD)* – RWD will consider increased production from the Main Basin, Central Basin, and Puente Basin to address customer demands. However, RWD plans to implement demand reduction measures in the event water supplies from existing sources are not sufficient to meet anticipated demands.
- *Walnut Valley Water District (WVWD)* – WVWD will consider increased purchased water from the Main Basin, through California Domestic Water Company, to address customer demands. However, WVWD plans to implement demand reduction measures in the event water supplies from existing sources are not sufficient to meet anticipated demands.
- *City of La Verne* – City of La Verne's water system is equipped to handle both single and multiple dry years. In case of increased water demand, La Verne can manage short-term shutdowns of up to 3 days and likely up to 7 days through enhanced conservation efforts and customer communication. The city has established connections with adjacent water agencies for additional supply and maintains access to MWD import water through a city-owned emergency supply pump station. La Verne also keeps a contact list of nearby water bottlers as potential alternative water sources.
- *Suburban Water Systems (SWS)* – SWS did not identify any supply augmentation actions.
- *Three Valleys* – Three Valleys does not anticipate augmenting water supplies. However, Three Valleys' member agencies will consider increased production from the Main Basin, Chino Basin, and/or Six Basins (through potential transfer of water rights) using existing facilities to address customer demands.

6.4 Operational Changes

Many of the demand reduction actions specified in the agencies WSCPs qualify as operational changes. With the exception of SWS, all of Three Valleys' member agencies, classified as urban water

suppliers, identified stand-alone operational changes outside of the demand reduction actions that may be further used to reduce the gap between demand and available supplies.

Three Valleys, City of Covina, City of Glendora, City of Pomona, GSWC Claremont, GSWC San Dimas, RWD, and WVWD have all identified several operational changes, including:

- Improved monitoring, analysis, and tracking of customer water usage to enforce demand reduction measures.
- Optimization of production from existing available water supply sources.
- Potential use of emergency supply sources, including emergency interconnections.
- Potential blending of water supply resources.
- Improved monitoring, maintenance, and repairs to reduce water distribution system losses.

Additionally, the City of La Verne plans to implement improved monitoring and tracking of water usage rates for customers.

6.5 Additional Mandatory Restrictions

As part of their WSCP, the City of La Verne and SWS have all identified a series of restrictions to be implemented at various water shortage levels. The remaining retail member agencies have indicated there are currently no additional mandatory restrictions planned.

The City of La Verne's additional restrictions primarily focus on:

- Prohibited Uses of Water
- Water Consumption Reduction
- Water Conservation
- Construction Water Usage
- Cooling System Restrictions
- Landscape Watering Hours
- Strict Landscape Watering Regulations
- New Swimming Pool Permits
- Outdoor Irrigation Prohibitions
- New Water Service Connections

For SWS, the additional restrictions include:

- Expanding Public Information Campaigns
- Offering Water Use Surveys
- Providing Rebates on Plumbing Fixtures and Devices
- Providing Rebates for Landscape Irrigation Efficiency

6.6 Agency Drought Response Actions Summary

The most common drought response actions included in the WSCPs for the region are shown below in Figure 6-2. This data excludes drought response actions categorized under the 'other' category, as it includes a wide variety of measures.

The most prevalent drought response actions across all agency WSCPs involve limiting landscape irrigation to specific times and days, and requiring customers to promptly repair leaks, breaks, and malfunctions in a timely manner. Prohibiting the use of potable water for washing hard surfaces, restricting water use for decorative features like fountains, and prohibiting runoff from landscape irrigation are also significant, appearing in 91 percent of agency WSCPs. Additionally, common measures featured in 82 percent of agency WSCPs are operational changes and requiring restaurants to serve water only upon request. Seventy-three percent also consider implementing water transfers.

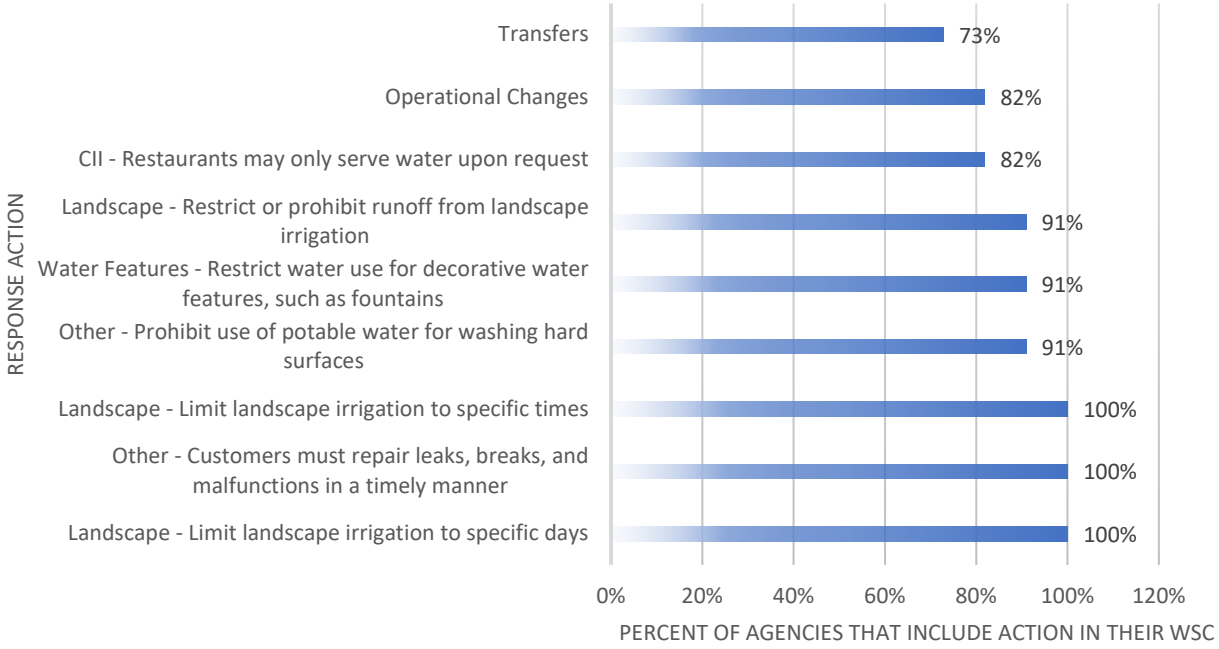


Figure 6-2. Most Commonly Included Drought Response Actions in Agency WSCPs

The drought response actions included in the fewest WSCPs for the region are shown below in Figure 6-3. The following drought response actions are only implemented by 9 percent of agencies:

- Increasing frequency of meter reading
- Other (Supply Augmentation Action)

The following drought response actions are only implemented by 18 percent of agencies:

- Distribution of water-saving items such as efficient toilets and urinals
- Moratorium or Net Zero Demand Increase on New Connections
- Additional Mandatory Restrictions

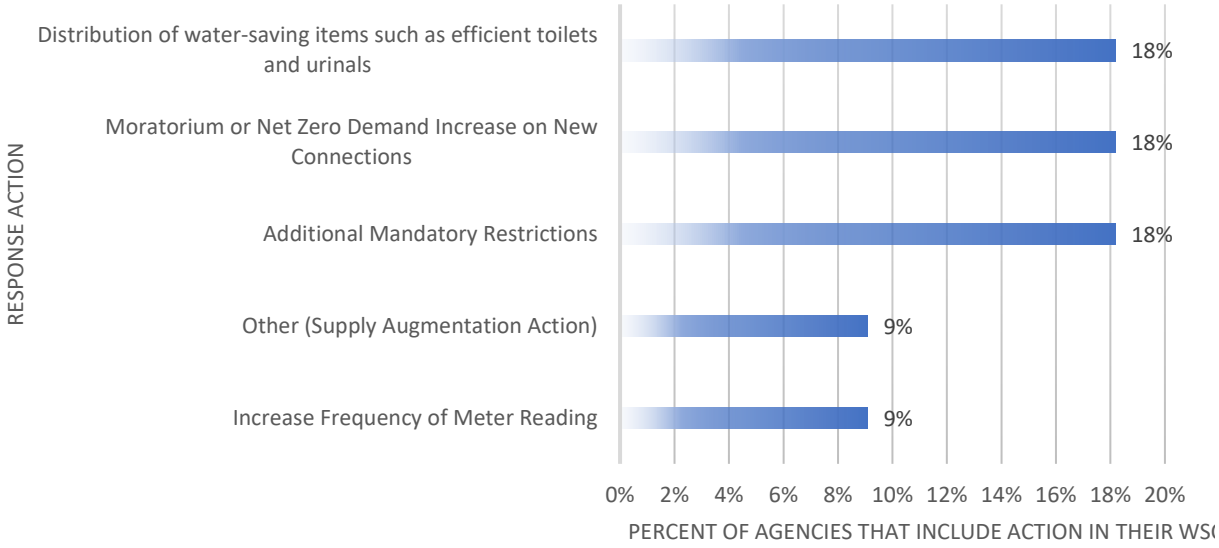


Figure 6-3. Least Commonly Included Drought Response Actions in Agency WSCPs

As previously stated, Three Valleys and its member agencies that are considered urban water suppliers will rely on the drought response actions provided in each agency's WSCP to promote a DCP that is flexible and responsive to each of the agencies. Similar to the mitigation actions, Three Valleys is not involved in the prioritization of agency response actions. Prioritization of response actions is generally performed by each respective agency's Board of Directors. Additionally, implementation and enforcement of the response actions is also the responsibility of each of Three Valleys' member agencies. Three Valleys' role is to understand when an agency is entering different shortage stages, and how they can support and assist with supply augmentation with the goal of unified drought response and messaging. This is facilitated through:

- A review of each agency's Annual Assessment which incorporates planned response actions for the next fiscal year and timing of the accompanying response actions.
- The planned member agency meetings included as part of Three Valleys' Drought Monitoring Framework which will provide the opportunity to discuss response actions being planned by each of the agencies along with potential implementation challenges.
- Communication of shortage stages.

6.7 Potential Enhancement of Drought Response Actions

The DCP will incorporate the potential drought response actions identified by each agency as part of their WSCP. However, the development of the DCP provided an opportunity to discuss their potential implementation and how Three Valleys and its member agencies can more effectively respond to drought at a regional level.

At a high level, Three Valleys, its member agencies, and other interested organizations can enhance their drought response actions by focusing on three main categories:

1. Physical changes: This category includes the installation or use of new equipment and infrastructure aimed at expanding water conservation efforts and enhancing interagency collaboration. Potential actions could include low-flow fixtures, smart irrigation systems, and developing interconnections with neighboring agencies for shared water resources.
2. Behavioral changes: This category focuses on voluntary actions taken by end-users that contribute to overall water conservation. This may include reducing landscape irrigation times and participating in community education programs that advocate water-saving practices.
3. Mandated changes: This category involves enforced actions to reduce water use. Possible measures could include mandated landscape watering days and restrictions on the use of potable water for non-essential purposes, both enforced by fines.

During Workshop 5 held in December 2024, these categories were presented, and the following question was discussed among the Drought Task Force:

- *Of these types of actions, which have been most effective during previous droughts, and which have been the most difficult to implement, and why?*

The poll results indicate that a combination of physical, behavioral, and mandated actions is considered the most effective strategies for managing droughts. Among the responses, behavioral changes were frequently highlighted as the most effective response, particularly when driven by education, outreach, and community engagement. Many participants emphasized that these changes are most successful when paired with mandated actions, such as water use restrictions and unified messaging. Physical actions, such as the use of smart meters, tiered rates, and changes to irrigation systems, were also indicated as tools for managing water consumption. Participants noted that smart meters, for example, help customers track their usage and adjust their behaviors accordingly, especially in conjunction with mandatory reductions. Some respondents also expressed that a combination of these actions yields the most effective results.

However, the discussion also revealed that behavioral actions are generally the most difficult to implement, with many respondents noting that people are often resistant to change. Several mentioned that individuals simply find it challenging to adopt new habits, particularly when it comes to changing water usage patterns or adjusting long-standing practices such as landscape irrigation. When it comes to physical changes, respondents highlighted challenges related to funding availability. Yet, despite efforts to offer such changes, many people have not taken full advantage of the opportunities available. Mandated actions also face significant resistance, particularly when it comes to gaining public buy-in. Respondents noted that mandates can be difficult to enforce or receive acceptance if the community does not fully understand the importance or reasons behind them. Finding agreement among the stakeholders about what can be implemented is also a challenge, especially when it comes to determining what mandates are both feasible and effective. In summary, the main challenges of the three action types stem from public resistance, lack of understanding, and resource constraints.

Table 6-3 below shows a compiled summary of the key points raised under each action type by the member agencies.

Table 6-3. Summary of Effective and Challenging Actions from Workshop 5

Action Type	Most Effective Actions	Most Difficult to Implement
Behavioral	Behavioral changes through education, community outreach, and open communication.	Some people are not easily swayed or are set in their ways.
	Engagement is focused on changed behavior and shaping future decisions.	Behavioral change is tough for many.
	Behavioral changes have been most effective through education and outreach.	People tend to stick with what they know; learning and accepting new trends can be tough.
	Behavioral changes based on mandates, along with physical actions, contribute to effective drought management.	Getting the public involved in conserving is challenging.
Physical	Smart meter usage helps customers understand their water usage and tailor it accordingly.	Physical changes are difficult because of funding availability.
	Physical actions show the best way to take action on droughts over the years.	Many people have not taken advantage of available physical changes.
	Conservation, tiered rates, and landscaping irrigation changes are effective.	
Mandated	Mandated reductions in water use and unified messaging are key for ensuring compliance.	Mandated actions are difficult to get public buy-in.
	Mandated actions help the city put restrictions on paper for the public to adhere to.	Educating the public on the reasons behind mandates is challenging.
	Mandated actions are crucial for formalizing behavior changes.	Finding agreement among stakeholders on what can be done has been difficult.

6.8 Recommendations

The key takeaways highlighted in Section 6.7 are generally consistent with the drought response actions identified in individual agency WSCPs. This DCP has been developed to promote the flexibility needed for Three Valleys and its member agencies to implement response actions based on local conditions and, along with the takeaways summarized in Table 6-3, could provide a framework for:

- Guiding the development of new response actions during subsequent updates of agency WSCPs
- Coordinating regional response actions in collaboration with the Drought Task Force

7 Operational and Administrative Framework

The operational and administrative framework identifies the roles, responsibilities, and related procedures necessary to implement the primary elements of the DCP:

1. Conduct drought monitoring – as described in Chapter 3
2. Coordinate response actions in connection with each agency's WSCP – as described in Chapter 6
3. Coordinate mitigation actions in connection with each agencies local planning and Three Valleys regional planning – as described in Chapter 5

Updating the DCP is also part of the operational and administrative framework.

This chapter provides a summary of the responsibilities associated with the primary elements of the DCP and the roles that will carry forward with these responsibilities. Additionally, it includes a discussion of the DCP update process, which includes monitoring, evaluating, and updating the plan.

7.1 Roles and Responsibilities

Three Valleys, its member agencies, and the Drought Task Force all retain responsibilities associated with the key elements of this plan.

Three Valleys: Three Valleys is responsible for estimating regional demand and supply projections, identifying infrastructure constraints that may impact supply delivery, comparing supply and demand estimates considering any infrastructure constraints and determining which Three Valleys shortage response stage and actions are recommended, carrying out strategic communication of response actions (as needed), participating in and assembling the Drought Task Force, coordinating mitigation actions as part of ongoing planning efforts, and updating the DCP. These responsibilities are generally carried out through the following roles:

a) Three Valleys General Manager
b) Three Valleys Chief Water Resources Officer
c) Three Valleys Senior Engineer
d) Three Valleys Chief Administrative Officer
e) Three Valleys Water Resources Analyst/Communication Assistant

Table 7-1 provides the level of responsibility for each of these roles relative to the primary tasks described above.

Table 7-1. Level of Responsibility for the Key Roles at Three Valleys Relative to the Primary DCP Responsibilities

	Three Valleys General Manager	Three Valleys Chief Water Resources Officer	Three Valleys Senior Engineer	Three Valleys Chief Administrative Officer	Three Valleys Water Resources Analyst/ Communication Assistant
Demand projections	I	A	R	I	R
Supply projections	I	A	R	I	R
Identify infrastructure constraints	I	A	R	I	I
Strategic communication of response actions	A	C	I	R	R
Assembly of the Drought Task Force	I	A	I	C	R
Coordinate mitigation actions as part of ongoing planning efforts	A	R	C	I	I
Update the DCP	C	A	I	I	R

R	Responsible	Assigned to complete the task
A	Accountable	Has final decision-making authority and accountability for completion
C	Consulted	An advisor or subject matter expert who is consulted before a decision or action
I	Informed	Updated on decisions or actions

Three Valleys Member Agencies: Three Valleys member agencies are responsible for providing demand and supply projections to Three Valleys for their respective service areas, participation in the Drought Task Force, initiating strategic communication of response actions, and implementing mitigation actions as part of ongoing planning efforts.

Drought Task Force: The Drought Task Force is responsible for collectively evaluating regional conditions, identifying, and planning for response actions, seeking approval for said response actions through appropriate Board approval (as needed), and communicating with customers once response actions have been initiated.

7.2 Drought Response Task Force Process

The Drought Task Force is comprised of 27 organizations and currently there is a roster of 73 members spanning various stakeholder segments within the region. As part of the Drought Monitoring Framework, regional coordination is facilitated through regular monthly meetings between Three Valleys and its member agencies. These meetings are used to review and analyze water availability data and Annual Assessments, as well as to make decisions regarding the declaration of water supply shortages, the implementation of water restrictions, and the pursuit of additional supplies. As outlined in the DMF, during the implementation phase of this DCP, Three Valleys will

increase the frequency of meetings with any member agency or agencies that are in Stage 5 or above, holding these meetings at least twice monthly.

Additionally, the Drought Task Force may be convened based on a declaration from the state, Metropolitan, or if any member agency raises concerns about their supplies or infrastructure. Three Valleys can conduct an annual check-in meeting with the Drought Task Force during one of the regular Member Agency Meetings.

Once the Drought Task Force is convened, the group will meet to:

1. Evaluate regional conditions and identify which agencies/organizations are experiencing water shortage conditions
2. Discuss the need for a coordinated response and identify potential response actions

Drought Task Force members may experience shortages and impacts of drought at varying times and degrees of severity due to nuances in supply and demand portfolios. It is important to enable and support each agency as they enact shortage levels and response actions that are relevant and actionable in their service area. As a result, agencies are provided the flexibility to decide the degree to which they wish to participate, whether response actions are warranted consistent with their individual WSCPs, and communication protocols.

Once the Drought Task Force has met and identified potential response actions, Three Valleys and its member agencies will individually plan for implementation of said response actions, which includes Board approval and strategic communication to customers as to what will be required and how to achieve the intended results.

7.3 Drought Contingency Plan Update

The DCP is a living document that is intended to be evaluated on an ongoing basis and subsequently updated as needed. Three Valleys will regularly review the DCP and make adjustments accordingly. This includes a post-drought evaluation to assess the effectiveness of the DCP after its implementation. This evaluation could include an analysis of the climatic and environmental aspects of the drought; its economic and social consequences; the extent to which pre-drought planning was useful in mitigating the impacts, in facilitating relief or assistance to stricken areas, and in post-recovery; and any other weaknesses or problems caused by or not covered by the DCP. Three Valleys will also update the DCP consistent with the five-year UWMP report cycle to incorporate any significant changes to WSCPs, demand and supply projections, and additional mitigation actions.

7.4 Operational and Administrative Framework Summary

Table 7-2 summarizes the roles, responsibilities, and procedures associated with the operation and administration of the DCP.

Table 7-2. Operational and Administrative Framework Summary

DCP Element	Roles	Responsibilities	Procedures
Conduct Drought Monitoring	Three Valleys Member Agencies	Evaluate water supply reliability as part of the Annual Assessment	Compare supplies and demands. Determine which shortage response stage is recommended. Provide demand estimates to Three Valleys annually.
	Three Valleys	Develop annual supply and demand projections	Estimate unconstrained demands and available supplies for the coming year.
	Three Valleys	Identify infrastructure constraints	Identify any known MWD or Three Valleys infrastructure issues that may pertain to near-term water supply reliability.
	Three Valleys	Convene member agencies to conduct Wholesale Annual Assessment	Compare supplies and demands and discuss any infrastructure constraints that may impact supply delivery. Determine which Three Valleys shortage response stage is recommended.
	Three Valleys	Initiate Drought Task Force	Initiate the Drought Task Force based on a declaration from the state, Metropolitan, or if any member agency raises concerns about their supplies or infrastructure.
Coordinate Response Actions	Three Valleys Three Valleys Member Agencies	Identify response actions	Based on the water shortage response stage identified during the Annual Assessment, determine which response actions are recommended.
	Drought Task Force	Evaluate regional conditions	Identify which agencies are experiencing water shortage conditions once the Drought Task Force has been initiated. Discuss the need for a regional response.
	Three Valleys Three Valleys Member Agencies	Plan for response actions	Develop scope, schedule, and budget for implementation of response actions.
	Three Valleys Three Valleys Member Agencies	Approval and implementation of response actions	By Three Valleys Board and member agency Boards as needed.
	Three Valleys Three Valleys Member Agencies Drought Task Force	Communicate response actions	Communicate with customers as to what will be required and how to achieve the required results.
Coordinate Mitigation Actions	Three Valleys Three Valleys Member Agencies	Ongoing evaluation and prioritization of mitigation actions	Continuation of regional planning efforts.

DCP Element	Roles	Responsibilities	Procedures
	Three Valleys Three Valleys Member Agencies	Identify opportunities for funding and potential cost-sharing	Pursue funding opportunities, initiate agreements for cost-sharing.
	Three Valleys Three Valleys Member Agencies	Coordination of mitigation actions	As needed, initiate design, environmental documentation, permitting, and construction.
Update DCP	Three Valleys	DCP evaluation	Conduct a post-drought evaluation.
	Three Valleys Three Valleys Member Agencies	DCP update(s)	Comprehensive review of DCP and updates to the framework as needed.

8 References

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9 Appendices

9.1 Appendix A

Adoption Resolution

9.2 Appendix B

Detailed Projected Changes in Rainfall, Outdoor Demand, San Gabriel River Flow Under All Scenarios

Table B1: Projected Changes in Rainfall Under Drier with Extreme Warming Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	100.8%	99.9%	100.6%	101.6%	97.4%	98.9%	100.1%	102.5%	100.1%	97.0%	97.8%	99.7%
Normal	YR2030	101.6%	99.7%	101.1%	103.1%	94.8%	97.9%	100.3%	105.0%	100.3%	94.1%	95.6%	99.4%
Normal	YR2035	97.9%	101.2%	98.2%	97.1%	90.2%	96.3%	99.9%	102.2%	103.8%	90.8%	88.1%	107.8%
Normal	YR2040	94.2%	102.7%	95.3%	91.0%	85.5%	94.7%	99.5%	99.3%	107.2%	87.5%	80.6%	116.2%
Normal	YR2045	90.5%	104.2%	92.4%	84.9%	80.9%	93.2%	99.2%	96.5%	110.7%	84.2%	73.1%	124.5%
Dry_1Yr	YR2025	101.1%	99.1%	101.8%	103.8%	98.3%	100.0%	100.0%	101.3%	100.0%	97.4%	96.7%	98.9%
Dry_1Yr	YR2030	102.2%	98.2%	103.6%	107.6%	96.6%	100.0%	100.0%	102.7%	100.0%	94.8%	93.3%	97.9%
Dry_1Yr	YR2035	100.2%	102.5%	100.2%	104.4%	95.5%	98.9%	100.0%	90.7%	100.0%	92.4%	84.0%	97.5%
Dry_1Yr	YR2040	98.1%	106.8%	96.8%	101.2%	94.4%	97.8%	100.0%	78.6%	100.0%	90.0%	74.7%	97.1%
Dry_1Yr	YR2045	96.1%	111.1%	93.4%	97.9%	93.3%	96.6%	100.0%	66.6%	100.0%	87.6%	65.3%	96.7%
Dry_5Yr	YR2025	101.1%	100.0%	100.6%	102.3%	97.0%	99.9%	99.4%	104.7%	100.3%	98.6%	98.1%	101.3%
Dry_5Yr	YR2030	102.2%	100.0%	101.1%	104.5%	94.1%	99.7%	98.9%	109.4%	100.6%	97.2%	96.3%	102.7%
Dry_5Yr	YR2035	97.2%	98.6%	97.8%	98.7%	91.2%	99.0%	98.3%	105.5%	105.2%	94.7%	89.7%	129.2%
Dry_5Yr	YR2040	92.2%	97.3%	94.5%	92.8%	88.4%	98.2%	97.8%	101.6%	109.9%	92.2%	83.1%	155.6%
Dry_5Yr	YR2045	87.3%	95.9%	91.3%	86.9%	85.5%	97.4%	97.3%	97.6%	114.6%	89.6%	76.6%	182.1%
Wet_1Yr	YR2025	102.3%	99.3%	102.2%	99.9%	96.9%	97.2%	99.7%	100.0%	100.0%	100.0%	95.7%	100.0%
Wet_1Yr	YR2030	104.5%	98.5%	104.4%	99.7%	93.8%	94.4%	99.4%	100.0%	100.0%	100.0%	91.4%	100.0%
Wet_1Yr	YR2035	98.5%	99.4%	98.0%	92.5%	85.9%	85.1%	99.8%	100.0%	100.0%	100.0%	82.2%	100.0%
Wet_1Yr	YR2040	92.4%	100.3%	91.6%	85.4%	78.1%	75.7%	100.2%	100.0%	100.0%	100.0%	73.0%	100.0%
Wet_1Yr	YR2045	86.3%	101.2%	85.3%	78.2%	70.3%	66.3%	100.6%	100.0%	100.0%	100.0%	63.9%	100.0%
Wet_5Yr	YR2025	101.2%	99.4%	99.9%	101.3%	98.5%	97.2%	100.6%	100.1%	99.4%	98.8%	97.2%	98.9%
Wet_5Yr	YR2030	102.4%	98.9%	99.7%	102.7%	96.9%	94.4%	101.1%	100.3%	98.9%	97.6%	94.4%	97.9%
Wet_5Yr	YR2035	100.4%	100.4%	98.3%	96.3%	94.0%	89.9%	100.9%	100.2%	102.2%	96.3%	85.8%	100.8%
Wet_5Yr	YR2040	98.4%	101.9%	96.9%	89.8%	91.0%	85.4%	100.6%	100.0%	105.5%	94.9%	77.1%	103.7%
Wet_5Yr	YR2045	96.4%	103.5%	95.6%	83.4%	88.0%	80.8%	100.4%	99.9%	108.9%	93.6%	68.4%	106.6%

Table B2: Projected Changes in Rainfall Under Median Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	100.8%	99.9%	100.6%	101.6%	97.4%	98.9%	100.1%	102.5%	100.1%	97.0%	97.8%	99.7%
Normal	YR2030	101.6%	99.7%	101.1%	103.1%	94.8%	97.9%	100.3%	105.0%	100.3%	94.1%	95.6%	99.4%
Normal	YR2035	102.4%	100.0%	100.6%	99.8%	92.9%	96.6%	101.6%	104.7%	102.1%	92.4%	92.8%	98.5%
Normal	YR2040	103.1%	100.2%	100.1%	96.5%	90.9%	95.3%	103.0%	104.3%	104.0%	90.7%	90.0%	97.6%
Normal	YR2045	103.8%	100.5%	99.7%	93.1%	88.9%	93.9%	104.4%	104.0%	105.9%	88.9%	87.2%	96.8%
Dry_1Yr	YR2025	101.1%	99.1%	101.8%	103.8%	98.3%	100.0%	100.0%	101.3%	100.0%	97.4%	96.7%	98.9%
Dry_1Yr	YR2030	102.2%	98.2%	103.6%	107.6%	96.6%	100.0%	100.0%	102.7%	100.0%	94.8%	93.3%	97.9%
Dry_1Yr	YR2035	103.5%	97.6%	103.4%	105.2%	97.1%	96.4%	100.0%	100.3%	100.0%	93.7%	89.2%	96.6%
Dry_1Yr	YR2040	104.8%	96.9%	103.2%	102.8%	97.7%	92.7%	100.0%	98.0%	100.0%	92.6%	85.2%	95.3%
Dry_1Yr	YR2045	106.1%	96.3%	103.0%	100.3%	98.2%	89.1%	100.0%	95.7%	100.0%	91.5%	81.1%	93.9%
Dry_5Yr	YR2025	101.1%	100.0%	100.6%	102.3%	97.0%	99.9%	99.4%	104.7%	100.3%	98.6%	98.1%	101.3%
Dry_5Yr	YR2030	102.2%	100.0%	101.1%	104.5%	94.1%	99.7%	98.9%	109.4%	100.6%	97.2%	96.3%	102.7%
Dry_5Yr	YR2035	103.8%	100.1%	100.7%	100.0%	92.5%	98.2%	100.4%	110.2%	102.8%	96.2%	92.4%	100.5%
Dry_5Yr	YR2040	105.5%	100.2%	100.4%	95.5%	90.9%	96.7%	101.9%	110.9%	105.0%	95.1%	88.6%	98.2%
Dry_5Yr	YR2045	107.1%	100.4%	100.0%	90.9%	89.4%	95.2%	103.5%	111.7%	107.2%	94.0%	84.8%	96.0%
Wet_1Yr	YR2025	102.3%	99.3%	102.2%	99.9%	96.9%	97.2%	99.7%	100.0%	100.0%	100.0%	95.7%	100.0%
Wet_1Yr	YR2030	104.5%	98.5%	104.4%	99.7%	93.8%	94.4%	99.4%	100.0%	100.0%	100.0%	91.4%	100.0%
Wet_1Yr	YR2035	104.3%	98.0%	103.0%	98.6%	89.7%	95.6%	101.8%	100.0%	100.0%	100.0%	87.5%	100.0%
Wet_1Yr	YR2040	104.1%	97.5%	101.7%	97.4%	85.6%	96.7%	104.2%	100.0%	100.0%	100.0%	83.7%	100.0%
Wet_1Yr	YR2045	103.9%	97.0%	100.3%	96.3%	81.6%	97.9%	106.6%	100.0%	100.0%	100.0%	79.9%	100.0%
Wet_5Yr	YR2025	101.2%	99.4%	99.9%	101.3%	98.5%	97.2%	100.6%	100.1%	99.4%	98.8%	97.2%	98.9%
Wet_5Yr	YR2030	102.4%	98.9%	99.7%	102.7%	96.9%	94.4%	101.1%	100.3%	98.9%	97.6%	94.4%	97.9%
Wet_5Yr	YR2035	103.0%	98.6%	99.6%	99.9%	95.6%	95.0%	102.7%	100.7%	100.6%	96.4%	91.6%	97.6%
Wet_5Yr	YR2040	103.6%	98.3%	99.5%	97.1%	94.2%	95.6%	104.3%	101.0%	102.4%	95.2%	88.8%	97.4%
Wet_5Yr	YR2045	104.2%	98.1%	99.3%	94.3%	92.9%	96.2%	105.9%	101.4%	104.2%	94.0%	85.9%	97.1%

Table B3: Projected Changes in Rainfall Under Wetter with Moderate Warming Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	100.8%	99.9%	100.6%	101.6%	97.4%	98.9%	100.1%	102.5%	100.1%	97.0%	97.8%	99.7%
Normal	YR2030	101.6%	99.7%	101.1%	103.1%	94.8%	97.9%	100.3%	105.0%	100.3%	94.1%	95.6%	99.4%
Normal	YR2035	102.0%	107.6%	108.9%	96.9%	93.4%	95.8%	100.9%	101.9%	119.6%	88.8%	95.3%	97.6%
Normal	YR2040	102.4%	115.6%	116.7%	90.7%	92.0%	93.7%	101.5%	98.9%	139.0%	83.5%	95.0%	95.9%
Normal	YR2045	102.7%	123.5%	124.4%	84.5%	90.6%	91.6%	102.1%	95.8%	158.4%	78.2%	94.7%	94.1%
Dry_1Yr	YR2025	101.1%	99.1%	101.8%	103.8%	98.3%	100.0%	100.0%	101.3%	100.0%	97.4%	96.7%	98.9%
Dry_1Yr	YR2030	102.2%	98.2%	103.6%	107.6%	96.6%	100.0%	100.0%	102.7%	100.0%	94.8%	93.3%	97.9%
Dry_1Yr	YR2035	106.5%	104.0%	110.5%	104.0%	92.8%	97.5%	100.0%	92.2%	100.0%	94.3%	93.6%	93.6%
Dry_1Yr	YR2040	110.9%	109.7%	117.3%	100.3%	89.0%	95.0%	100.0%	81.7%	100.0%	93.7%	93.9%	89.2%
Dry_1Yr	YR2045	115.3%	115.4%	124.1%	96.7%	85.2%	92.5%	100.0%	71.2%	100.0%	93.1%	94.2%	84.9%
Dry_5Yr	YR2025	101.1%	100.0%	100.6%	102.3%	97.0%	99.9%	99.4%	104.7%	100.3%	98.6%	98.1%	101.3%
Dry_5Yr	YR2030	102.2%	100.0%	101.1%	104.5%	94.1%	99.7%	98.9%	109.4%	100.6%	97.2%	96.3%	102.7%
Dry_5Yr	YR2035	105.2%	106.0%	109.1%	96.6%	94.0%	98.5%	100.2%	105.5%	122.3%	92.4%	95.8%	95.8%
Dry_5Yr	YR2040	108.3%	112.0%	117.2%	88.6%	93.8%	97.2%	101.7%	101.6%	143.9%	87.6%	95.4%	88.9%
Dry_5Yr	YR2045	111.4%	118.0%	125.2%	80.6%	93.7%	95.9%	103.1%	97.6%	165.6%	82.8%	95.0%	82.0%
Wet_1Yr	YR2025	102.3%	99.3%	102.2%	99.9%	96.9%	97.2%	99.7%	100.0%	100.0%	100.0%	95.7%	100.0%
Wet_1Yr	YR2030	104.5%	98.5%	104.4%	99.7%	93.8%	94.4%	99.4%	100.0%	100.0%	100.0%	91.4%	100.0%
Wet_1Yr	YR2035	104.0%	101.9%	118.8%	94.4%	91.1%	96.2%	102.0%	100.0%	100.0%	100.0%	93.6%	100.0%
Wet_1Yr	YR2040	103.4%	105.3%	133.3%	89.1%	88.5%	97.9%	104.5%	100.0%	100.0%	100.0%	95.9%	100.0%
Wet_1Yr	YR2045	102.9%	108.6%	147.8%	83.8%	85.9%	99.6%	107.0%	100.0%	100.0%	100.0%	98.2%	100.0%
Wet_5Yr	YR2025	101.2%	99.4%	99.9%	101.3%	98.5%	97.2%	100.6%	100.1%	99.4%	98.8%	97.2%	98.9%
Wet_5Yr	YR2030	102.4%	98.9%	99.7%	102.7%	96.9%	94.4%	101.1%	100.3%	98.9%	97.6%	94.4%	97.9%
Wet_5Yr	YR2035	104.8%	106.2%	107.8%	97.8%	95.2%	93.5%	101.6%	100.2%	120.6%	95.3%	94.9%	98.2%
Wet_5Yr	YR2040	107.1%	113.5%	115.8%	92.9%	93.4%	92.5%	102.1%	100.0%	142.3%	93.1%	95.3%	98.4%
Wet_5Yr	YR2045	109.5%	120.8%	123.9%	88.0%	91.7%	91.5%	102.6%	99.9%	164.1%	90.8%	95.8%	98.7%

Table B4: Projected Changes in San Gabriel River Flow Under Drier with Extreme Warming Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	100.3%	99.9%	99.3%	98.8%	98.5%	99.4%	99.9%	100.1%	100.0%	99.6%	98.6%	99.3%
Normal	YR2030	100.6%	99.7%	98.5%	97.6%	96.9%	98.9%	99.7%	100.3%	100.0%	99.1%	97.2%	98.5%
Normal	YR2035	98.7%	96.3%	94.6%	92.8%	93.7%	97.3%	98.8%	99.5%	101.2%	100.4%	94.2%	99.7%
Normal	YR2040	96.9%	92.9%	90.7%	88.0%	90.5%	95.7%	97.9%	98.8%	102.5%	101.7%	91.1%	100.9%
Normal	YR2045	95.0%	89.5%	86.9%	83.3%	87.2%	94.2%	97.1%	98.0%	103.8%	103.0%	88.0%	102.0%
Dry_1Yr	YR2025	99.3%	98.6%	97.6%	99.4%	99.6%	99.9%	100.0%	100.0%	99.9%	99.3%	99.3%	100.0%
Dry_1Yr	YR2030	98.5%	97.2%	95.2%	98.9%	99.1%	99.7%	100.0%	100.0%	99.7%	98.5%	98.5%	100.0%
Dry_1Yr	YR2035	90.7%	89.4%	87.6%	93.7%	96.4%	98.2%	99.1%	99.6%	100.3%	97.2%	96.7%	100.6%
Dry_1Yr	YR2040	83.0%	81.5%	80.1%	88.5%	93.8%	96.7%	98.3%	99.2%	101.0%	95.9%	94.9%	101.2%
Dry_1Yr	YR2045	75.2%	73.6%	72.5%	83.4%	91.1%	95.2%	97.4%	98.9%	101.6%	94.6%	93.1%	101.9%
Dry_5Yr	YR2025	99.9%	98.6%	98.1%	98.0%	98.0%	99.6%	99.9%	100.0%	100.0%	99.4%	98.6%	98.6%
Dry_5Yr	YR2030	99.7%	97.2%	96.3%	95.9%	95.9%	99.1%	99.7%	100.0%	100.0%	98.9%	97.2%	97.2%
Dry_5Yr	YR2035	96.7%	93.2%	93.2%	92.2%	93.6%	98.1%	99.1%	99.5%	100.0%	97.9%	94.3%	97.7%
Dry_5Yr	YR2040	93.7%	89.2%	90.2%	88.5%	91.2%	97.1%	98.5%	99.0%	100.0%	97.0%	91.4%	98.1%
Dry_5Yr	YR2045	90.6%	85.2%	87.2%	84.7%	88.9%	96.1%	97.8%	98.5%	100.0%	96.1%	88.4%	98.5%
Wet_1Yr	YR2025	99.1%	100.3%	99.1%	99.1%	98.1%	98.3%	99.6%	102.2%	100.4%	98.3%	97.6%	100.0%
Wet_1Yr	YR2030	98.2%	100.6%	98.2%	98.2%	96.3%	96.6%	99.1%	104.4%	100.9%	96.6%	95.2%	100.0%
Wet_1Yr	YR2035	94.9%	96.3%	100.6%	96.9%	92.3%	94.7%	98.2%	99.2%	100.8%	111.2%	90.0%	97.3%
Wet_1Yr	YR2040	91.7%	91.9%	102.9%	95.6%	88.3%	92.8%	97.3%	94.1%	100.8%	125.9%	84.8%	94.5%
Wet_1Yr	YR2045	88.4%	87.6%	105.3%	94.3%	84.4%	90.9%	96.4%	88.9%	100.8%	140.5%	79.7%	91.7%
Wet_5Yr	YR2025	100.6%	100.1%	98.8%	98.1%	98.3%	99.4%	99.9%	100.0%	101.1%	100.0%	99.4%	99.3%
Wet_5Yr	YR2030	101.1%	100.3%	97.6%	96.3%	96.6%	98.9%	99.7%	100.0%	102.2%	100.0%	98.9%	98.5%
Wet_5Yr	YR2035	102.1%	96.7%	95.7%	92.4%	92.8%	97.5%	99.0%	99.5%	107.7%	102.4%	99.5%	104.5%
Wet_5Yr	YR2040	103.1%	93.1%	93.9%	88.6%	89.0%	96.2%	98.2%	99.0%	113.3%	104.7%	100.1%	110.4%
Wet_5Yr	YR2045	104.0%	89.5%	92.0%	84.8%	85.2%	95.0%	97.4%	98.5%	118.8%	107.1%	100.8%	116.4%

Table B5: Projected Changes in San Gabriel River Flow Under Median Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	100.3%	99.9%	99.3%	98.8%	98.5%	99.4%	99.9%	100.1%	100.0%	99.6%	98.6%	99.3%
Normal	YR2030	100.6%	99.7%	98.5%	97.6%	96.9%	98.9%	99.7%	100.3%	100.0%	99.1%	97.2%	98.5%
Normal	YR2035	100.6%	99.8%	97.9%	95.7%	95.6%	98.4%	99.5%	100.0%	101.0%	99.0%	96.3%	97.1%
Normal	YR2040	100.6%	100.0%	97.2%	93.9%	94.2%	98.1%	99.2%	99.8%	102.0%	98.9%	95.4%	95.7%
Normal	YR2045	100.6%	100.1%	96.6%	92.0%	92.9%	97.7%	99.0%	99.5%	103.0%	98.7%	94.4%	94.2%
Dry_1Yr	YR2025	99.3%	98.6%	97.6%	99.4%	99.6%	99.9%	100.0%	100.0%	99.9%	99.3%	99.3%	100.0%
Dry_1Yr	YR2030	98.5%	97.2%	95.2%	98.9%	99.1%	99.7%	100.0%	100.0%	99.7%	98.5%	98.5%	100.0%
Dry_1Yr	YR2035	96.1%	95.1%	92.0%	96.9%	98.4%	99.3%	99.8%	99.9%	100.6%	98.1%	97.6%	99.9%
Dry_1Yr	YR2040	93.6%	93.0%	88.8%	95.0%	97.6%	99.0%	99.5%	99.8%	101.5%	97.7%	96.7%	99.8%
Dry_1Yr	YR2045	91.1%	90.8%	85.5%	93.0%	96.8%	98.6%	99.2%	99.6%	102.4%	97.4%	95.8%	99.6%
Dry_5Yr	YR2025	99.9%	98.6%	98.1%	98.0%	98.0%	99.6%	99.9%	100.0%	100.0%	99.4%	98.6%	98.6%
Dry_5Yr	YR2030	99.7%	97.2%	96.3%	95.9%	95.9%	99.1%	99.7%	100.0%	100.0%	98.9%	97.2%	97.2%
Dry_5Yr	YR2035	99.0%	96.5%	95.3%	94.0%	94.7%	98.6%	99.5%	99.9%	100.0%	98.4%	96.5%	95.8%
Dry_5Yr	YR2040	98.2%	95.6%	94.3%	92.0%	93.4%	98.1%	99.2%	99.8%	100.0%	98.1%	95.6%	94.3%
Dry_5Yr	YR2045	97.4%	94.8%	93.4%	90.1%	92.2%	97.6%	99.0%	99.6%	100.0%	97.7%	94.8%	92.8%
Wet_1Yr	YR2025	99.1%	100.3%	99.1%	99.1%	98.1%	98.3%	99.6%	102.2%	100.4%	98.3%	97.6%	100.0%
Wet_1Yr	YR2030	98.2%	100.6%	98.2%	98.2%	96.3%	96.6%	99.1%	104.4%	100.9%	96.6%	95.2%	100.0%
Wet_1Yr	YR2035	98.3%	100.8%	99.3%	96.8%	93.8%	95.8%	98.7%	102.0%	101.2%	95.2%	94.4%	96.6%
Wet_1Yr	YR2040	98.5%	101.1%	100.3%	95.3%	91.3%	95.0%	98.4%	99.6%	101.6%	93.9%	93.5%	93.2%
Wet_1Yr	YR2045	98.6%	101.3%	101.3%	93.9%	88.9%	94.1%	98.0%	97.3%	101.9%	92.5%	92.7%	89.9%
Wet_5Yr	YR2025	100.6%	100.1%	98.8%	98.1%	98.3%	99.4%	99.9%	100.0%	101.1%	100.0%	99.4%	99.3%
Wet_5Yr	YR2030	101.1%	100.3%	97.6%	96.3%	96.6%	98.9%	99.7%	100.0%	102.2%	100.0%	98.9%	98.5%
Wet_5Yr	YR2035	101.2%	100.9%	97.6%	94.5%	95.1%	98.4%	99.6%	100.0%	106.3%	100.2%	98.3%	97.1%
Wet_5Yr	YR2040	101.4%	101.5%	97.6%	92.7%	93.6%	98.1%	99.5%	100.0%	110.4%	100.5%	97.8%	95.7%
Wet_5Yr	YR2045	101.5%	102.1%	97.6%	90.9%	92.1%	97.7%	99.3%	100.0%	114.6%	100.8%	97.3%	94.2%

Table B6: Projected Changes in San Gabriel River Flow Under Wetter with Moderate Warming Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	100.3%	99.9%	99.3%	98.8%	98.5%	99.4%	99.9%	100.1%	100.0%	99.6%	98.6%	99.3%
Normal	YR2030	100.6%	99.7%	98.5%	97.6%	96.9%	98.9%	99.7%	100.3%	100.0%	99.1%	97.2%	98.5%
Normal	YR2035	102.5%	110.7%	108.5%	100.1%	97.2%	99.2%	100.0%	100.0%	109.1%	101.4%	97.0%	96.6%
Normal	YR2040	104.5%	121.6%	118.5%	102.6%	97.5%	99.6%	100.2%	99.8%	118.3%	103.7%	96.7%	94.6%
Normal	YR2045	106.5%	132.6%	128.5%	105.1%	97.7%	100.0%	100.5%	99.5%	127.4%	106.0%	96.5%	92.7%
Dry_1Yr	YR2025	99.3%	98.6%	97.6%	99.4%	99.6%	99.9%	100.0%	100.0%	99.9%	99.3%	99.3%	100.0%
Dry_1Yr	YR2030	98.5%	97.2%	95.2%	98.9%	99.1%	99.7%	100.0%	100.0%	99.7%	98.5%	98.5%	100.0%
Dry_1Yr	YR2035	93.1%	107.8%	107.5%	108.3%	101.8%	101.3%	100.9%	100.4%	119.5%	103.2%	101.2%	101.8%
Dry_1Yr	YR2040	87.6%	118.4%	119.8%	117.9%	104.5%	103.0%	101.8%	100.8%	139.2%	107.9%	104.0%	103.5%
Dry_1Yr	YR2045	82.2%	128.9%	132.2%	127.4%	107.2%	104.6%	102.6%	101.1%	159.0%	112.5%	106.7%	105.2%
Dry_5Yr	YR2025	99.9%	98.6%	98.1%	98.0%	98.0%	99.6%	99.9%	100.0%	100.0%	99.4%	98.6%	98.6%
Dry_5Yr	YR2030	99.7%	97.2%	96.3%	95.9%	95.9%	99.1%	99.7%	100.0%	100.0%	98.9%	97.2%	97.2%
Dry_5Yr	YR2035	99.0%	102.6%	103.6%	97.1%	96.3%	99.6%	100.2%	100.0%	100.9%	97.9%	96.9%	94.6%
Dry_5Yr	YR2040	98.2%	107.9%	111.0%	98.4%	96.7%	100.1%	100.7%	100.0%	101.8%	97.0%	96.5%	91.9%
Dry_5Yr	YR2045	97.4%	113.3%	118.4%	99.6%	97.1%	100.7%	101.2%	100.0%	102.6%	96.1%	96.0%	89.2%
Wet_1Yr	YR2025	99.1%	100.3%	99.1%	99.1%	98.1%	98.3%	99.6%	102.2%	100.4%	98.3%	97.6%	100.0%
Wet_1Yr	YR2030	98.2%	100.6%	98.2%	98.2%	96.3%	96.6%	99.1%	104.4%	100.9%	96.6%	95.2%	100.0%
Wet_1Yr	YR2035	101.1%	109.9%	102.6%	97.2%	92.3%	94.0%	97.6%	99.2%	114.5%	91.4%	92.1%	93.9%
Wet_1Yr	YR2040	104.0%	119.3%	107.1%	96.1%	88.3%	91.4%	96.1%	94.1%	128.3%	86.3%	89.0%	87.7%
Wet_1Yr	YR2045	106.8%	128.7%	111.5%	95.1%	84.4%	88.9%	94.5%	88.9%	142.0%	81.1%	86.0%	81.6%
Wet_5Yr	YR2025	100.6%	100.1%	98.8%	98.1%	98.3%	99.4%	99.9%	100.0%	101.1%	100.0%	99.4%	99.3%
Wet_5Yr	YR2030	101.1%	100.3%	97.6%	96.3%	96.6%	98.9%	99.7%	100.0%	102.2%	100.0%	98.9%	98.5%
Wet_5Yr	YR2035	101.5%	112.8%	105.1%	98.7%	95.6%	98.6%	99.6%	99.9%	120.7%	99.6%	98.7%	94.2%
Wet_5Yr	YR2040	101.8%	125.4%	112.7%	101.2%	94.7%	98.3%	99.5%	99.8%	139.3%	99.2%	98.6%	90.0%
Wet_5Yr	YR2045	102.2%	137.9%	120.2%	103.6%	93.7%	98.1%	99.3%	99.6%	157.9%	98.9%	98.4%	85.7%

Table B7: Projected Changes in Outdoor Demand Under Drier with Extreme Warming Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	101.0%	100.6%	100.4%	100.6%	100.7%	100.6%	100.4%	100.4%	100.6%	100.7%	101.0%	101.1%
Normal	YR2030	101.9%	101.1%	100.9%	101.1%	101.4%	101.1%	100.9%	100.9%	101.1%	101.4%	101.9%	102.2%
Normal	YR2035	103.9%	103.1%	102.2%	102.9%	103.4%	102.8%	101.2%	101.3%	101.6%	102.5%	104.4%	104.4%
Normal	YR2040	106.0%	105.0%	103.5%	104.8%	105.5%	104.5%	101.6%	101.8%	102.1%	103.6%	106.9%	106.7%
Normal	YR2045	108.0%	106.9%	104.9%	106.6%	107.5%	106.2%	101.9%	102.3%	102.6%	104.6%	109.4%	108.9%
Dry_1Yr	YR2025	100.8%	100.7%	100.4%	100.4%	101.0%	100.7%	100.6%	100.4%	100.4%	100.6%	100.7%	100.8%
Dry_1Yr	YR2030	101.6%	101.4%	100.9%	100.9%	101.9%	101.4%	101.1%	100.9%	100.9%	101.1%	101.4%	101.6%
Dry_1Yr	YR2035	103.3%	102.2%	102.3%	102.2%	103.7%	102.7%	101.5%	102.1%	102.8%	104.3%	105.0%	103.7%
Dry_1Yr	YR2040	105.0%	103.1%	103.8%	103.5%	105.5%	104.0%	101.8%	103.3%	104.8%	107.4%	108.6%	105.7%
Dry_1Yr	YR2045	106.7%	103.9%	105.2%	104.9%	107.3%	105.4%	102.2%	104.5%	106.7%	110.6%	112.2%	107.8%
Dry_5Yr	YR2025	101.0%	100.6%	100.4%	100.4%	100.8%	100.6%	100.4%	100.6%	100.6%	100.7%	101.1%	101.1%
Dry_5Yr	YR2030	101.9%	101.1%	100.9%	100.9%	101.6%	101.1%	100.9%	101.1%	101.1%	101.4%	102.2%	102.2%
Dry_5Yr	YR2035	103.9%	103.2%	102.3%	102.4%	103.7%	102.7%	101.1%	101.7%	101.6%	102.3%	104.1%	104.1%
Dry_5Yr	YR2040	106.0%	105.2%	103.8%	104.0%	105.7%	104.3%	101.3%	102.3%	102.1%	103.3%	105.9%	105.9%
Dry_5Yr	YR2045	108.0%	107.3%	105.2%	105.6%	107.8%	105.9%	101.6%	102.9%	102.6%	104.3%	107.8%	107.8%
Wet_1Yr	YR2025	101.5%	100.6%	100.3%	100.6%	100.7%	100.7%	100.4%	100.6%	100.4%	100.6%	100.7%	100.8%
Wet_1Yr	YR2030	102.9%	101.1%	100.6%	101.1%	101.4%	101.4%	100.9%	101.1%	100.9%	101.1%	101.4%	101.6%
Wet_1Yr	YR2035	105.5%	103.8%	102.8%	104.8%	104.5%	104.2%	101.5%	101.6%	101.5%	102.6%	103.2%	102.6%
Wet_1Yr	YR2040	108.0%	106.5%	105.0%	108.4%	107.7%	106.9%	102.1%	102.1%	102.1%	104.0%	105.0%	103.6%
Wet_1Yr	YR2045	110.6%	109.1%	107.2%	112.0%	110.8%	109.7%	102.7%	102.6%	102.7%	105.5%	106.8%	104.5%
Wet_5Yr	YR2025	101.1%	100.6%	100.4%	100.6%	100.8%	100.7%	100.6%	100.6%	100.6%	100.7%	101.0%	101.1%
Wet_5Yr	YR2030	102.2%	101.1%	100.9%	101.1%	101.6%	101.4%	101.1%	101.1%	101.1%	101.4%	101.9%	102.2%
Wet_5Yr	YR2035	104.3%	103.1%	102.1%	102.9%	103.4%	103.2%	101.5%	101.6%	101.6%	102.7%	104.0%	104.5%
Wet_5Yr	YR2040	106.4%	105.0%	103.3%	104.8%	105.2%	105.0%	101.8%	102.1%	102.1%	104.0%	106.2%	106.9%
Wet_5Yr	YR2045	108.5%	106.9%	104.5%	106.6%	107.0%	106.8%	102.2%	102.6%	102.6%	105.4%	108.3%	109.3%

Table B8: Projected Changes in Outdoor Demand Under Median Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	101.0%	100.6%	100.4%	100.6%	100.7%	100.6%	100.4%	100.4%	100.6%	100.7%	101.0%	101.1%
Normal	YR2030	101.9%	101.1%	100.9%	101.1%	101.4%	101.1%	100.9%	100.9%	101.1%	101.4%	101.9%	102.2%
Normal	YR2035	102.7%	101.8%	101.6%	101.8%	102.2%	101.7%	101.2%	101.3%	101.5%	102.0%	102.9%	103.3%
Normal	YR2040	103.6%	102.6%	102.3%	102.6%	103.1%	102.3%	101.6%	101.8%	101.8%	102.6%	103.8%	104.5%
Normal	YR2045	104.4%	103.3%	103.0%	103.3%	103.9%	102.9%	101.9%	102.3%	102.2%	103.2%	104.8%	105.7%
Dry_1Yr	YR2025	100.8%	100.7%	100.4%	100.4%	101.0%	100.7%	100.6%	100.4%	100.4%	100.6%	100.7%	100.8%
Dry_1Yr	YR2030	101.6%	101.4%	100.9%	100.9%	101.9%	101.4%	101.1%	100.9%	100.9%	101.1%	101.4%	101.6%
Dry_1Yr	YR2035	102.2%	101.7%	101.5%	101.6%	102.7%	101.9%	101.4%	101.5%	101.6%	102.0%	102.3%	102.7%
Dry_1Yr	YR2040	102.8%	102.1%	102.1%	102.3%	103.6%	102.3%	101.6%	102.1%	102.3%	102.8%	103.3%	103.8%
Dry_1Yr	YR2045	103.4%	102.5%	102.7%	103.0%	104.4%	102.8%	101.8%	102.7%	103.0%	103.7%	104.3%	104.9%
Dry_5Yr	YR2025	101.0%	100.6%	100.4%	100.4%	100.8%	100.6%	100.4%	100.6%	100.6%	100.7%	101.1%	101.1%
Dry_5Yr	YR2030	101.9%	101.1%	100.9%	100.9%	101.6%	101.1%	100.9%	101.1%	101.1%	101.4%	102.2%	102.2%
Dry_5Yr	YR2035	102.5%	101.7%	101.5%	101.6%	102.2%	101.7%	101.3%	101.6%	101.5%	102.0%	103.0%	103.3%
Dry_5Yr	YR2040	103.1%	102.3%	102.1%	102.3%	102.8%	102.3%	101.8%	102.1%	101.8%	102.6%	103.8%	104.5%
Dry_5Yr	YR2045	103.7%	102.9%	102.7%	103.0%	103.4%	102.9%	102.3%	102.6%	102.2%	103.2%	104.6%	105.7%
Wet_1Yr	YR2025	101.5%	100.6%	100.3%	100.6%	100.7%	100.7%	100.4%	100.6%	100.4%	100.6%	100.7%	100.8%
Wet_1Yr	YR2030	102.9%	101.1%	100.6%	101.1%	101.4%	101.4%	100.9%	101.1%	100.9%	101.1%	101.4%	101.6%
Wet_1Yr	YR2035	104.1%	102.2%	101.3%	102.0%	102.5%	102.1%	101.2%	101.5%	101.3%	101.8%	102.1%	102.4%
Wet_1Yr	YR2040	105.2%	103.3%	102.0%	102.8%	103.6%	102.8%	101.6%	101.8%	101.8%	102.6%	102.8%	103.1%
Wet_1Yr	YR2045	106.4%	104.4%	102.8%	103.7%	104.6%	103.6%	101.9%	102.2%	102.3%	103.3%	103.6%	103.8%
Wet_5Yr	YR2025	101.1%	100.6%	100.4%	100.6%	100.8%	100.7%	100.6%	100.6%	100.6%	100.7%	101.0%	101.1%
Wet_5Yr	YR2030	102.2%	101.1%	100.9%	101.1%	101.6%	101.4%	101.1%	101.1%	101.1%	101.4%	101.9%	102.2%
Wet_5Yr	YR2035	103.1%	101.8%	101.5%	101.8%	102.4%	102.0%	101.5%	101.5%	101.5%	102.0%	102.6%	103.2%
Wet_5Yr	YR2040	104.1%	102.6%	102.1%	102.6%	103.1%	102.6%	101.8%	101.8%	101.8%	102.6%	103.3%	104.3%
Wet_5Yr	YR2045	105.0%	103.3%	102.7%	103.3%	103.8%	103.2%	102.2%	102.2%	102.2%	103.2%	104.0%	105.4%

Table B9: Projected Changes in Outdoor Demand Under Wetter with Moderate Warming Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	101.0%	100.6%	100.4%	100.6%	100.7%	100.6%	100.4%	100.4%	100.6%	100.7%	101.0%	101.1%
Normal	YR2030	101.9%	101.1%	100.9%	101.1%	101.4%	101.1%	100.9%	100.9%	101.1%	101.4%	101.9%	102.2%
Normal	YR2035	103.0%	100.9%	100.5%	100.6%	101.3%	101.5%	101.1%	101.0%	101.0%	101.1%	101.9%	102.9%
Normal	YR2040	104.0%	100.6%	100.1%	100.1%	101.1%	101.8%	101.3%	101.1%	100.9%	100.9%	101.9%	103.6%
Normal	YR2045	105.1%	100.4%	99.7%	99.7%	101.0%	102.2%	101.6%	101.2%	100.7%	100.7%	101.9%	104.3%
Dry_1Yr	YR2025	100.8%	100.7%	100.4%	100.4%	101.0%	100.7%	100.6%	100.4%	100.4%	100.6%	100.7%	100.8%
Dry_1Yr	YR2030	101.6%	101.4%	100.9%	100.9%	101.9%	101.4%	101.1%	100.9%	100.9%	101.1%	101.4%	101.6%
Dry_1Yr	YR2035	101.8%	100.7%	100.2%	100.2%	101.8%	102.0%	101.6%	101.7%	102.6%	102.9%	103.2%	102.8%
Dry_1Yr	YR2040	101.9%	99.9%	99.6%	99.6%	101.7%	102.6%	102.1%	102.6%	104.3%	104.8%	105.0%	104.0%
Dry_1Yr	YR2045	102.0%	99.2%	99.0%	99.0%	101.5%	103.2%	102.6%	103.4%	106.0%	106.6%	106.8%	105.2%
Dry_5Yr	YR2025	101.0%	100.6%	100.4%	100.4%	100.8%	100.6%	100.4%	100.6%	100.6%	100.7%	101.1%	101.1%
Dry_5Yr	YR2030	101.9%	101.1%	100.9%	100.9%	101.6%	101.1%	100.9%	101.1%	101.1%	101.4%	102.2%	102.2%
Dry_5Yr	YR2035	102.9%	100.7%	100.5%	100.6%	101.3%	101.5%	101.0%	101.2%	101.0%	101.0%	101.8%	102.9%
Dry_5Yr	YR2040	103.8%	100.4%	100.1%	100.3%	100.9%	101.8%	101.1%	101.4%	100.9%	100.7%	101.5%	103.6%
Dry_5Yr	YR2045	104.8%	100.0%	99.7%	100.1%	100.6%	102.2%	101.2%	101.5%	100.7%	100.3%	101.1%	104.3%
Wet_1Yr	YR2025	101.5%	100.6%	100.3%	100.6%	100.7%	100.7%	100.4%	100.6%	100.4%	100.6%	100.7%	100.8%
Wet_1Yr	YR2030	102.9%	101.1%	100.6%	101.1%	101.4%	101.4%	100.9%	101.1%	100.9%	101.1%	101.4%	101.6%
Wet_1Yr	YR2035	103.8%	100.6%	100.2%	100.5%	101.9%	101.7%	101.2%	101.1%	101.1%	101.1%	101.5%	102.1%
Wet_1Yr	YR2040	104.8%	100.1%	99.8%	99.9%	102.3%	102.1%	101.6%	101.1%	101.3%	101.1%	101.6%	102.6%
Wet_1Yr	YR2045	105.7%	99.7%	99.5%	99.3%	102.8%	102.5%	101.9%	101.1%	101.6%	101.1%	101.7%	103.1%
Wet_5Yr	YR2025	101.1%	100.6%	100.4%	100.6%	100.8%	100.7%	100.6%	100.6%	100.6%	100.7%	101.0%	101.1%
Wet_5Yr	YR2030	102.2%	101.1%	100.9%	101.1%	101.6%	101.4%	101.1%	101.1%	101.1%	101.4%	101.9%	102.2%
Wet_5Yr	YR2035	102.9%	100.7%	100.3%	100.7%	101.6%	101.6%	101.2%	101.0%	101.0%	100.8%	101.2%	102.6%
Wet_5Yr	YR2040	103.6%	100.4%	99.9%	100.4%	101.6%	101.9%	101.4%	100.9%	100.9%	100.2%	100.5%	103.1%
Wet_5Yr	YR2045	104.3%	100.0%	99.4%	100.0%	101.6%	102.1%	101.5%	100.7%	100.7%	99.6%	99.8%	103.6%

9.3 Appendix C

Table C-1: Identification of Potential Mitigation Actions and Their Key Identifiers

Project Number	Agency	Type of Mitigation Action	Project/Program Name	Location	Stage	Regional Partners	Timing/ Schedule	Estimated Capital Costs ($)	Potential Benefits									Review		
									Increase Local Supply			Operational Flexibility			Water Supply Reliability					
									New Extraction Wells	Enhanced Well Efficiency	Groundwater Treatment Projects	System Interties	Upgrade Aging Infrastructure	Conservation and Efficiency	Projects that increase overall supply	Projects that reduce drought dependency	Projects that reduce overall dependency	Regional Water Supply Reliability and Resiliency	Regional Benefits	Timing/ Schedule
1	Cal Poly Pomona	Groundwater Treatment Projects	VOC Treatment at Well 2	34°03'05"N 117°48'32"W	Conceptual		≤ 1 yr	$1,300,000			X				X			Meets 2 of the regional benefits	Single agency action	Short-term action
2	Cal Poly Pomona	Groundwater Treatment Projects	Install Additional RO Train at ROWTP	34°03'27"N 117°49'04"W	Conceptual		2-4 yrs	$750,000			X				X			Meets 2 of the regional benefits	Single agency action	Mid-term action
3	Cal Poly Pomona	Enhanced Well Efficiency	Repurpose Farm Well #4 water	34°02'33"N 117°48'48"W	Conceptual		1-2 yrs	≤ $2M		X					X			Meets 2 of the regional benefits	Single agency action	Short-term action
4	Cal Poly Pomona	New Extraction Wells	Future wells as injection (recycled water) and extraction		Conceptual	Three Valleys	1-2 yrs	$2-5M	X						X			Meets 2 of the regional benefits	Regional action	Short-term action
5	Rowland Water District & Walnut Valley Water District (through Puente Basin Water Agency)	New Extraction Wells	Six Basins Groundwater Project		Construction	RWD, WVWD	Late 2024	≥ $10M	X						X		X	Meets 2 of the regional benefits	Action involves multiple adjacent agencies	Short-term action
6	Rowland Water District & Walnut Valley Water District (through Puente Basin Water Agency)	System Interties	Covina Irrigating Company Interconnection		Conceptual	RWD, WVWD	2-4 yrs	$4,122,000				X			X		X	Meets 2 of the regional benefits	Action involves multiple adjacent agencies	Mid-term action
7	Walnut Valley Water District w/ Pomona (through Spadra Basin GSA)	New Extraction Wells	Spadra Basin Optimization Scenario 3		Conceptual	WVWD, Pomona	≥ 4 yrs	$160,527,246	X						X		X	Meets 2 of the regional benefits	Action involves multiple adjacent agencies	Long-term action
8	City of Covina Water Department	Upgrade Aging Infrastructure	Grand Avenue Water Main Replacement Project		Unknown		2027	$8,500,000					X					Meets 1 of the regional benefits	Single agency action	Mid-term action

Project Number	Agency	Type of Mitigation Action	Project/Program Name	Location	Stage	Regional Partners	Timing/ Schedule	Estimated Capital Costs ($)	Potential Benefits									Review		
									Increase Local Supply			Operational Flexibility			Water Supply Reliability					
									New Extraction Wells	Enhanced Well Efficiency	Groundwater Treatment Projects	System Interties	Upgrade Aging Infrastructure	Conservation and Efficiency	Projects that increase overall supply	Projects that reduce drought dependency	Projects that reduce overall dependency	Regional Water Supply Reliability and Resiliency	Regional Benefits	Timing/ Schedule
9	City of Covina Water Department	Upgrade Aging Infrastructure	Pipeline Replacement		Unknown		≥ 4 yrs	$2-5M					X		X	X		Meets 2 of the regional benefits	Single agency action	Long-term action
10	City of Covina Water Department	Upgrade Aging Infrastructure	Hurst Tract Water Main Replacement Project	From Cypress Avenue to Covina Boulevard and Grand Avenue to Brightview Drive	Unknown		FY25	$1,500,000					X					Meets 1 of the regional benefits	Single agency action	Short-term action
11	City of Covina Water Department	Upgrade Aging Infrastructure	Edna Place Pipe Improvements Project	Grand Avenue to Barranca Avenue	Unknown		FY28	$6,000,000					X					Meets 1 of the regional benefits	Single agency action	Mid-term action
12	City of Covina Water Department	Upgrade Aging Infrastructure	Navilla and Forestdale Main Replacement Project	From Puente Street to Rowland Avenue and From Grand to Barranca Avenue	Unknown		FY26	$5,000,000					X					Meets 1 of the regional benefits	Single agency action	Short-term action
13	City of Covina Water Department	Upgrade Aging Infrastructure	Azusa Avenue Main Installation Project	From Badillo Street to Edna Place	Unknown		FY27	$2,500,000					X					Meets 1 of the regional benefits	Single agency action	Mid-term action
14	City of Covina Water Department	Upgrade Aging Infrastructure	Fourth Avenue Water Main Replacement Project & Cypress Avenue Water Main Replacement Project	From Badillo Street to San Bernardino Road From Citrus Avenue to Barranca Avenue	Unknown		FY25	$2-5M					X					Meets 1 of the regional benefits	Single agency action	Short-term action

Project Number	Agency	Type of Mitigation Action	Project/Program Name	Location	Stage	Regional Partners	Timing/ Schedule	Estimated Capital Costs ($)	Potential Benefits									Review		
									Increase Local Supply			Operational Flexibility			Water Supply Reliability					
									New Extraction Wells	Enhanced Well Efficiency	Groundwater Treatment Projects	System Interties	Upgrade Aging Infrastructure	Conservation and Efficiency	Projects that increase overall supply	Projects that reduce drought dependency	Projects that reduce overall dependency	Regional Water Supply Reliability and Resiliency	Regional Benefits	Timing/ Schedule
15	City of Covina Water Department	Upgrade Aging Infrastructure	Cypress Reservoir Water Booster Improvement Project	1051 E. Cypress Street	Unknown		FY24	$850,000					X					Meets 1 of the regional benefits	Single agency action	Short-term action
16	City of Covina Water Department	Upgrade Aging Infrastructure	Rancho La Merced Water Improvement Project (Design Only)	Rancho La Merced	Unknown		FY24	$100,000					X					Meets 1 of the regional benefits	Single agency action	Short-term action
17	City of Covina Water Department	Conservation and Efficiency	Water Master Plan & Rate Update City-Wide	City-Wide	Unknown		FY24	$250,000						X				Meets 1 of the regional benefits	Single agency action	Short-term action
18	City of Covina Water Department	Upgrade Aging Infrastructure	San Joaquin Road and Rambling Road Main Replacement	From Covina Hills to Navilla Place	Unknown		FY27	$4,000,000					X					Meets 1 of the regional benefits	Single agency action	Mid-term action
19	City of Glendora	Enhanced Well Efficiency	Well #7 (Vosburg) Replacement	201 South Virginia Ave. Azua, CA	Feasibility		≥ 4 yrs	$2,000,000		X								Meets 1 of the regional benefits	Single agency action	Long-term action
20	City of Glendora	Upgrade Aging Infrastructure	North Glendora Tank Replacement	Glendora, CA	Feasibility		1-2 yrs	$1,180,000					X					Meets 1 of the regional benefits	Single agency action	Short-term action
21	City of Glendora	New Extraction Wells	Well #14 Replacement	Glendora, CA	Feasibility		≥ 4 yrs	$600,000	X						X	X		Meets 2 of the regional benefits	Single agency action	Long-term action
22	City of Glendora	Conservation and Efficiency	Turf Removal for Large Commercial and Municipal Properties	Glendora, CA	Design		≤ 1 yr	$550,000.00						X	X	X		Meets 2 of the regional benefits	Single agency action	Short-term action

Project Number	Agency	Type of Mitigation Action	Project/Program Name	Location	Stage	Regional Partners	Timing/ Schedule	Estimated Capital Costs ($)	Potential Benefits									Review		
									Increase Local Supply			Operational Flexibility			Water Supply Reliability					
									New Extraction Wells	Enhanced Well Efficiency	Groundwater Treatment Projects	System Interties	Upgrade Aging Infrastructure	Conservation and Efficiency	Projects that increase overall supply	Projects that reduce drought dependency	Projects that reduce overall dependency	Regional Water Supply Reliability and Resiliency	Regional Benefits	Timing/ Schedule
23	City of Glendora	Enhanced Well Efficiency	Redrilling Wells 10 and 11 for Exploration	Well-10 Location: GPS-340839.06N / 1175102.54W - Elev. 918' Cable Tool-1912 to 525' Well-11 Location: GPS-340829.20N / 1175113.46W - Elev.882' Cable Tool-1913 to 496'	Unknown		≥ 4 yrs	$2-5M		X								Meets 1 of the regional benefits	Single agency action	Long-term action
24	City of Glendora	System Interties	Pipeline Intertie Replacements		Unknown		2-4 yrs	≤ $2M				X						Meets 1 of the regional benefits	Single agency action	Mid-term action
25	City of Glendora	Enhanced Well Efficiency	Well 2 Replacement		Unknown		1-2 yrs	$2-5M		X								Meets 1 of the regional benefits	Single agency action	Short-term action
26	City of La Verne	System Interties	Connections to Weymouth WTP		Conceptual		2-4 yrs	≤ $2M				X						Meets 1 of the regional benefits	Single agency action	Mid-term action
27	City of La Verne	Groundwater Treatment Projects	Well Treatment 6th and White, Lincoln and Mills - Ion-Ex Plant	6th and white water facility	Conceptual		≥ 4 yrs	$2-5M			X				X	X		Meets 2 of the regional benefits	Single agency action	Long-term action
28	City of La Verne	Enhanced Well Efficiency	La Verne Heights Well #1 Replacement - Ion-Ex	LVH #1	Conceptual		≥ 4 yrs	$2-5M		X								Meets 1 of the regional benefits	Single agency action	Long-term action

Project Number	Agency	Type of Mitigation Action	Project/Program Name	Location	Stage	Regional Partners	Timing/ Schedule	Estimated Capital Costs ($)	Potential Benefits									Review		
									Increase Local Supply			Operational Flexibility			Water Supply Reliability					
									New Extraction Wells	Enhanced Well Efficiency	Groundwater Treatment Projects	System Interties	Upgrade Aging Infrastructure	Conservation and Efficiency	Projects that increase overall supply	Projects that reduce drought dependency	Projects that reduce overall dependency	Regional Water Supply Reliability and Resiliency	Regional Benefits	Timing/ Schedule
29	City of La Verne	System Interties	Conjunctive Use Concepts (Six Basins, Pomona Basin, Live Oak Basin)		Conceptual		≥ 4 yrs	≥ $10M				X						Meets 1 of the regional benefits	Single agency action	Long-term action
30	City of La Verne	Conservation and Efficiency	AMI	City wide	Design		2-4 yrs	$2-5M						X				Meets 1 of the regional benefits	Single agency action	Mid-term action
31	City of Pomona	New Extraction Wells, Enhanced Well Efficiency, Upgrade Aging Infrastructure, Groundwater Treatment Projects	Pomona Combined Project (Groundwater Quality Improvement, Anion Exchange Plant, & Reservoir 5)		Unknown		≥ 4 yrs	≥ $10M	X	X	X		X		X	X		Meets all regional benefits	Single agency action	Long-term action
32	City of Pomona	Upgrade Aging Infrastructure	Reservoir 6		Unknown		2029	≤ $2M					X					Meets 1 of the regional benefits	Single agency action	Long-term action
33	City of Industry	System Interties	Surface Water Storage Project		Unknown		≥ 4 yrs	≥ $10M				X						Meets 1 of the regional benefits	Single agency action	Long-term action
34	City of Industry	System Interties	Water Distribution System Reliability Project	Lat: 33.957826 Long: -117.858392	Design		Late 2025	$1,200,000				X						Meets 1 of the regional benefits	Single agency action	Short-term action
35	Three Valleys	Groundwater Treatment Projects	Filter Drain Valves		Conceptual		2025	$200,000			X							Meets 1 of the regional benefits	Regional action	Short-term action
36	Three Valleys	System Interties	Padua Pump Station		Conceptual		≥ 4 yrs	$5-10M				X						Meets 1 of the regional benefits	Regional action	Long-term action

Project Number	Agency	Type of Mitigation Action	Project/Program Name	Location	Stage	Regional Partners	Timing/ Schedule	Estimated Capital Costs ($)	Potential Benefits									Review		
									Increase Local Supply			Operational Flexibility			Water Supply Reliability					
									New Extraction Wells	Enhanced Well Efficiency	Groundwater Treatment Projects	System Interties	Upgrade Aging Infrastructure	Conservation and Efficiency	Projects that increase overall supply	Projects that reduce drought dependency	Projects that reduce overall dependency	Regional Water Supply Reliability and Resiliency	Regional Benefits	Timing/ Schedule
37	Three Valleys	Upgrade Aging Infrastructure, Conservation and Efficiency	Sludge Pond Mixing Upgrade		Conceptual		2027	$800,000					X	X				Meets 1 of the regional benefits	Regional action	Mid-term action
38	Three Valleys	Enhanced Well Efficiency	Grand Avenue Well Improvement		Conceptual		2029	$250,000		X								Meets 1 of the regional benefits	Regional action	Long-term action
39	Three Valleys	Enhanced Well Efficiency	Well 2 Improvement		Conceptual		2027	$200,000		X								Meets 1 of the regional benefits	Regional action	Mid-term action
40	Three Valleys	Conservation and Efficiency	PM-21 [Miramar] Bypass Magmeter		Conceptual		2026	$2,300,000						X				Meets 1 of the regional benefits	Regional action	Short-term action
41	Three Valleys	System Interties	Miramar Pumpback		Conceptual		2028	$2,000,000				X			X			Meets 2 of the regional benefits	Regional action	Short-term action
42	Three Valleys	Upgrade Aging Infrastructure	Hydroelectric Facilities Efficiency Upgrades		Conceptual		2030	$3,000,000					X					Meets 1 of the regional benefits	Regional action	Long-term action
43	Three Valleys	System Interties, Enhanced Well Efficiency	Groundwater Reliability Improvement Program		Feasibility	RWD, WVWD, Glendora	≥ 4 yrs	≥ $10M		X		X			X			Meets all regional benefits	Regional action	Long-term action
44	Three Valleys	Conservation and Efficiency	Renewable Energy Project[1]		Conceptual		2027	$250,000										Meets 1 of the regional benefits	Regional action	Mid-term action
45	Three Valleys	Upgrade Aging Infrastructure	Miramar System Condition Assessment		Conceptual		1-2 yrs	$2-5M					X					Meets 1 of the regional benefits	Regional action	Short-term action

Project Number	Agency	Type of Mitigation Action	Project/Program Name	Location	Stage	Regional Partners	Timing/ Schedule	Estimated Capital Costs ($)	Potential Benefits									Review		
									Increase Local Supply			Operational Flexibility			Water Supply Reliability					
									New Extraction Wells	Enhanced Well Efficiency	Groundwater Treatment Projects	System Interties	Upgrade Aging Infrastructure	Conservation and Efficiency	Projects that increase overall supply	Projects that reduce drought dependency	Projects that reduce overall dependency	Regional Water Supply Reliability and Resiliency	Regional Benefits	Timing/ Schedule
46	Suburban Water System	Groundwater Treatment Projects	201 PFOA/PFAS treatment	9825 Mission Mill Road Whittier, CA 90601	Design		2-4 yrs	$30,000,000			X							Meets 1 of the regional benefits	Single agency action	Mid-term action
47	Suburban Water System	Groundwater Treatment Projects	Plant 410 Treatment Plant		Unknown		2-4 yrs	$3,200,000			X							Meets 1 of the regional benefits	Single agency action	Mid-term action
48	Suburban Water System	Upgrade Aging Infrastructure	Plant 128 Pump Station and Reservoir Replacement		Unknown		≤ 1 yr	$5,500,000					X					Meets 1 of the regional benefits	Single agency action	Short-term action
49	Valencia Heights Water Company	Upgrade Aging Infrastructure	Grand Ave waterline replacement		Design		2-4 yrs	$400,000					X					Meets 1 of the regional benefits	Single agency action	Mid-term action
50	Valencia Heights Water Company	Upgrade Aging Infrastructure	Reservoir rehab and retrofitting #4a		Design		2-4 yrs	$400,000					X					Meets 1 of the regional benefits	Single agency action	Mid-term action
51	Valencia Heights Water Company	Upgrade Aging Infrastructure	Reservoir rehab and retrofitting #6b		Design		1-2 yrs	$500,000					X					Meets 1 of the regional benefits	Single agency action	Short-term action
52	Valencia Heights Water Company	Upgrade Aging Infrastructure	Reservoir rehab and retrofitting #6a		Design		1-2 yrs	$500,000					X					Meets 1 of the regional benefits	Single agency action	Short-term action
53	Valencia Heights Water Company	Upgrade Aging Infrastructure	Reservoir rehab and retrofitting #4b		Design		≥ 4 yrs	$500,000.00					X					Meets 1 of the regional benefits	Single agency action	Long-term action
54	Valencia Heights Water Company	Upgrade Aging Infrastructure	Golden Bough waterline replacement		Design		≥ 4 yrs	$550,000					X					Meets 1 of the regional benefits	Single agency action	Long-term action

[1] Project #44 is included to account for all proposed mitigation actions. However, upon further review with Three Valleys, it was determined that Project #44 does not qualify as a drought mitigation action.

THREE VALLEYS
MUNICIPAL WATER DISTRICT

Board Workshop

Three Valleys Municipal Water District

February 19, 2025

8:00am to 9:30am

Workshop Agenda

10 min	**Welcome and Workshop Goals**
45 min	**WRMP Overview**
15 min	**Questions and Feedback**
10 min	**Next Steps**

Presenters and GEI Project Team

Roger Putty, PE, PMP
Planning Lead
(Presenter)

Kwabena Asante, PhD, PE
Technical Lead
(Presenter)

Fatima Segoviano
Water Resources Engineer

Matthew Bachman
Water Resources Engineer

Peter Kavounas, PE
Senior Civil Engineer

Mark Ashenfelter
Project Manager/
Grant Administrator

Workshop Goals

1. **Review and Discussion of WRMP**

2. **Board Direction on WRMP Recommendations**

Water Resources Master Plan

Roadmap To Enhance Water Supply Reliability

→→→ Guiding Objectives and Priorities →→→

TM

Water Supply Vulnerability Assessment

Workshops 1 through 5

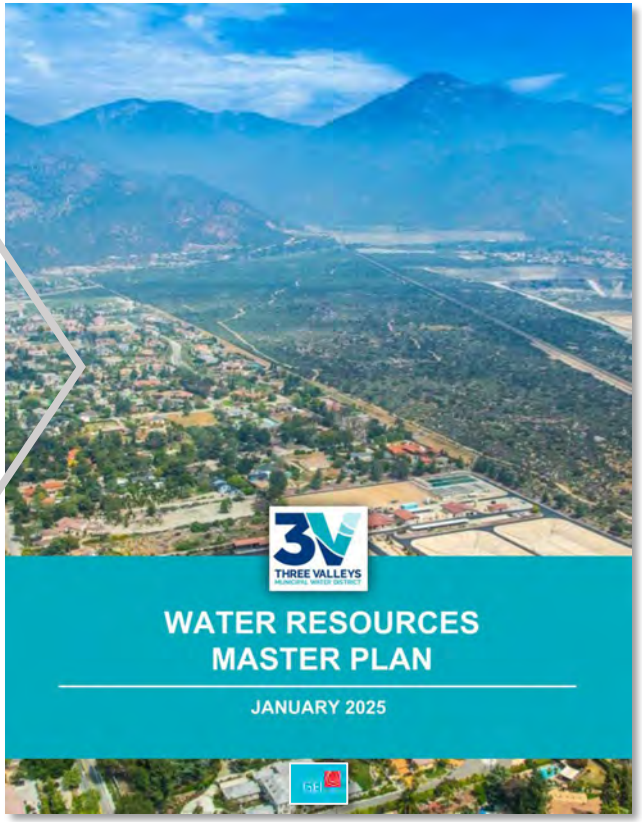
TM

Proposed Mitigation Projects

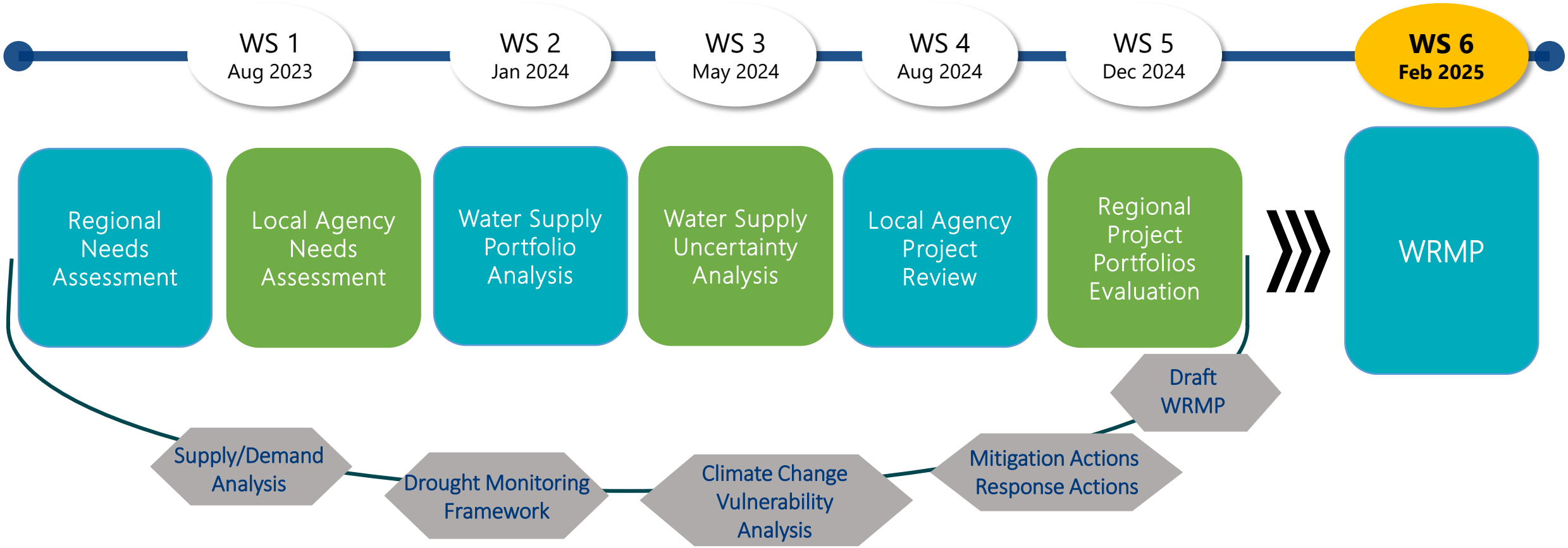
TM

Proposed Regional Projects

→→→ Guiding Objectives and Priorities →→→



Drought Task Force Engagement



Approach to Water Resources Master Plan Development

- **Water Supply Vulnerability Assessment**
  - **Future growth and climate change**
  - **Extreme droughts**
  - **System performance**
- **Proposed Mitigation Projects and Response Actions**
  - **Local projects proposed by member agencies**
  - **Demand reduction from statewide conservation measures**
- **Multi-Agency Proposed Regional Projects**
  - **Development of regional project concepts**
  - **Assessment of project benefits**
  - **Assessment of project risks**
  - **Benefit-Risk ranking of regional projects**
- **Summary and Recommendations**

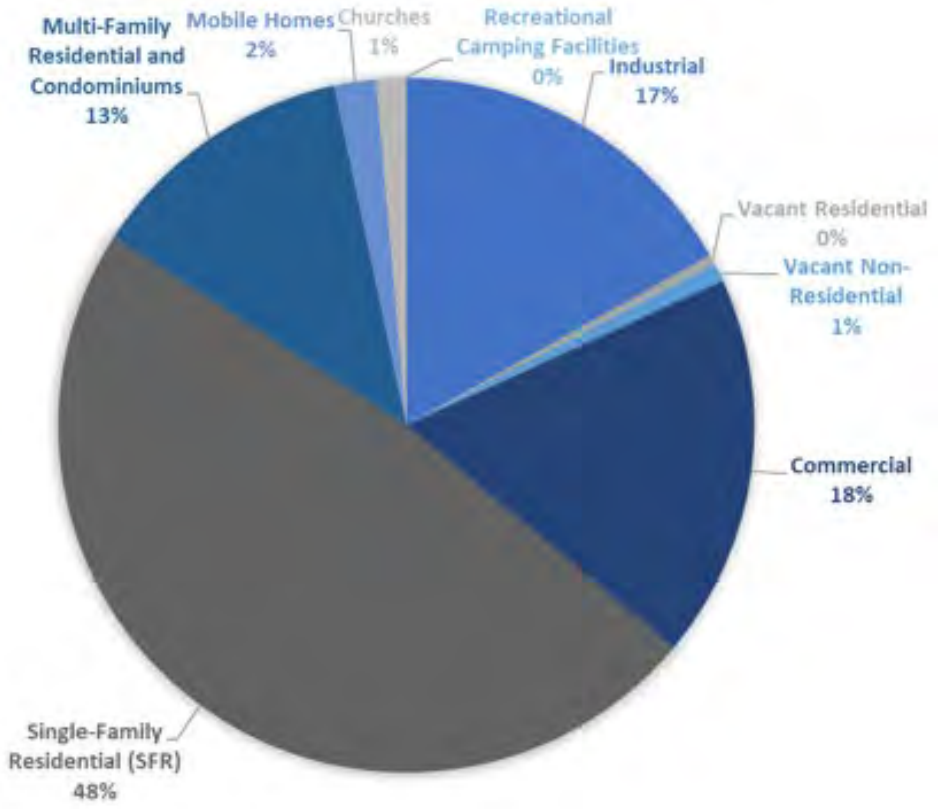
Water Supply Vulnerability Assessment

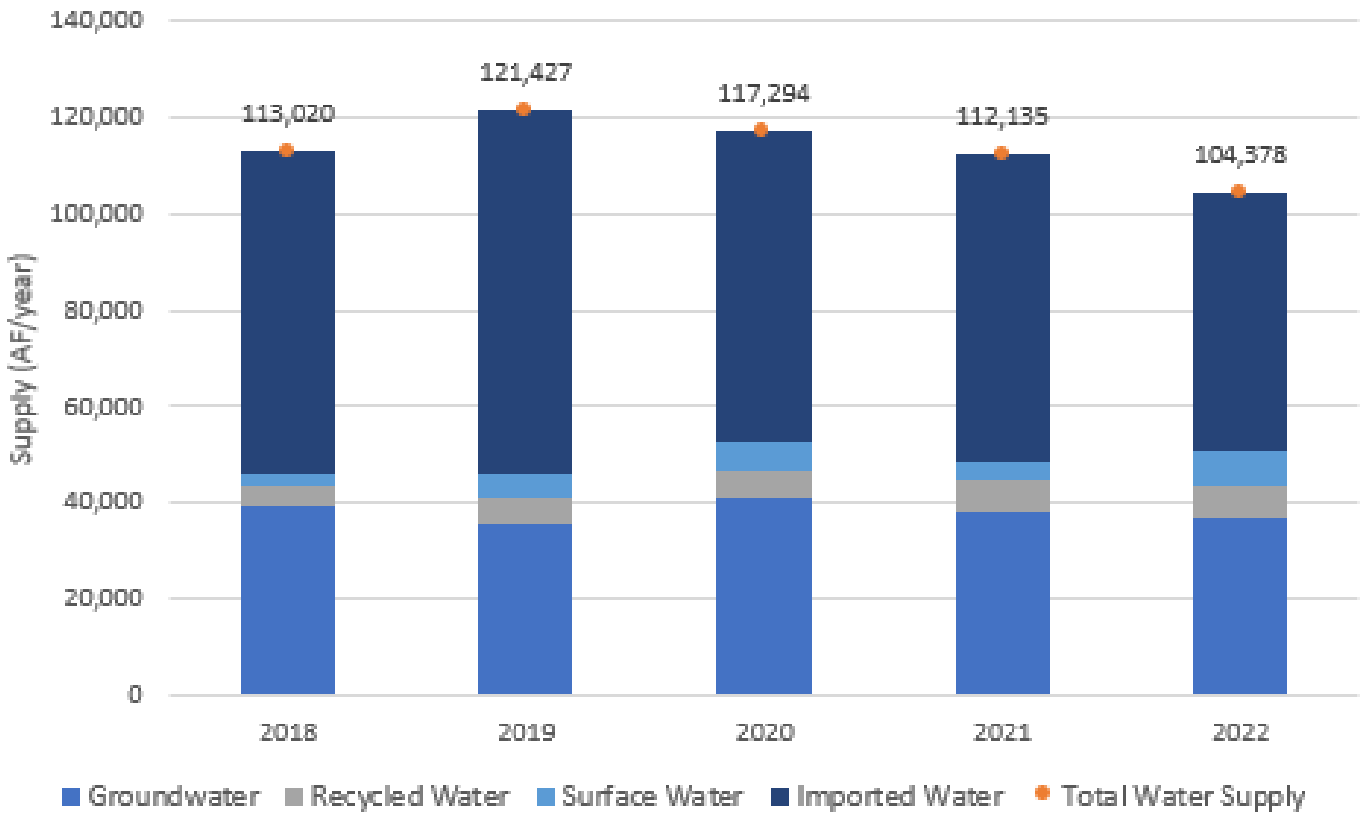
Water Supply Vulnerability Assessment

1. **Baseline Water Demand and Supply Sources**
2. **Member Agency Dependency on Imported**
3. **Impacts of Droughts**
4. **Impacts of Future Growth and Climate Change**

Baseline Water Demands

Three Valleys member agencies serve the water needs of a mix of residential, commercial and industrial users





Member Agency Water Supply Sources

Three Valleys member agencies rely on a combinations of water sources and storage accounts to supply their needs

Member Agency	Groundwater	Imported Water	Surface Water	Recycled Water
Boy Scouts of America		X		
Cal Poly Pomona	X	X		X
City of Covina[a]	X	X	X	
City of Glendora*	X	X	X	
City of La Verne	X	X		
City of Pomona	X	X	X	X
Golden State Water Company (Claremont)*	X	X		
Golden State Water Company (San Dimas)*	X	X	X	
Mount San Antonio College		X		
Rowland Water District	X	X		X
Suburban Water Systems*	X	X	X	X
Valencia Heights Water Company*	X	X	X	X
Walnut Valley Water District	X	X		X

* Purchases water from Covina Irrigating Company which produces water from local surface and groundwater sources and treats imported water from Three Valleys.

Storage System	Three Valleys Storage Capacity (AF)	Three Valleys - Pomona Agreement
Six Basins	3,500	
Main San Gabriel Basin	50,000	
Chino Basin		1,390

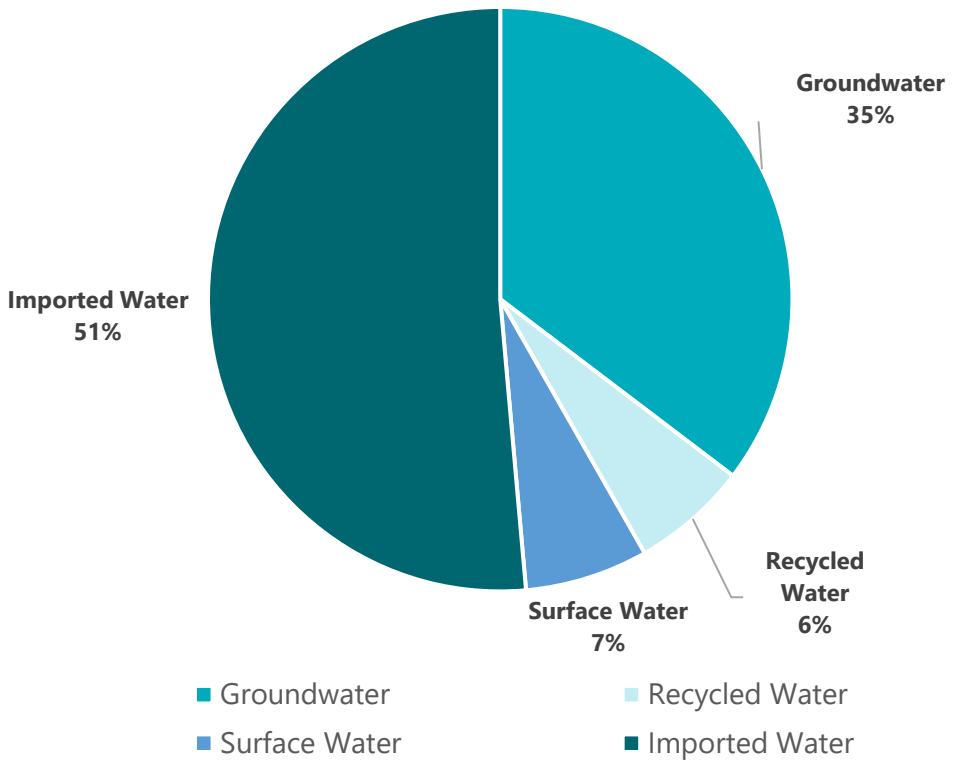
PBWA has a storage and export agreement with the Main Basin for 30,000 AF

Chino Basin Three Valleys storage through Pomona is a one-time agreement

Member Agency Dependency on Imported Water During Droughts

Three Valleys region and several member agencies have

- **High overall dependency on imported water (about 57% of total supplies)**
- **Increasing dependency during drought periods (+10%)**

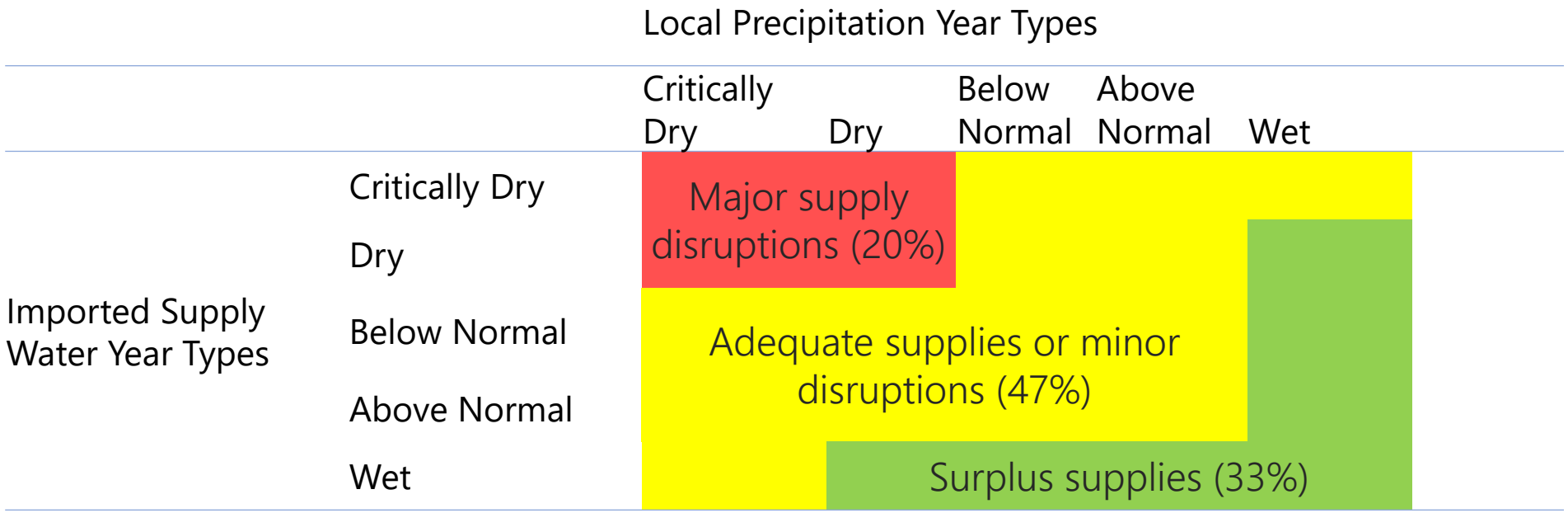


Agency	Current Dependency on IW (2015-2022)	Dependency on IW during Drought Periods
Boy Scouts of America	0%	0%
Cal Poly Pomona	5%	6%
City of Covina	4%	18%
City of Glendora	6%	25%
City of La Verne	55%	79%
City of Pomona	21%	30%
Covina Irrigating Company	56%	65%
Golden State Water Company (Claremont)	56%	65%
Golden State Water Company (San Dimas)	82%	87%
Mount San Antonio College	100%	100%
Rowland Water District	82%	88%
Suburban Water Systems (San Jose)	28%	75%
Valencia Heights Water Company	10%	29%
Walnut Valley Water District	91%	88%

How Often do Droughts Impact Both Local and Imported Supplies?

Based on 82 years of local and State Water Project (SWP) data:

- **Dry and/or Critically Dry droughts causing deficits in both Three Valleys local and imported water sources simultaneously occurs in approximately 20% of years which is 1 in 5 years.**
- **Surplus water supplies are available in about 33% of years (1 in 3 years) for use in enhancing local resilience to future drought events.**



Impacts of Recent Droughts on Local and Imported Supplies

How frequently have droughts impacted water supplies in recent years?

Local production has declined after persistent local droughts

Increasing dependency on imports to fill the gap

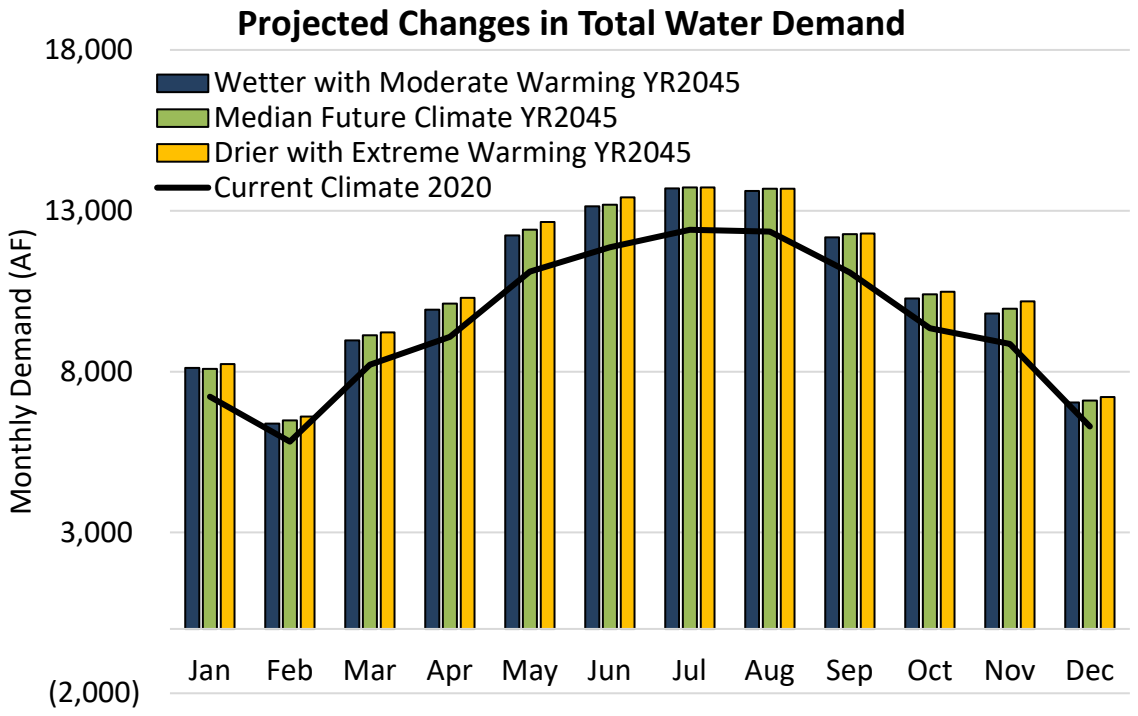
Major Supply Deficits
Adequate/Minor Supply Deficits
Surplus Supplies

Three Valleys Sources	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
SWP Year Type	Below Normal	Wet	Below Normal	Dry	Critically Dry	Critically Dry	Below Normal	Wet	Below Normal	Wet	Dry	Critically Dry	Critically Dry
Local Precipitation Year Type	Wet	Dry	Critically Dry	Critically Dry	Dry	Dry	Below Normal	Dry	Dry	Wet	Below Normal	Dry	Critically Dry
Local Three Valleys Water Supply (TAF)	60.6	64.4	65.2	61.1	57.7	52.6	43.1	45.2	45.7	46.1	52.6	48.4	50.7

Impacts of Future Growth and Climate Change

Three Valleys region is projected to experience:

- **Increasing water demand due to warming and growth**
- **Total local waters supplies unchanged or slightly lower**



Total Local Supply (AF/year)	2018-2022	2045	Net Change
Drier Future with Extreme Warming	48,694	48,345	-1,039
Median Future Climate Conditions		48,345	-349
Wetter Future with Moderate Warming		52,587	3,893

Future Water Budget with Climate Change and Growth

Region's annual water supply deficits projected to increase to 15 TAFY by 2045

- Projected growth +10 TAFY
- Climate change +5 TAFY

Increasing water budget deficits need to be addressed through

- Increasing imported water
- Developing alternate supplies
- Reducing demands, e.g., through water use efficiency and managing growth

Demand (AF/year)	2018-2022	2045	Net Change
Drier Future with Extreme Warming	113,651	128,000	+14,400
Median Future Climate Conditions		126,600	+12,900
Wetter Future with Moderate Warming		125,400	+11,700

Imported Water Supply Required (AF/year)	2018-2022	2045	Net Change
Drier Future with Extreme Warming	64,957	80,400	+15,400
Median Future Climate Conditions		78,200	+13,300
Wetter Future with Moderate Warming		72,800	+7,800

Proposed Mitigation Projects and Response Actions

Proposed Mitigation Projects and Response Actions

1. **Water Conservation**

2. **Proposed Local Agency Projects**

3. **Regional Drought Continency Planning**

Water Conservation: Targets and Potential Savings

Agency	Current 55 GPCD target (AF)	Projected 2025 47 GPCD target (AF)	Projected 2030 42 GPCD target (AF)
Glendora	-1,854	-2,326	-2,621
La Verne	171	-97	-231
Pomona	1,015	-226	-817
GSWC Claremont	2,531	2,193	2,002
GSWC San Dimas	1,194	693	387
Rowland	168	-313	-602
Suburban	2,341	805	-99
Walnut	173	-701	-1,208
Conservation Savings	**-1,854**	**-3,663**	**-5,578**

Actual GPCD above target GPCD

Actual GPCD below target GPCD

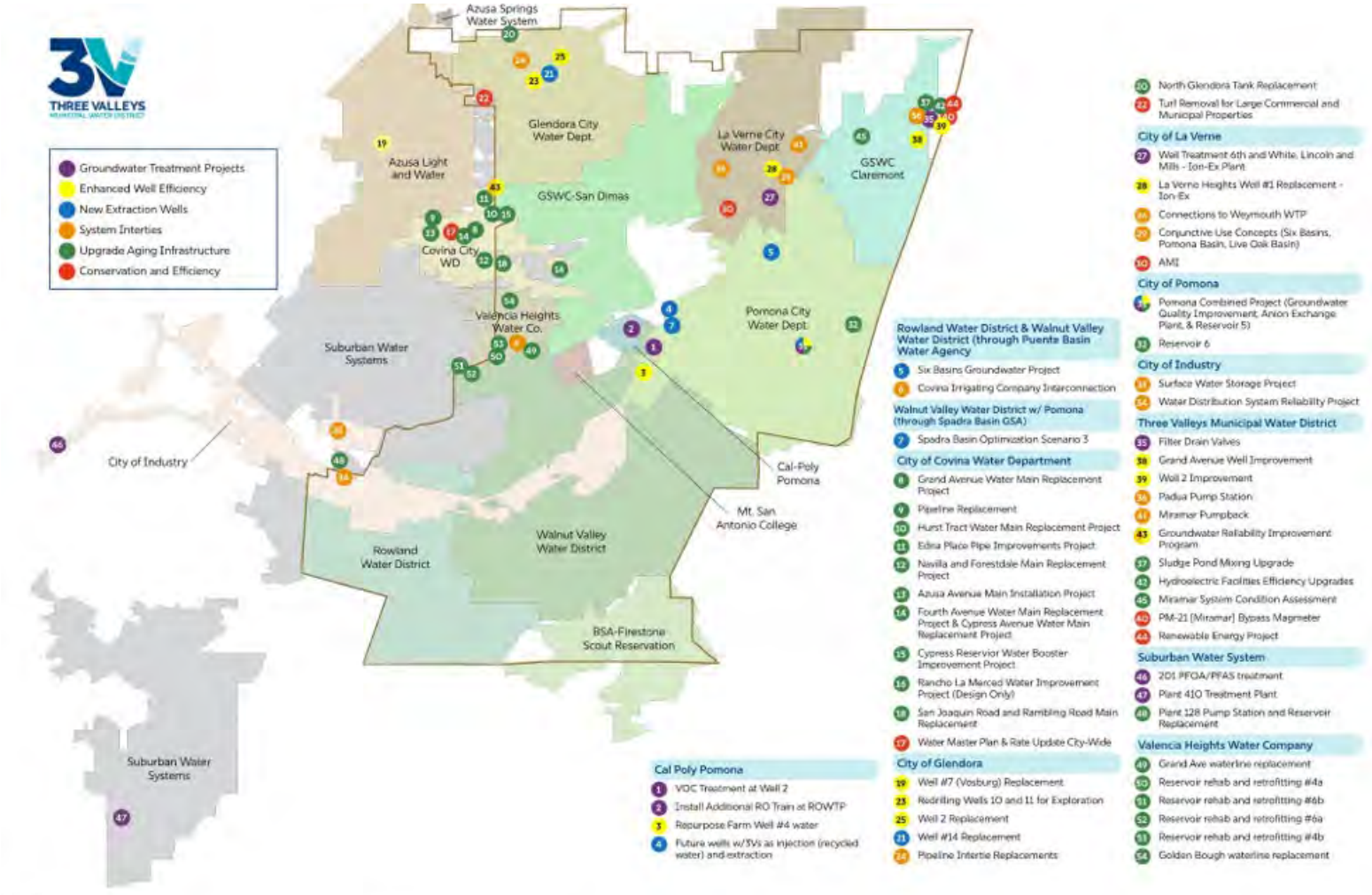
Increased water use efficiency to meet State mandated water use targets reduces demand +5 TAFY by 2030

Proposed Local Agency Projects

Pursue mitigation actions to address vulnerabilities identified through the Water Supply Vulnerability Assessment

Prioritize projects that align with the proposed mitigation actions, which can result in:

- Enhanced water supply reliability for the region and its member agencies
- More regional benefits
- More competitive grants



Note:
1. GSWC = Golden State Water Company, BSA = Boy Scouts of America
2. Project #44 is included to account for all proposed mitigation actions. However, upon further review with Three Valleys, it was determined that Project #44 does not qualify as a drought mitigation action.

Proposed Local Agency Projects: Implementation Timeline

Collectively, local agencies identified a total of 54 projects, programs, and/or strategies

Projects vary by type and implementation timeline, which informed the regional solutions

Projects included in the plan have increased opportunities for grant funding

	Short-Term	Mid-Term	Long-Term
System Interties	34, 41	6, 24, 26	29, 33, 36, 43*
New Extraction Wells	4, 5		21, 31*
Enhanced Well Efficiency	3, 25, 40	39	19, 23, 28, 38
Upgrade Aging Infrastructure	10, 12, 14, 15, 16, 20, 45, 48, 51, 52	8, 11, 13, 18, 37, 49, 50	9, 32, 42, 53, 54
Groundwater Treatment Projects	1, 35	2, 46, 47	7, 27
Conservation and Efficiency	17, 22	30, 44	
TOTAL	**21**	**16**	**17**

**Categorized under multiple project types*

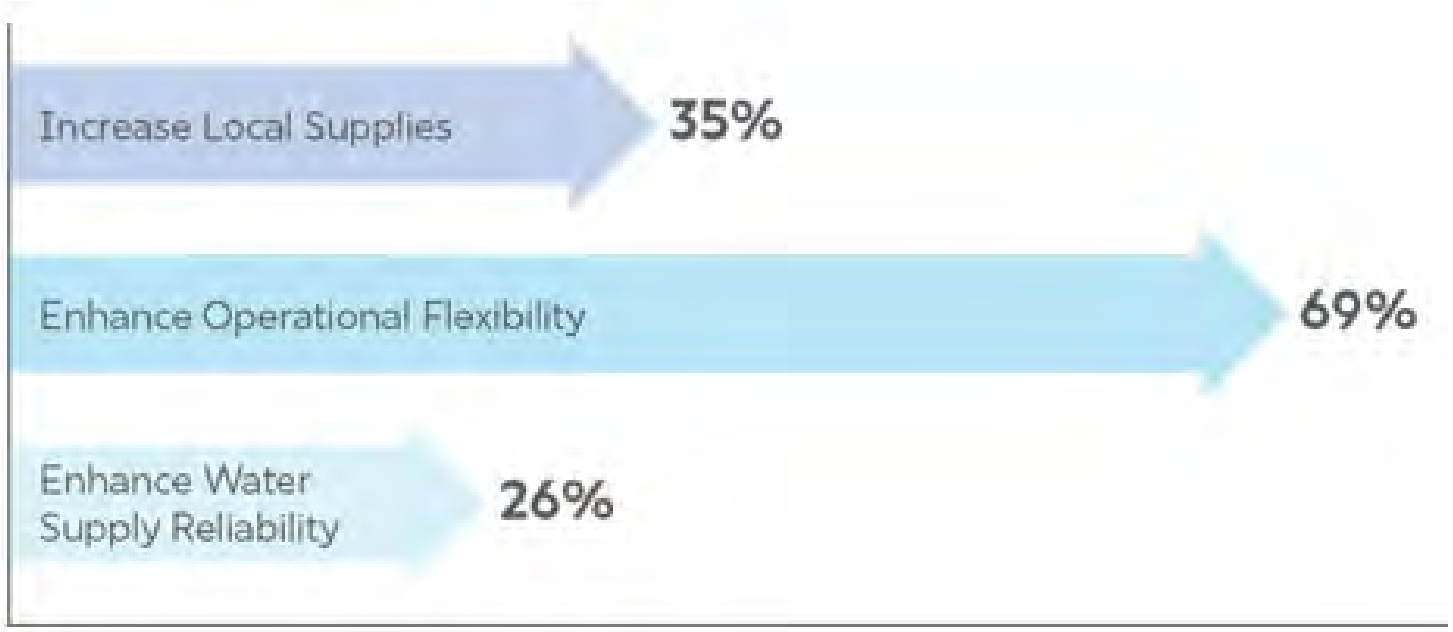
Proposed Local Agency Projects: Benefits

Proposed projects provide a range of local and regional benefits:

Increasing Local Supplies:
- New Extraction Wells
- Enhanced Well Efficiency
- Groundwater Treatment Projects

Enhancing Operational Flexibility:
- System Interties
- Upgrading Aging Infrastructure
- Conservation and Efficiency Measures

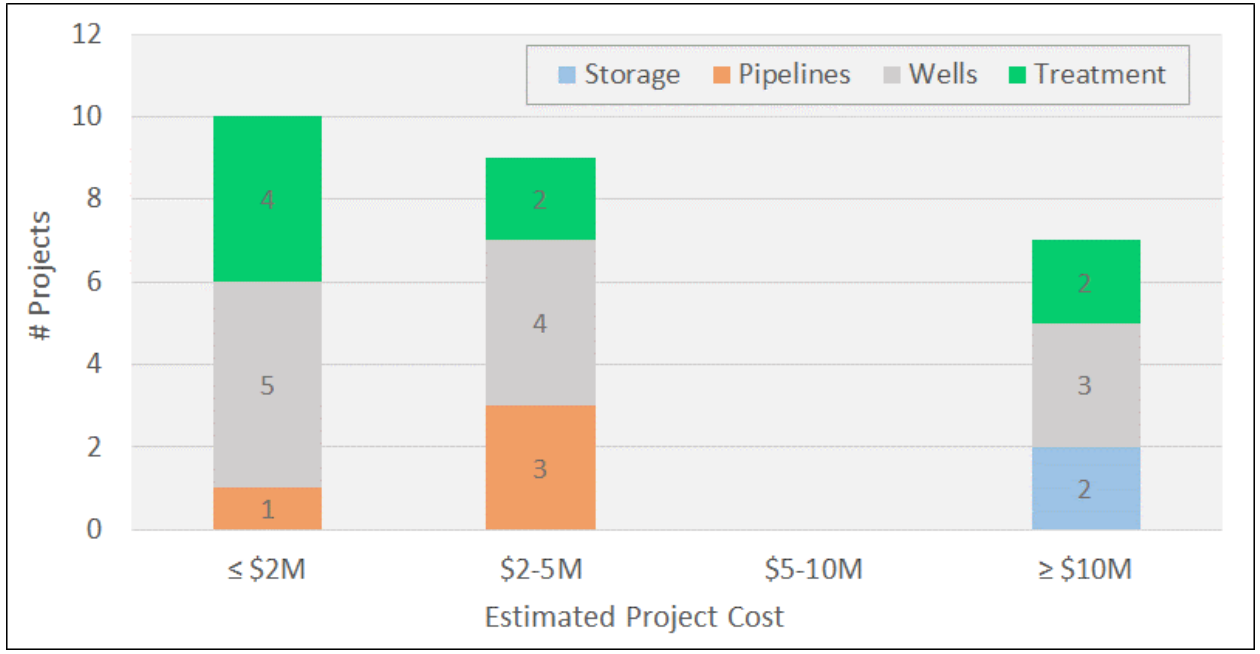
Enhancing Water Supply Reliability:
- Overall supply increase
- Reduction in drought imported water dependency
- Decrease in overall imported water dependency



Proposed Local Agency Projects: Construction Costs

- Member agencies identified proposed infrastructure components, yield and cost for 26 of the 54 local water projects
- Construction cost estimated at over $660 million
- Most local projects proposed replace aging infrastructure and/or maintain current water production
- Projects to generate additional water supplies and/or storage are expensive

Type of Project	Number of Projects	Estimated Average Cost ($)	Estimated Total Cost ($)
Storage	2	$88M	$176M
Pipelines	4	$3M	$12M
Wells	12	$27.3M	$327M
Treatment	8	$6.5M	$52M
		Total	$667M

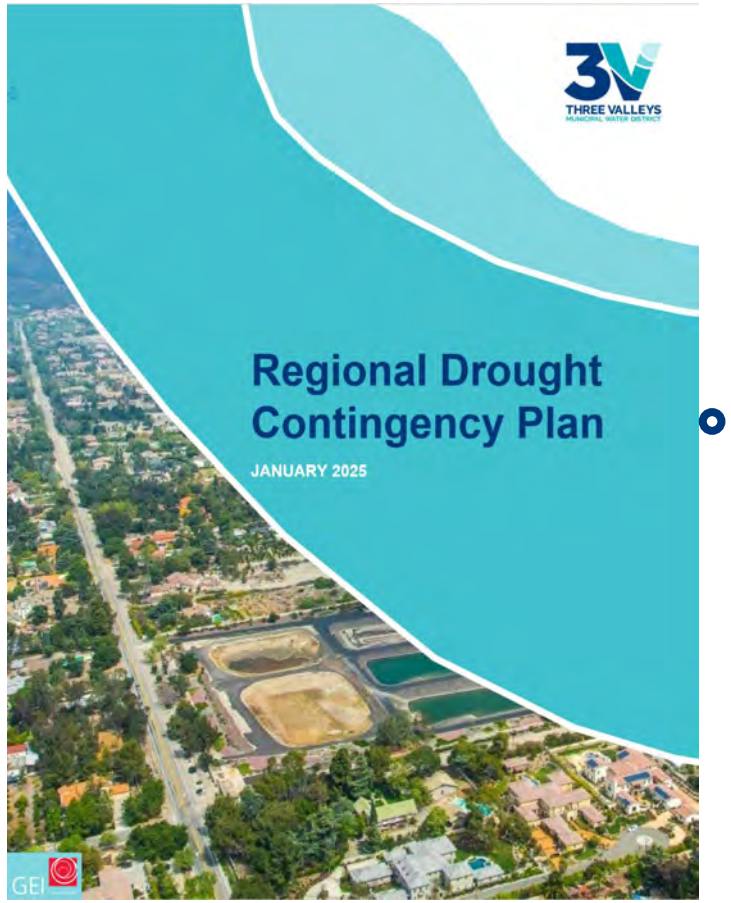


Proposed Local Agency Projects: Project Yield & Unit Costs

- **Yield and Unit Costs only available for about half of proposed projects**
- **Most local projects proposed replace aging infrastructure; not new yield**
- **Local production capacity could decline in half if these local projects are not implemented**
- **Securing external funding for local projects is challenging and competitive**

Category (Number of Projects)	Total Project Yield (AF)	Project Yield Cost ($/AF)	
		Group Range	Group Average
Integrated Storage and Wells (1)	2,994	--	$53,616
Pipelines (2)	2,200	$2,000 - $17,000	$3,465
Wells (5)	14,300	$300 - $15,000	$10,735
Treatment (4)	9,535	$1,000 - $3,000	$1,841
TOTAL	29,029	$300 - $17,000	$11,685

Regional Drought Contingency Planning



Look here for help to answer those questions

How will we recognize and respond to the next drought?

How will drought affect us?

How can we protect ourselves from the next drought and increase opportunities for grant funding?

Regional Drought Contingency Planning: Meetings/DTF

Regional coordination will continue to be used to review and respond to water availability conditions:

- Member agency manager meetings are held monthly.

- More frequent meetings (at least twice monthly) may be held with any member agency in Stage 5 or above.

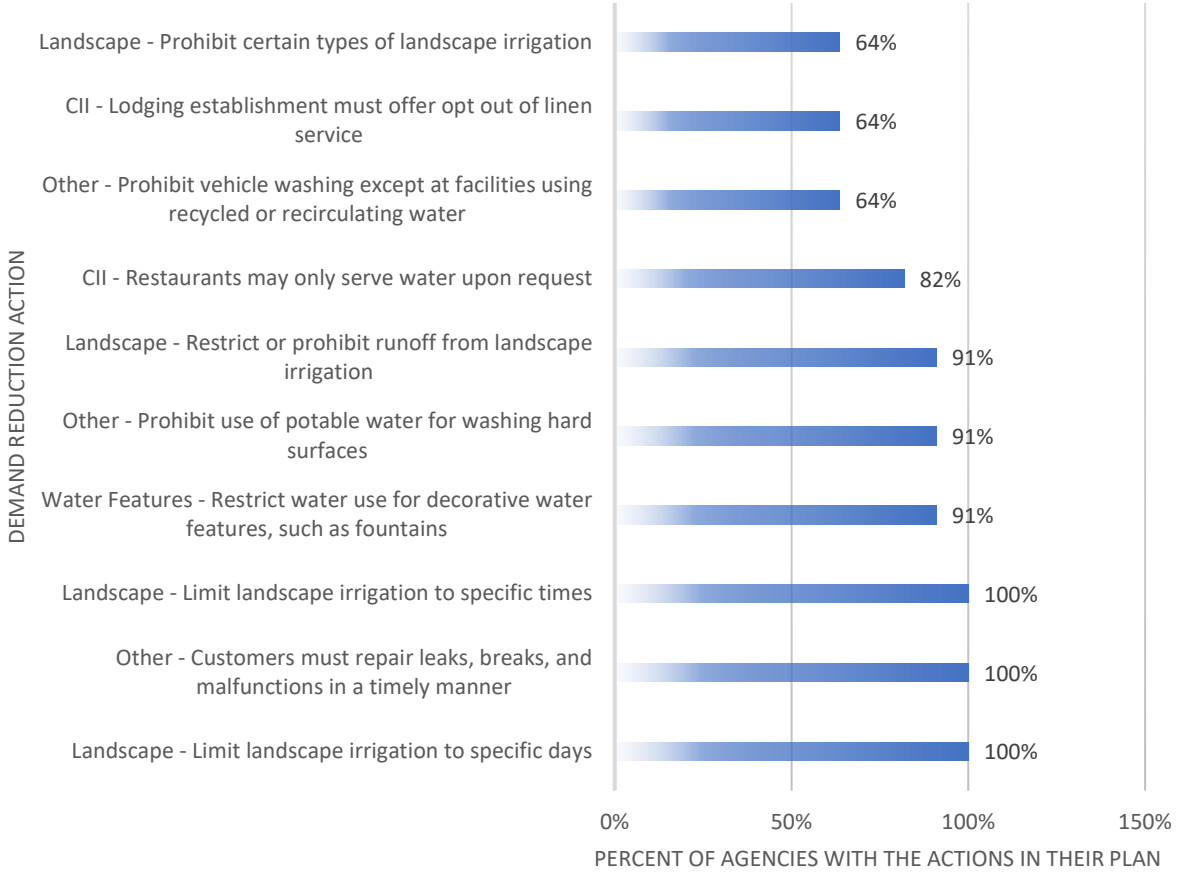
Drought Task Force Meetings will be convened accordingly:

- A drought emergency declaration from the State, Metropolitan.
- Or if any member agency raises concerns.

Three Valleys may also conduct an annual check-in meeting with the Drought Task Force.

Regional Drought Contingency Planning: Response Actions

A variety of local and regional drought response actions identified in the plan



Regional Drought Contingency Plan includes:

- Triggers for droughts and surplus conditions
- Procedures for managing response
  - Demand and supply projections
  - Identifying infrastructure constraints
  - Strategic communication of response actions
  - Assembly of the Drought Task Force
  - Coordinating mitigation actions
  - Updating the DCP
- Descriptions of Three Valleys staff roles

Multi-Agency Proposed Regional Projects

Multi-Agency Proposed Regional Projects: Components

Regional Project #1 – External Partnership with Covina Valley Water Company (Main San Gabriel Basin)	Regional Project #2 – Three Valleys Groundwater Reliability Improvement Program (GRIP)	Regional Project #3 – Three Valleys Storing Water in Main San Gabriel Basin (GRIP+)	Regional Project #4 – Chino Basin Conjunctive Use with Three Valleys
Construction of an intertie to access existing water supply from Covina Valley Water Company (CVWC). Through Puente Basin Water Agency (PBWA), WVWD and RWD would lead the construction of this intertie, which would allow pumping of surplus CVWC well and surface water into the Badillo-Grand pipeline via the new interconnection.	Three Valleys partnership with the City of Glendora and PBWA to implement a regional distribution network and local supplies by utilizing 9,000 AF/yr of stranded City assets. The regional distribution network would be augmented by the construction of new treatment facilities and conveyance pipelines.	Three Valleys partnership with the City of Glendora and City of Pomona in which Three Valleys would store surplus imported water in wet years for the Cities via groundwater recharge at the Santa Fe Spreading Grounds in the Main San Gabriel Basin.	Partnership between Three Valleys and the City of Pomona. Three Valleys will store water in the Chino Basin and fund City of Pomona's infrastructure projects in exchange for the pumping and delivery of water for use by the Three Valleys member agencies, such as the City of La Verne, Golden State Water Company and the Puente Basin Water Agency.

Multi-Agency Proposed Regional Projects: Components

Project	Facilities					
	Extraction Wells	'Put' Facilities	Regional Pipeline	Increased Treatment Capacity	Increased Storage	Increased Local Supply
External Partnership with Covina Valley Water Company (Main Basin)			●			●
Three Valleys Groundwater Reliability Improvement Program (GRIP)	●		●	●	●	●
Three Valleys Storing Water in Main Basin (GRIP+)	●		●		●	●
Chino Basin Conjunctive Use with Three Valleys					●	●

Multi-Agency Proposed Regional Projects: Benefits Evaluation

Goal	Regional Project Needs as Evaluation Criteria
10 TAF	1. Reduce dependency on imported water during drought years
10 TAF	2. Reduce overall dependency on imported water
60 TAF	3. Increase total water in storage to about one year of imported supplies from Metropolitan
15 TAF	4. Increase Three Valleys PUT capacity by 15 TAF/year
15 TAF	5. Increase climate resilience – need to meet additional 15 TAFY[1]
	6. Increase operational flexibility with additional Three Valleys conveyance facilities to transmit water from West to East, through a shared program with member agencies.
	7. Affordability of marginal cost of water produced compared to Metropolitan water
	8. Increase local groundwater treatment capacity
	9. Increase local extraction capacity

[1] *Compliance with State 2030 goal for 42 GPCD reduces total member agency demand by approximately 5 TAFY*

Multi-Agency Proposed Regional Projects: Risk Evaluation

- **4 categories of project risk identified**
- **Each project is assigned a severity score and a likelihood score for each category of risk**
- **Severity and likelihood scores assigned range from 1 (low) to 4 (high)**

Risk Category	Risk Elements	Project 1 Severity	Project 1 Likelihood
Costs	Risk of Capital Cost Overuns		
	Risk of Partner Agencies not paying their share		
	Risk of not securing External Financing and funding		
	Risk of increasing long-term operations and maintenance		
Implementation	Risk of Project duration and schedule overuns		
	Risk of Land not being available		
	Risk of Running into Constructability issues		
	Risk of having limited implementation options		
	Risk of Permitting Complications (conditions, denials etc)		
	Risk of the project not being thoroughly planned		
Operations	Risk of Yield variability and reliability		
	Uncertainty of Operating Partnerships		
	Risk of inter-dependent projects not coming through		
	Risk of Environmental and water quality regulations (eg PF		
	Lack of Redundancy for emergency operations/asset failur		
Stakeholders	Lack of Ratepayer support		
	Risk of not garnering Three Valleys and member board sup		
	External stakeholder opposition		
	Opposition from Environmental/special interest groups		

Multi-Agency Proposed Regional Projects: Benefit-Risk Rankings

- **Project rankings based on Benefit - Risk Ratio**
- **High Benefit - Risk Ratios indicate preferred projects**

Regional Project	Sum of Benefit Scores (max = 27)	Benefit Index	Sum of Risk Scores (max = 64)	Risk Index	Benefit - Risk Ratio	Preferred Project Rank
Project 4: Chino Basin Conjunctive Use with Three Valleys	13.7	0.51	19.3	0.30	1.68	**1**
Project 3: Three Valleys Storing Water in Main San Gabriel Basin (GRIP+)	16.6	0.61	23.8	0.37	1.65	**2**
Project 1: External Partnership with Covina Irrigation Company (Main San Gabriel Basin)	9.7	0.36	16.1	0.25	1.43	**3**
Project 2: Three Valleys Groundwater Reliability Improvement Program (GRIP)	14.1	0.52	34.4	0.54	0.97	**4**

Summary and Recommendations

WRMP Summary of Findings

The Three Valleys Water Resources Master Plan has documented:

1. **Current and future water supply needs with climate change and growth for the next two decades**
2. **Scope and costs information for 26 proposed local infrastructure projects**
3. **Identified and evaluated benefits and risks for four regional project concepts for meeting regional water supply reliability goals**

WRMP Recommendations

Infrastructure Conditions Assessment (1 and 2):

1. **Conduct a comprehensive assessment of the condition of water infrastructure in the Three Valley region**
   - **Quantify status of existing wells, pipelines, pumping, and treatment assets**
   - **Establish the remaining life and replacement schedule of existing assets**
   - **List all existing infrastructure that are no longer functioning or in use**
2. **Align infrastructure plans to future changes in system performance and water supply reliability**
   - **Regularly updated infrastructure masterplan**
   - **Regularly updated regional capital improvement plan**

WRMP Recommendations (continued)

Multi-Agency Regional Projects (3 and 4):

3. **Continue development of the regional projects including**
   - **Conceptual planning of project components, constraints, project costs, and review alternatives**
   - **Engage member agencies to recruit project participants, establish participation agreements, and seek approval of agency boards to seek implementation funds**
   - **Develop funding proposals and engage funding agencies to solicit early input on fundability**
4. **Pursue state and federal funding opportunities**

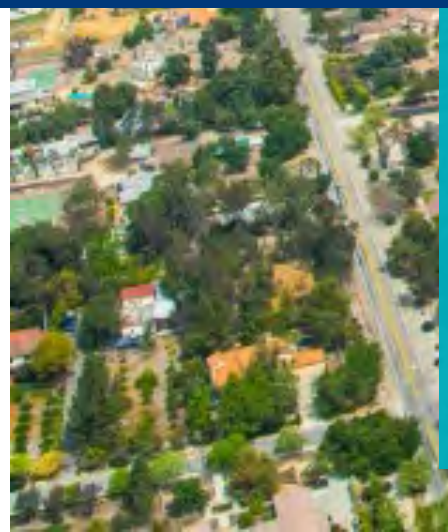
Questions, Feedback, and Actions

1. **Discussion of questions and feedback on final draft WRMP by Three Valleys and Member Agencies**

2. **Board Direction on WRMP Recommendation?**

Workshop Closing Comments and Adjournment

Sylvie Lee



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THREE VALLEYS
MUNICIPAL WATER DISTRICT

WATER RESOURCES MASTER PLAN

JANUARY 2025

GEI Consultants

Table of Contents

Figures

Tables

Acronyms and Abbreviations

1,2,3-TCP	1,2,3-Trichloropropane
AF	acre-feet
AF/year	acre-feet per year
CEC	contaminants of emerging concern
CIP	Capital Improvement Program
CPP	California State Polytechnic University at Pomona
CRA	Colorado River Aqueduct
DBCP	Hexavalent Chromium, Arsenic, 1,2-Dibromo-3-chloropropane
CVWC	Covina Valley Water Company
DCP	Drought Contingency Plan
DWR	California Department of Water Resources
FEMA	Federal Emergency Management Agency
ET	evapotranspiration
FY	fiscal year
GAMA	Groundwater Ambient Monitoring and Assessment
gpm	gallons per minute
GRIP	Groundwater Reliability Improvement Program
GRIP+	Groundwater Reliability Improvement Program "Plus"
GSA	Groundwater Sustainability Agency
GSWC	Golden State Water Company
JWL	Joint Water Line
MCL	Maximum Contaminant Level
Metropolitan	Metropolitan Water District of Southern California
O&M	operations and maintenance
PBWA	Puente Basin Water Agency

PCE	Trichloroethene
PFA	polyfluoroalkyl substances
TAF	thousand acre-feet
TAF/year	thousand acre-feet per year
TCE	Trichloroethene
TDS	Total Dissolved Solids
USBR	U.S. Bureau of Reclamation
RWD	Rowland Water District
SGMA	Sustainable Groundwater Management Act
SWP	State Water Project
SWS	Suburban Water Systems
Three Valleys	Three Valleys Municipal Water District
UWMP	2020 Urban Water Management Plan
VHWC	Valencia Heights Water Company
WRMP	Water Resources Master Plan
WVWD	Walnut Valley Water District

1 Introduction

Three Valleys Municipal Water District (Three Valleys) was formed in 1950 and provides water supply and water resource management to over 500,000 people in a 133 square mile area in eastern Los Angeles County. As a member agency of the Metropolitan Water District of Southern California (Metropolitan), Three Valleys provides wholesale water to its 13 member agencies, which includes:

- Boy Scouts of America,
- California State Polytechnic University at Pomona (CPP)
- City of Covina
- City of Glendora
- City of La Verne
- City of Pomona
- Golden State Water Company (GSWC) (Claremont and San Dimas systems)
- Mount San Antonio College
- Rowland Water District (RWD)
- Suburban Water Systems (SWS)
- Valencia Heights Water Company (VHWC)
- Walnut Valley Water District (WVWD).

These member agencies are described in more detail in Section 2.

1.1 Objectives

The mission of Three Valleys is to supplement and enhance local water supplies to meet the region and their member agencies' needs in a reliable and cost-effective manner. The objective of the Three Valleys Water Resources Master Plan (WRMP) is to provide a roadmap of needed capital improvements to meet Three Valleys' member agencies' needs. The key objectives are as follows:

- Assess Three Valleys current water system performance.
- Establish a comprehensive approach to achieve water supply reliability within the Three Valleys service area.
- Inform and supplement Three Valleys' Capital Improvement Program (CIP) to gain efficiency in operations and maintenance (O&M) and sustainably manage the water system.
- Identify the investment priorities for the future and provide information to inform policy decisions related to infrastructure and supply.

1.2 Relevant Studies

To increase water supply reliability and proactively address the region's concern with drought, in 2023 Three Valleys began preparing a WRMP and Regional Drought Contingency Plan (DCP). The WRMP has several elements in common with Three Valleys' DCP, such as the assessment of water shortage conditions based on current and future water supply needs and anticipated impacts to supplies from climate change and other risks, along with the identification and prioritization of projects to enhance

the region's water supply portfolio. The WRMP and Regional DCP were prepared in parallel with a coordinated schedule and approach. The Regional DCP is included as Appendix C.

1.3 Organization of Report

This document is organized as follows:

Section 1 – Introduction

Section 2 – Existing System Description

Section 3 – Water System Reliability

Section 4 – Mitigation Projects Development and System Performance Evaluation

Section 5 – Mitigation Projects Analysis

Section 6 – Opportunities for Regional Agency/Project Collaboration

Section 7 – Summary and Recommendations

Section 8 – References

Appendix A – List of Mitigation Projects

Appendix B – Results of Pairwise Benefit Evaluation

Appendix C – Three Valleys Regional Drought Contingency Plan

2 Existing System Description

Three Valleys was formed in 1950 and provides water supply and water resource management to over 500,000 people in a 133 square mile area in eastern Los Angeles County. The estimated population within the Three Valleys wholesale service area in 2020, along with future population projections documented in Three Valleys' 2020 Urban Water Management Plan (UWMP), is presented in Table 2-1.

Table 2-1. Three Valleys Current and Future Populations

	2020	2025	2030	2035	2040	2045
Three Valleys	513,623	523,167	532,888	542,790	555,204	561,782

2.1 Water Supplier Service Area

Three Valleys' member agencies retail the water directly to their customers, or wholesale it to other water systems for resale. Three Valleys' member agencies produce water from local sources; however, when water demands exceed these local supplies, the member agencies may rely on Three Valleys to supply their supplemental water needs. Three Valleys' service area includes the Cities of Claremont, Covina, Diamond Bar, Glendora, Industry, La Verne, Pomona, San Dimas, Walnut, West Covina, and unincorporated areas of Los Angeles County (including Charter Oak and Rowland Heights) (Figure 2-1).

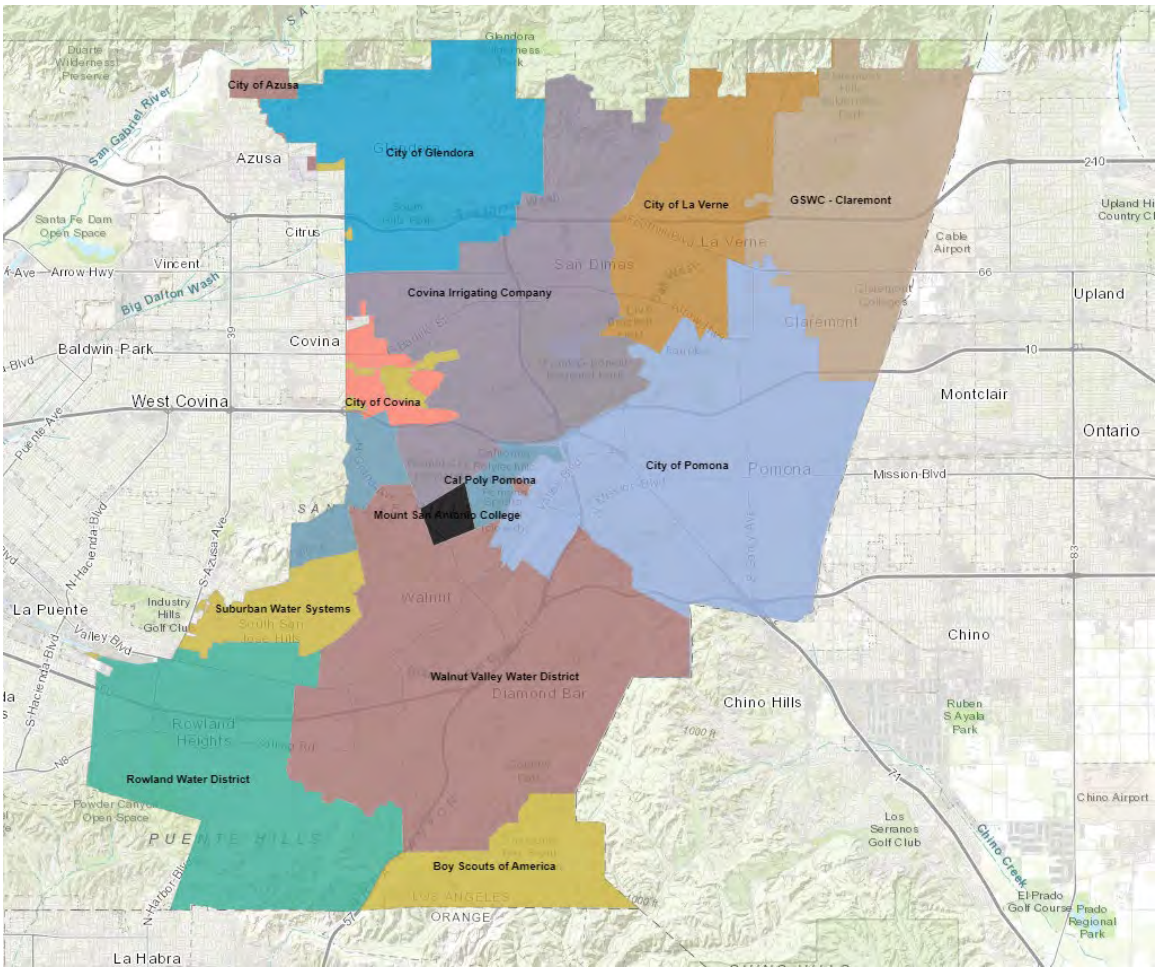

Figure 2-1: Three Valleys Municipal Water District Service Area

Three Valleys is one of 26 member agencies of Metropolitan. Three Valleys' water supply sources consist of untreated imported water purchased from Metropolitan, treated imported water purchased from Metropolitan, and groundwater from the Six Basins groundwater basin, with imported water from Metropolitan accounting for the majority of Three Valleys' supply. Water purchased from Metropolitan comes from the Colorado River Aqueduct and the State Water Project (SWP). Most Three Valleys member agencies rely on a combination of imported water and groundwater supplies. A few members also use other sources including three who currently utilize recycled water, and five who utilize surface water supplies. Several of these agencies are in SWP dependent areas, meaning they cannot receive Colorado River supplies from Metropolitan, and are solely dependent on imported water from the SWP.

2.2 Member Agencies

Wholesale water within the region is supplied by Three Valleys by importing and distributing water obtained from Metropolitan to its 13 member agencies. Three Valleys has 13 members agencies including the following:

- Boy Scouts of America: Boy Scouts of America is one of three institutions that receives imported water from Three Valleys. They own and operate the Firestone Scout Reservation, a campground and wilderness facility located in the southern part of the Three Valleys' service area.
- California State Polytechnic University, Pomona: California State Polytechnic University is one of three institutions that receives imported water from Three Valleys, located within the City of Pomona.
- City of Covina: The City of Covina has a service area of approximately 7 square miles encompassing the majority of the City of Covina, a portion of the City of West Covina and an unincorporated portion of Los Angeles County. In 2020, the City of Covina served a population of approximately 29,287 through about 8,500 municipal connections.
- City of Glendora: The City of Glendora's service area covers approximately 11 square miles encompassing the majority of the City of Glendora and a portion of the Cities of San Dimas, Azusa and an unincorporated portion of Los Angeles County. In 2020, the City of Glendora served a population of approximately 45,551 through about 13,468 municipal connections.
- City of La Verne: The City of La Verne has a service area of approximately 8.56 square miles bounded on the west by the City of San Dimas, on the south by the Puddingstone Recreation area, on the east by Fulton Road and the prolongation of Williams Avenue, and on the north by the Los Angeles National Forest. In 2020, the City of La Verne served a population of approximately 31,321 through about 8,800 municipal connections.
- City of Pomona: The City of Pomona's service area covers approximately 22.9 square miles encompassing the majority of the City of Pomona and portions of the Cities of La Verne, Claremont, and Chino Hills. In 2020, the City of Pomona served a population of approximately 153,988 through about 30,041 municipal connections.
- Golden State Water Company (Claremont and San Dimas systems): Golden State Water Company (Claremont system) provides water service to the City of Claremont, portions of the Cities of Montclair, Pomona, and Upland, and adjacent unincorporated areas of Los Angeles County, which encompasses approximately 9.2 square miles. The San Dimas system serves portions of the Cities of La Verne, Walnut, and Covina, and adjacent unincorporated areas of Los Angeles County, covering approximately 13.7 square miles. In 2020, Golden State Water Company served a population of approximately 36,713 through about 11,076 municipal connections in the Claremont system. In the San Dimas system, Golden State Water Company served a population of approximately 53,120 through about 16,033 municipal connections.
- Mount San Antonio College: Mount San Antonio College is one of three institutions that receives imported water from Three Valleys, located within the City of Walnut.
- Rowland Water District (RWD): RWD's water service area covers approximately 17.2 square miles encompassing portions of the Cities of Industry, La Puente, and West Covina, and unincorporated areas of Los Angeles County including Rowland Heights and Hacienda

Heights. In 2020, Rowland Water District served a population of approximately 59,283 through about 13,202 municipal connections.

- Suburban Water Systems: Suburban Water Systems has a service area of approximately 41.7 square miles encompassing the Cities of Glendora, Covina, West Covina, La Puente, Walnut, Whittier, La Mirada, La Habra, and Buena Park as well as sections of unincorporated Los Angeles County and Orange County. Suburban Water Systems' service area is currently divided into two main service areas: the San Jose Hills Service Area, and the Whittier/La Mirada Service Area. In 2020, Suburban Water Systems served a population of approximately 298,367 through about 42,512 municipal connections. This includes approximately 175,529 residents in the San Jose Hills service area and approximately 122,838 residents in the Whittier/La Mirada service area.
- Valencia Heights Water Company: Valencia Heights Water Company is a mutual water company serving portions of the City of West Covina and unincorporated areas of Los Angeles County. Valencia Heights Water Company serves less than 3,000 customers and does not supply more than 3,000 acre-feet (AF) of water annually and thus is not required to prepare a UWMP.
- Walnut Valley Water District (WVWD): WVWDs water service area covers approximately 29 square miles covering the City of Diamond Bar and portions of the Cities of Industry, Pomona, Walnut, and West Covina, as well as unincorporated areas of Los Angeles County including Rowland Heights. In 2020, Walnut Valley Water District served a population of approximately 99,956 through about 27,100 municipal connections.

2.3 Water Sources

An overview of the water sources used by each agency within Three Valleys' service area is shown in Table 2-2.This summary highlights the diversity of water supply portfolios among the water agencies in the region. As a result, each agency is impacted differently by drought, driving a need for regional solutions that are flexible and adaptable to different community needs.

Table 2-2. Current Three Valleys Member Agency Water Sources

Member Agency	Groundwater	Imported Water	Surface Water	Recycled Water
Boy Scouts of America		X		
Cal Poly Pomona	X	X		X
City of Covina[a]		X	X	
City of Glendora[a]	X	X	X	
City of La Verne	X	X		
City of Pomona	X	X	X	X
Golden State Water Company (Claremont)[a]	X	X		

Member Agency	Groundwater	Imported Water	Surface Water	Recycled Water
Golden State Water Company (San Dimas)[a]	X	X	X	
Mount San Antonio College		X		
Rowland Water District	X	X		X
Suburban Water Systems[a]	X	X	X	X
Valencia Heights Water Company[a]	X	X	X	X
Walnut Valley Water District	X	X		X

[a] Purchases water from Covina Irrigating Company (recently renamed Covina Valley Water Company), which produces water from local surface and groundwater sources and treats imported water from Three Valleys

Historical water supply data was provided by each member agency for the years 2015-2022. Table 2-3 shows the average annual water supply sources for each Three Valleys member agency for this period.

Table 2-3. Three Valleys Member Agencies Average Annual Water Supply Sources (2015-2022)

Agency	Groundwater (AF)	Imported Water (AF)	Purchased Water (AF)	Surface Water (AF)	Recycled Water (AF)	Total (AF)
Boy Scouts of America	0	20	0	0	0	20
Cal Poly Pomona	284	39	0	0	454	777
City of Covina	0	222	4,906	0	0	5,128
City of Glendora	9,732	635	0	14	0	10,381
City of La Verne	1,625	2,007	0	0	0	3,632
City of Pomona	12,777	4,309	0	1,740	1,881	20,707
Covina Valley Water Company (CVWC)	860	2,538	0	1,135	0	4,533
Golden State Water Company (Claremont)	4,159	5,316	0	0	0	9,475
Golden State Water Company (San Dimas)	1,777	8,043	0	0	0	9,821
Mount San Antonio College	0	154	0	0	0	154
Rowland Water District	1,226	9,046	0	0	795	11,067
Suburban Water Systems (San Jose)	13,056	5,374	0	0	682	19,112
Valencia Heights Water Company	298	65	0	288	11	662
Walnut Valley Water District	858	17,232	0	0	926	19,016
TOTAL	46,652	55,000	4,906	3,177	4,749	114,485

2.3.1 Imported Water

Three Valleys purchases both untreated and treated imported water from Metropolitan and supplies it to its member agencies. Three Valleys currently receives a Tier 1 water supply allotment from Metropolitan of 80,688 acre-feet per year (AF/year); from 2010-2020, Three Valleys imported an average of 64 TAF from Metropolitan, with annual imports ranging from 54-73 TAF.

Metropolitan imports water from the SWP which is owned and operated by the California Department of Water Resources (DWR) and conveys water from the Bay-Delta to Southern California via the California Aqueduct, and from the Colorado River through the Colorado River Aqueduct (CRA) which is owned and operated by Metropolitan. Generally, Metropolitan sources around 35 percent of its water from the SWP, with another 25 percent sourced from the Colorado River Aqueduct.

Three Valleys supplies treated imported water directly to its member agencies through service connections from the Metropolitan distribution system, but it does not provide water directly to retail customers. Untreated imported water is sent to Three Valleys' Miramar Water Treatment Plant for processing before being distributed to the member agencies. This untreated water is also used to replenish portions of the Six Basins and is delivered to the Main San Gabriel Basin (also referred to as Main Basin) to meet Replacement Water obligations specified in the Main Basin Judgment. Furthermore, Three Valleys obtains untreated imported water supplies from Metropolitan for delivery to the Covina Irrigating Company, which treats these deliveries at its William B. Temple Treatment Plant before supplying other member agencies within the Three Valleys' region.

During drought periods, water allocations from SWP are significantly reduced, leading to a greater proportion of Colorado River supplies in Metropolitan's supply mix. However, the Colorado River faces ongoing water quality issues, and in August 2021, the federal government declared a water shortage for the first time at one of the river's main reservoirs. Additionally, several of Three Valleys' member agencies are in SWP dependent areas, meaning they cannot receive Colorado River supplies from Metropolitan, and are solely dependent on imported water from the SWP.

Each year, Metropolitan member agencies communicate their anticipated water needs for the next five years, allowing Metropolitan to collaborate with them on forecasts for long-term future water supply. Total imported water use by Three Valleys member agencies amounts to approximately 51 percent of the region's total water supply portfolio.

2.3.2 Groundwater

The region also uses local groundwater from four different groundwater basins including the Six Basins, Chino Basin, Main San Gabriel Basin, and Spadra Basin. However, Three Valleys only has water storage accounts in the Six Basins, the Main San Gabriel Basin, and Chino Basin. Table 2-4 shows Three Valleys operational water storage accounts.

Table 2-4. Three Valleys Operational Storage Accounts

Storage System	Type	Three Valleys Storage Capacity (AF)	Three Valleys - Pomona Agreement**
Six Basins	Groundwater basin	3,500	
Main San Gabriel Basin	Groundwater basin	50,000	
Chino Basin	Groundwater basin		1,390

[a] PBWA has a storage and export agreement with the Main San Gabriel Basin for 30,000 AF

**Chino Basin Three Valleys storage through Pomona is a one-time agreement

Three basins (Six Basins, Chino Basin, and Main San Gabriel Basin) are adjudicated groundwater basins; therefore, they are exempt from the requirement to designate a Groundwater Sustainability Agency (GSA) as mandated by the Sustainable Groundwater Management Act (SGMA). These basins are managed by their respective Watermasters to manage the ownership of water rights and water use with goals similar to that of SGMA. The Spadra Basin is a small, non-adjudicated subbasin of the San Gabriel Valley Basin, designated as a 'very low-priority' basin by DWR. However, the Walnut Valley Water District and the City of Pomona collectively formed the Spadra Basin GSA to manage the basin. Total groundwater use by Three Valleys member agencies amounts to approximately 35 percent of the region's total water supply portfolio.

According to the State Water Resources Control Board's Groundwater Ambient Monitoring and Assessment (GAMA) Program, groundwater from these basins has exhibited Maximum Contaminant Level (MCL) exceedances for numerous constituents, including 1,2,3-Trichloropropane (1,2,3-TCP), Hexavalent Chromium, Arsenic, 1,2-Dibromo-3-chloropropane (DBCP), Perchlorate, Tetrachloroethene (PCE), Trichloroethene (TCE), Total Dissolved Solids (TDS), and Uranium. To remove these contaminants, agencies use a combination of blending and wellhead treatment, both of which are resulting in a greater reliance on imported water.

2.3.3 Recycled Water

Three Valleys does not directly use or have access to recycled water. However, several member agencies in the region use recycled water to meet non-potable demands; Table 2-5 lists these member agencies.

Table 2-5. Average Annual Three Valleys Member Agency Water Use (2015-2022)

Member Agency	Recycled Water Use (AF)
Cal Poly Pomona	454
City of Pomona	1,881
Rowland Water District	795
Suburban Water Systems	682
Valencia Heights Water Company	11
Walnut Valley Water District	926

Recycled water sources in the region are primarily from the Pomona Water Reclamation Plant and San Jose Creek Water Reclamation Plant, both owned and operated by the Los Angeles County Sanitation District. Total recycled water use by Three Valleys member agencies amounts to approximately 6 percent of the region's total water supply portfolio.

2.3.4 Surface Water

Three Valleys does not use self-supplied surface water sources to meet regional water demands. However, the District purchases San Antonio Creek surface water supplies from the City of Pomona to replenish the Six Basins. Several Three Valleys member agencies use surface water to meet potable demands; the City of Pomona, for example, sources local surface water from San Antonio Creek, which is then purchased by Three Valleys to replenish the Six Basins. Additionally, some member agencies obtain surface water from the Covina Irrigating Company, which treats water from the San Gabriel River. Total surface water use by Three Valleys member agencies amounts to approximately 7 percent of the region's total water supply portfolio.

3 Water System Reliability

This section describes the existing and projected water demands in Three Valleys service area, both regionally as well as by member agency, and describes a vulnerability assessment developed by Three Valleys to assess the potential risk to water delivery reliability posed by projected climate change in the region.

3.1 Existing Water Demand

Total water demands in the Three Valleys service area has varied significantly during recent years, particularly during the five consecutive year drought from fiscal year (FY) 2011-12 to FY 2015-16. Total Three Valleys water demand for 2020 was aggregated from the latest available member agency UWMPs and is shown in Table 3-1. These demand estimates are much higher than the actual water use baseline. The combination of conservation measures and water use restrictions that has been imposed for most of the past 15 years due to recurring regional droughts has likely contributed to actual water use being lower than estimated water demand. However, the data from member agency UWMPs is still useful for understanding the distribution of water demand by use types.

Table 3-1. 2020 Distribution of Water Demand for the Three Valleys Service Area

Use Type	Demand (AF/year)	Contribution to Demand (%)
Single-Family Residential	69,639	51.6%
Commercial	18,822	14.0%
Other	11,712	8.7%
Multi-Family Residential	10,233	7.6%
Losses	5,726	4.2%
Recycled Water Demand	6,463	4.8%
Institutional	6,026	4.5%
Landscape & Agriculture	4,789	3.6%
Industrial	1,434	1.1%
Total Demand from Member Agencies	**134,844**	**100%**

AF = acre-feet

Source: Data aggregated from member agencies' 2020 UWMPs

3.2 Projected Water Demand

Three Valleys member agencies projected demands are provided in Table 3-2. Projected demand data by water source was provided by member agencies in five-year increments (starting at 2025 through 2045). The projected demands listed in Table 3-2 were calculated by taking the average of all projected demands provided by each agency for 2025-2045.

Table 3-2. Three Valleys Member Agencies Projected Average Annual Water Supply Sources (2025-2045)

Agency	Groundwater (AF)	Imported Water (AF)	Purchased Water (AF)	Surface Water (AF)	Recycled Water (AF)	Total (AF)
Boy Scouts of America	0	35	0	0	0	35
Cal Poly Pomona	956	60	0	0	1,430	2,446
City of Covina	0	200	5,465	0	0	5,665
City of Glendora	10,450	771	0	0	0	11,221
City of La Verne	2,895	10,890	0	0	0	13,785
City of Pomona	16,040	6,000	0	2,000	2,350	26,390
Covina Irrigating Company (CIC)*	2,293	6,768	0	3,026	0	12,087
Golden State Water Company (Claremont)	5,205	5,596	0	0	0	10,801
Golden State Water Company (San Dimas)	3,000	7,340	0	0	0	10,340
Mount San Antonio College	0	536	0	0	0	536
Rowland Water District	4,700	7,542	0	0	940	13,182
Suburban Water Systems (San Jose)	16,715	6,023	0	0	700	23,438
Valencia Heights Water Company	795	100	0	850	30	1,775
Walnut Valley Water District	5,521	13,986	0	0	2,180	21,687
TOTAL	68,570	65,847	5,465	5,876	7,630	153,388

*CIC receives and treats imported water from Three Valleys. CIC also produces water from local and groundwater sources. CIC was recently acquired by Valencia Heights Water Company and rebranded as Covina Valley Water Company.

3.3 Climate Change Vulnerability

Three Valleys developed a Climate Change Vulnerability Assessment as part of the preparation of their WRMP and DCP to enhance their understanding of the impacts of climate change on future water demand in Three Valleys wholesale service area and the sources of Three Valleys water supplies (Three Valleys 2024). The Assessment analyzed projected changes in future water supplies and water demand during a normal year, single dry and wet years, and multi-year (5-year) dry and wet periods over the next 20 years, using climate projections developed for the water resources planning by DWR. The analysis of future climate impacts on water supplies and demands included three potential future climate conditions: drier future conditions with extreme warming; median future conditions; and wetter future conditions with moderate warming.

Results from this climate modeling show minor decreases in average annual water supplies from the San Gabriel River basin during drought (single year and multi-year) years relative to baseline conditions due to shifts in precipitation from winter to fall and projected increases in surface water evaporation caused by increasing temperatures, particularly under the extreme warming climate scenario. Modeling results also projected a shorter rainy season with potential for higher intensity precipitation events resulting in higher peak flows of shorter duration.

In terms of water demand, climate modeling results projected increases in outdoor water uses under normal, single dry, and multi-year drought conditions, caused by projected temperature increases. This leads to higher evapotranspiration (ET) rates for landscaping, irrigated crops, and native vegetation. Average annual outdoor water use by customers within the Three Valleys service area could increase by up to six percent under the most severe (Dry Hot) climate change scenario.

A comparison of Three Valleys and Metropolitan's water budget projections under future climate conditions shows similar total demand projections, with Three Valleys showing increased reliance on imported surface water (supplied by Metropolitan) in its future projections. This increased reliance in Three Valleys projections occurs because local water supplies are projected to remain nearly constant while water demand increases due to future growth and increased climate-related water deficits. This highlights the need to develop mitigation actions to reduce future reliance on imported surface water.

Table 3-3 through Table 3-5 display the projected Three Valleys service area water budgets under the three modeled potential future climate conditions. The projected budgets show that between 2020 and 2045, imported water supply requirements will increase by 15.4 thousand acre-feet per year (TAF/year) under drier - extreme warming future conditions, 13.3 TAF/year under median future climate conditions, and 7.8 TAF/year if future conditions are wetter with moderate warming.

Table 3-3. Three Valleys Service Area Water Budget – Drier Future with Extreme Warming

Source (AF/year)	2018-2022	2025	2030	2035	2040	2045
Total Demand	113,651	120,346	121,219	123,062	125,472	128,004
Groundwater	38,316	38,282	38,234	37,895	37,551	37,202
Surface Water	4,760	4,741	4,718	4,579	4,440	4,301
Recycled Water	5,619	5,929	5,953	6,000	6,073	6,151
Total Local Supply	48,694	48,952	48,905	48,473	48,063	47,655
Net Imported Water Supply Required	64,957	71,394	72,314	74,589	77,409	80,349

Table 3-4. Three Valleys Service Area Water Budget – Median Future Climate Conditions

Source (AF/year)	2018-2022	2025	2030	2035	2040	2045
Total Demand	113,651	120,346	121,219	122,590	124,513	126,557
Groundwater	38,316	38,282	38,234	38,007	37,763	37,535
Surface Water	4,760	4,741	4,718	4,698	4,678	4,658
Recycled Water	5,619	5,929	5,953	6,000	6,073	6,151
Total Local Supply	48,694	48,952	48,905	48,705	48,514	48,345
Net Imported Water Supply Required	64,957	71,394	72,314	73,885	75,999	78,212

Table 3-5. Three Valleys Service Area Water Budget – Wetter Future with Moderate Warming

Source (AF/year)	2018-2022	2025	2030	2035	2040	2045
Total Demand	113,651	120,346	121,219	122,220	123,723	125,376
Groundwater	38,316	38,282	38,234	39,101	39,983	40,837
Surface Water	4,760	4,741	4,718	5,012	5,304	5,598
Recycled Water	5,619	5,929	5,953	6,000	6,073	6,151
Total Local Supply	48,694	48,952	48,905	50,113	51,360	52,587
Net Imported Water Supply Required	64,957	71,394	72,314	72,107	72,362	72,790

3.4 Dependence on Imported Water

Based on the historical water use for each of Three Valleys' member agencies from 2015 to 2022, almost all of Three Valleys' member agencies rely on imported water as a major supply source. Imported water constitutes the largest portion of the region's supply, accounting for about 51 percent of the total from 2015 to 2022 (Figure 3-1).

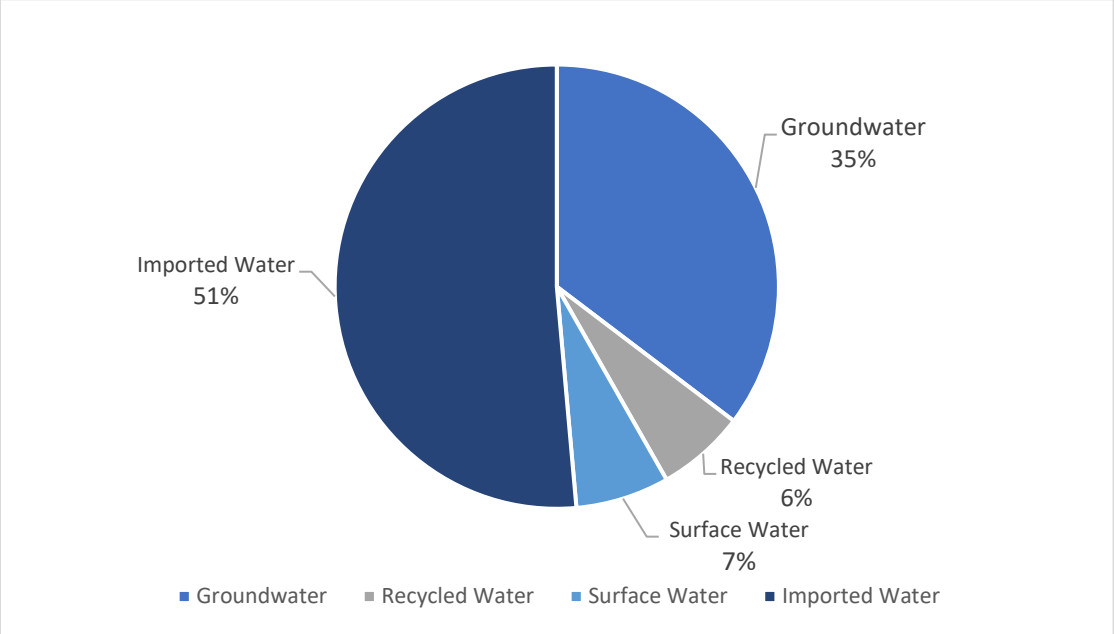

Figure 3-1. current dependency Water Use by Source

Table 3-6 presents Three Valleys member agencies dependencies on imported water – relative to their total supply of water – under normal, drought, and future conditions. Using historical data provided by member agencies for 2015-2022 and projected data through 2045, imported water dependency was first calculated under the latest available hydrologic conditions (2015-2022). Over half of the member agencies are at least 50 percent dependent on imported water for their total supply portfolio in these recent years.

Next, imported water dependency was calculated for each member agency looking at the worst drought available in these records (2022). Dependence on imported water supplies increases during drought, with eight member agencies being at least 65 percent dependent on imported water during this drought.

Finally, imported water dependency was calculated for projected supply portfolios in 2045. Similar to recent years, over half of the member agencies are at least 50 percent dependent on imported water in 2045 according to their projections.

Much like the findings of the Climate Change Vulnerability Assessment described in the previous Section, the imported water data and projections from Three Valley member agencies highlight the need to develop regional actions or project portfolios to help reduce dependence on imported supplies and secure more reliable water sources for the region.

Table 3-6. Three Valleys Member Agencies Dependence on Imported Water (IW)

Agency	Dependency on IW (2015-2022)	Dependency on IW during Drought	Dependency on IW (2045)
Boy Scouts of America	100%	100%	100%
Cal Poly Pomona	5%	6%	2%
City of Covina	4%	18%	3%
City of Glendora	6%	25%	7%
City of La Verne	55%	79%	79%
City of Pomona	21%	30%	21%
Covina Irrigating Company	56%	65%	56%
Golden State Water Company (Claremont)	56%	65%	52%
Golden State Water Company (San Dimas)	82%	87%	71%
Mount San Antonio College	100%	100%	100%
Rowland Water District	82%	88%	56%
Suburban Water Systems (San Jose)	28%	75%	26%
Valencia Heights Water Company	10%	29%	6%
Walnut Valley Water District	91%	88%	65%

4 Mitigation Projects Development and System Performance Evaluation

As described in Section 3.3, the Climate Change Vulnerability Analysis conducted by Three Valleys showed an increasing reliance on imported surface water (supplied by Metropolitan) in its future projections, highlighting the need to develop mitigation actions to reduce future reliance on imported surface water. In response to these findings, Three Valleys worked with their member agencies to compile a suite of projects designed towards the goal of increasing regional water supply planning and operational flexibility and resiliency[1]. This suite of mitigation projects includes projects that are in various stages of implementation, including pre-planning, planning, design, and construction. Many of these mitigation projects are consistent with existing planning programs and processes of the various regional stakeholders, such as Three Valleys' Capital Improvement Plan.

This section describes the process of identifying and developing the suite of mitigation projects as well as initial analyses of those projects' proposed benefits relative to existing system performance in four infrastructure categories: water supply storage, conveyance pipelines, wells, and water quality treatment.

4.1 Mitigation Projects Development

In June 2024, Three Valleys sent invitations to its member agencies and regional stakeholders to schedule meetings to discuss potential mitigation projects. Organizations received a project information sheet tailored to their agency. In July 2024, Three Valleys conducted individual meetings with the agencies to review, confirm, and update the mitigation projects.

The project information form asked each organization to assess whether and to what degree their submitted mitigation project(s) have the potential to enhance regional water supply reliability. Relevant features that could contribute to improving water supply reliability include infrastructure such as pipelines and pump stations; reduced reliance on imported water supplies; treatment of groundwater contaminants like per- and polyfluoroalkyl substances (PFAs) or contaminants of emerging concern (CECs); and system enhancements or repairs to storage facilities or other components.

Additionally, each organization was asked to provide as many key identifiers as possible for each mitigation project, including, but not limited to, the following:

- Project stage (conceptual, feasibility, design, construction)
- Implementation timeline/schedule (years)
- Estimated costs (capital and annual)
- Estimated annual water savings or supplemental supplies created

[1] As described in Section 1.2, Three Valleys has been developing a Regional DCP in parallel with the development of this WRMP. As part of the development of the DCP, Reclamation requires identification and description of actions that mitigate the impacts of drought and enhance regional resiliency. Pursuant to this requirement, Three Valleys has compiled a suite of Mitigation Actions; these Mitigation Actions will be referred to as mitigation projects in this WRMP.

4.1.1 Mitigation Projects Identified

Three Valleys held a workshop in August 2024 where the submitted mitigation projects were presented and discussed amongst member agencies and regional stakeholders. The workshop aimed to address gaps in the requested mitigation project data as well as to solicit additional feedback on the submitted projects. From the data collected and the input received during the workshop, a total of 54 projects, programs, and strategies were identified (Figure 4-1). A full list of the submitted mitigation projects and their descriptions (where available) are provided in Appendix A – List of Mitigation Projects.

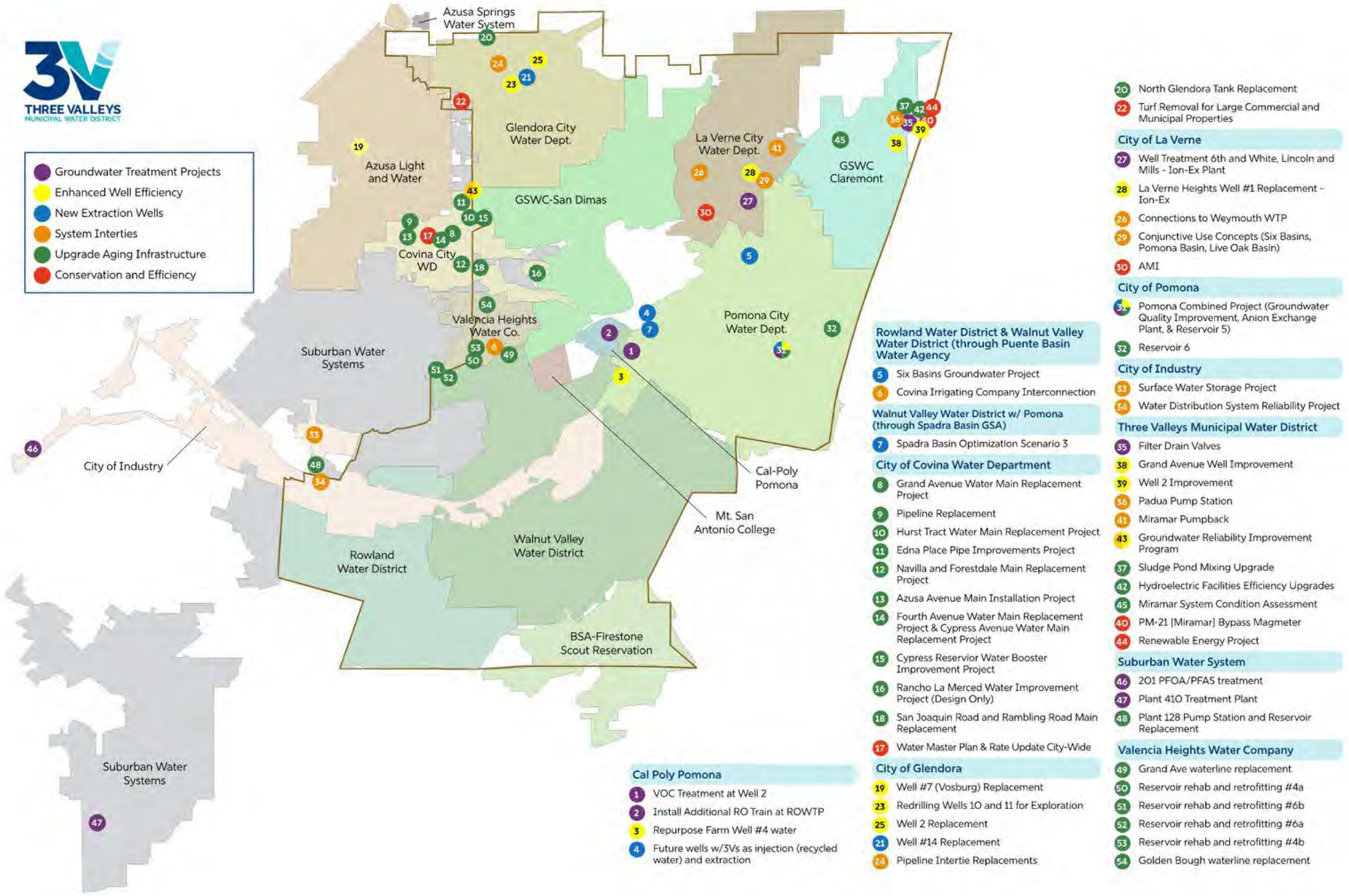

Figure 4-1. Potential Suite of Mitigation Projects Identified by Member Agencies and Regional Stakeholders

Note:

1. GSWC = Golden State Water Company, BSA = Boy Scouts of America
2. Project #44 is included to account for all proposed mitigation actions. However, upon further review with Three Valleys, it was determined that Project #44 does not qualify as a drought mitigation action.

4.1.2 Conservation Measures

Mitigation actions such as water conservation can also reduce future water supply deficits. Recent legislation such as SB 1157 requires urban retail water suppliers in California to implement water conservation measures which will reduce overall water use. Water conservation targets required by state regulations include the following indoor residential water use targets:

- 55 gallons per capita daily prior to January 1, 2025,
- 47 gallons per capita daily from January 1, 2025, to January 1, 2030,
- 42 gallons per capita daily beginning to January 1, 2030.

Table 4-1 shows how much water conservations saving would be realized if member agencies meet pre-2025, 2025 to 2030, and post-2030 indoor water use targets. The numbers in red show potential future water savings that would be achieved if member agencies reduced the water use to below the target. Total conservation savings are only aggregated from member agencies which have not yet met the indoor water use targets. Existing water saving from member agencies which have already met the water conservation targets are shown in black.

Table 4-1: Water Conservation Targets and Savings

Agency	Savings if Current 55 GPCD Target is Met (AF)	Projected 2025 Savings if 47 GPCD Target is Met (AF)	Projected 2030 Savings if 42 GPCD target is Met (AF)
Glendora	-1,854	-2,326	-2,621
La Verne	171	-97	-231
Pomona	1,015	-226	-817
GSWC Claremont	2,531	2,193	2,002
GSWC San Dimas	1,194	693	387
Rowland	168	-313	-602
Suburban	2,341	805	-99
Walnut	173	-701	-1,208
Conservation Savings	-1,854	-3,663	-5,578

Based on this analysis, total water use in the region would be reduced by an additional 5.6 TAF/year if all Three Valleys member agencies meet the state's 2030 water conservation target. Achieving this conservation reduction would reduce the overall future water supply deficit from 15 TAF/year to about 10 TAF/year.

The state has also passed AB 1572 which includes bans on the use of potable water for irrigation of nonfunctional turf with potable water on institutional properties including public agencies, commercial and industrial properties, common areas of properties of homeowners' associations, community organizations, and public water systems. The full impact of the legislation on total water in the region cannot be easily determined at this time because of the gradual phasing-in of irrigation prohibitions

for different land use types. As with other conservation measures, total savings will depend on levels of compliance achieved.

4.2 System Performance Evaluation

The following sections describe the initial analyses of the identified mitigation projects' proposed benefits relative to existing system performance in four infrastructure categories: water supply storage, conveyance pipelines, wells, and water quality treatment.

4.2.1 Storage Capacity

As described in Section 2.3.2, Three Valleys' water supply sources include: groundwater pumped from Six Basins; untreated, imported surface water purchased from Metropolitan for use at Three Valleys' treatment plant; and treated imported surface water purchased from Metropolitan. Three Valleys' main source of water supply is imported water from Metropolitan.

At of the end of 2023, Three Valleys had approximately 1,150 AF stored in the Main San Gabriel Basin (which is projected to increase to 10,000 AF by the end of 2024). The highest volume of water stored by Three Valleys in the Main San Gabriel Basin was 24,000 AF in 2019. Three Valleys also had 3,300 AF stored in the Six Basins groundwater basin in 2023, projected to decrease to 2,500 AF for 2024, and approximately 1,390 Fheld in a storage account in the Chino groundwater basin by City of Pomona (2024). By end of 2024, Three Valleys is projected to have approximately 14 TAF in storage compared to its current storage capacity amongst the basins of 54,890 AF. The availability of water and the groundwater spreading facility availability limits the ability for Three Valleys to fully utilize its groundwater storage programs.

System Storage Facilities Analysis

Additional investment in water storage infrastructure is needed to ensure that all member agencies have access to storage facilities. In addition, the region seeks to enhance water supply reliability by maximizing use of its full storage capacity (of approximately 55 TAF), which is currently about a year's worth of imported water supply.

Table 4-2 shows proposed and conceptual mitigation projects from Three Valleys – and their member agencies – that could increase Three Valleys' storage capacity and/or improve the reliability of their current storage systems. These mitigation projects are summarized and described in more detail in Section 5.

Table 4-2. Proposed Projects to Enhance Storage Capacity

Project	Proponent	Increase in Storage Capacity (AF)
Surface Water Storage Project	City of Industry	n/a
Spadra Basin Optimization Scenario 3	Walnut Valley Water District with Pomona (through Spadra Basin GSA)	3,500
	TOTAL	3,500+

4.2.2 Pipelines

As a water wholesaler, Three Valleys relies on a network of pipelines to deliver water to retail agencies. In addition, Three Valleys connects to neighboring pipelines for added flexibility. For instance, in the spring of 2015, Three Valleys was able to connect to the City of Pomona's Canon pipeline that conveys water from San Antonio Creek to the City of Pomona's Pedley Filtration Plant located in the City of Claremont to the direct surface water to San Antonio Spreading Grounds that benefit the Three Valleys' groundwater wells located in the Six Basins.

System Pipeline Facilities Analysis

A full asset condition survey has not been conducted for the Three Valleys water system. However, many pipelines and associated infrastructure within the system are approaching or even past their planned service life of approximately 50 years. This is particularly true for infrastructure constructed soon after the agency was established nearly 75 years ago. In addition, operational constraints in the conveyance system limit full utilization of water supply and storage capabilities. For example, Three Valleys has capacity to store 50,000 AF in the Main San Gabriel Basin but currently only has turnout capacity to import 5,000 to 6,000 AF/year from Metropolitan. Three Valleys developed a conceptual project which was tested in the fall of 2024 which provided an additional recharge capacity of 30 cubic feet per second. The facility would be able to recharge approximately 10,000 AF if operated continuously for six months without interruptions for basin maintenance or other facility limitations.

Table 4-3 shows proposed and conceptual mitigation projects from Three Valleys – and their member agencies – that could improve the reliability of their current pipeline systems. These mitigation projects are summarized and described in more detail in Section 5.

Table 4-3. Proposed Projects to Enhance Pipeline Reliability

Project	Proponent
Miramar System Condition Assessment	Three Valleys Municipal Water District
Covina Irrigating Company Interconnection	Rowland Water District & Walnut Valley Water District (through Puente Basin Water Agency)
Water Loss Reduction through Pipeline Replacement	City of Covina Water Department
Pipeline Intertie Replacements	City of Glendora

4.2.3 Wells

The number of active wells in the Three Valleys' region is estimated at between 40 and 50 based on the annual groundwater extraction of approximately 46,652 AF/year and an estimated yield of 800 gallons per minute (gpm) per well operating approximately 80 percent of the time. Some functioning wells are less efficient to operate as they approach the end of their planned service life. In addition, the region also has several wells which are no longer in use because of malfunctioning infrastructure or water quality conditions.

There is currently no comprehensive study on the state of wells in the region. However, anecdotal information from member agencies indicates that additional investment in new wells, groundwater treatment and rehabilitation projects is required to maintain or even increase total well extraction capacity in the region over the next few years.

System Wells Facilities Analysis

Table 4-4 shows well projects proposed by Three Valleys and member agencies to increase the total extraction capacity and improve the reliability of current wells. These mitigation projects are summarized and described in more detail in Section 5.

Table 4-4. Proposed Projects to Enhance Reliability of Well Extraction Capacity

Project	Proponent	Estimated Increase in Extraction Capacity (AF)
Grand Avenue Well Improvement	Three Valleys	n/a
Well #2 Improvement	Three Valleys	n/a
Groundwater Reliability Improvement Project	Three Valleys	9,000
Repurpose Farm Well #4 Water	Cal Poly Pomona	600
Future Wells as Injection (Recycled Water) and Extraction - 2 sites	Cal Poly Pomona (with Three Valleys, City of Pomona)	1,200
Six Basins Groundwater Project	Rowland Water District & Walnut Valley Water District (through Puente Basin Water Agency)	1,500
Spadra Basin Optimization Scenario 3	Walnut Valley Water District with Pomona (through Spadra Basin GSA)	2,994
Well #2 Replacement	City of Glendora	n/a
Well #7 Replacement	City of Glendora	n/a
Well #14 Replacement	City of Glendora	2,000
Redrilling Wells #10, #11 for Exploration	City of Glendora	n/a
La Verne Heights Well #1 Replacement	City of La Verne	n/a
	TOTAL	17,294+

4.2.4 Water Quality Treatment Infrastructure

Three Valleys obtains untreated, imported water supplies from Metropolitan for treatment at the District's Miramar Water Treatment Plant. In addition, Three Valleys produces groundwater from three wells located in the Six Basins which are also treated at the Miramar Water Treatment Plant.

System Treatment Infrastructure Facilities Analysis

The total treatment capacity currently operated by Three Valleys and their member agencies is unknown. However, member agencies have identified 8 water treatment projects. If implemented, the projects would enhance the region's treatment capacity by over 9,500 AF/year

Table 4-5 shows proposed and conceptual mitigation projects from Three Valleys – and their member agencies – that could improve the reliability of their water treatment infrastructure and systems. These mitigation projects are summarized and described in more detail in Section 5.

Table 4-5. Proposed Projects to Enhance Water Treatment Infrastructure Reliability

Project	Proponent	Increase in Usable Supply (AF)
Filter Drain Valves	Three Valleys	n/a
Sludge Pond Mixing Upgrade	Three Valleys	n/a
Volatile Organic Compounds (VOC) Treatment at Well #2	Cal Poly Pomona	460
Install Additional Reverse osmosis (RO) Train at Cal Poly Pomona Water Treatment Plant	Cal Poly Pomona	275
Well Treatment	City of La Verne	3,500
City of Pomona Combined Project (Groundwater Quality Improvement, Anion Exchange Plant)	City of Pomona	5,300
201 PFOA/PFAS Treatment	Suburban Water System	n/a
Plant 410 Treatment Plant	Suburban Water System	n/a
	TOTAL	9,535+

4.3 Summary of Infrastructure Need

As described in the previous sections, Three Valleys has a need for additional infrastructure investment across all infrastructure categories analyzed. Investments in mitigation projects identified as part of this process will support Three Valleys' goals of increasing local water supply reliability and reducing dependency on imported water supply.

Table 4-6 shows estimated Three Valleys and member agency project benefits relative to their respective infrastructure needs. It should be noted that the project water supply yields listed in this table were submitted by the respective project proponents as part of the mitigation project development (see Section 4.1); not every project submitted had a yield associated with the project as part of these project proponent submittals. Therefore, the yield and project costs listed in this table were only calculated for projects that included an estimated yield.

Table 4-6. Summary of Proposed Project Benefits Relative to Infrastructure Needs

Category (Number of Projects)	Total Project Yield (AF)	Project Yield Cost ($/AF)	
		Group Range	Group Average
Integrated Storage and Wells (1)	2,994	--	$53,616
Pipelines (2)	2,200	$2,000-$17,000	$3,465
Wells (5)	14,300	$300-$15,000	$10,735
Treatment (4)	9,535	$1,000-$3,000	$1,841
TOTAL	29,029	$300-$17,000	$11,685

5 Mitigation Projects Analysis

As described in the previous Section, Three Valleys and its member agencies, together with other regional stakeholders, identified 54 projects, programs, and strategies designed towards the goal of increasing regional water supply planning and operational flexibility and resiliency. Of those, 26 projects included new infrastructure and/or updates to existing infrastructure; these 26 projects were sorted into four infrastructure categories, described in the previous Section.

Numerous factors have the potential to impact implementation of these mitigation projects, such as funding availability, regulatory requirements, implementation complexities, and strategic planning priorities that are unique to each regional stakeholder. The following sections describe several of these factors: project cost, project implementation schedule, and probability of project's implementation. A summary of funding opportunities for regional and/or local projects is also presented.

5.1 Cost

Table 5-1 and Figure 5-1 present summaries of proposed regional infrastructure project estimated construction costs. The estimated total cost of the 26 proposed projects is over $660 million. Note that the projects included in these summaries include all 26 infrastructure projects described above, not just the infrastructure projects that were submitted with estimated water supply yields as presented in Section 4.3 and Table 4-5.

Table 5-1. Summary of Proposed Infrastructure Project Estimated Construction Costs

Type of Project	Number of Projects	Estimated Average Cost ($)	Estimated Total Cost ($)
Storage	2	$88M	$176M
Pipelines	4	$3M	$12M
Wells	12	$27.3M	$327M
Treatment	8	$6.5M	$52M
		TOTAL	$667M

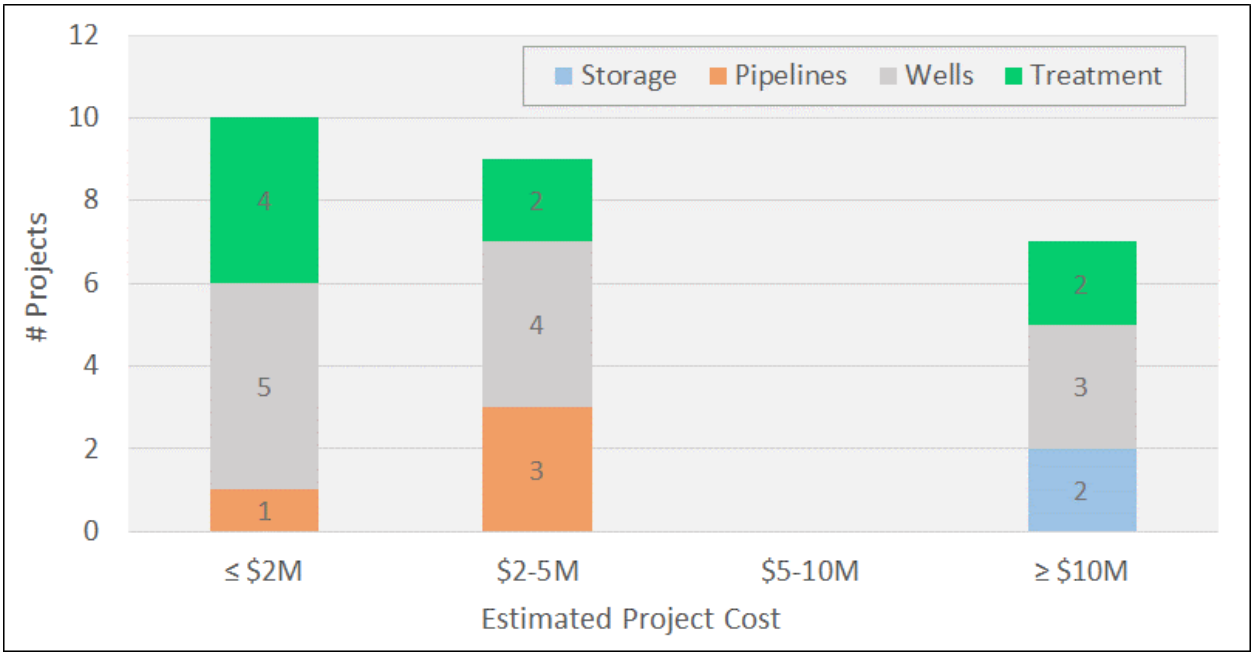

Figure 5-1. Grouped Summaries of Proposed Infrastructure Project Costs

Key Observations:

- Storage projects are relatively expensive in terms of total cost and cost per acre-foot. However, these projects can greatly improve water supply reliability and reduce dependence on imported water during periods of drought.
- Treatment and Wells projects are the most common type of proposed projects. They are also the most cost-effective source of supply in terms of cost per acre-foot. The amount of supply available from these projects is limited by availability of water rights.
- All Pipeline projects proposed are less than $5M. While they do not generate any new supplies, pipeline projects enhance water supply reliability and provide additional operational flexibility.

5.2 Schedule

Table 5-2 and Figure 5-2 present summaries of proposed regional infrastructure estimated project implementation schedules. Note that the projects included in these summaries include all 26 infrastructure projects described above, not just the infrastructure projects that were submitted with estimated water supply yields as presented in Section 4.3 and Table 4-5.

Table 5-2. Summary of Proposed Infrastructure Project Implementation Schedules

Type of Project	Number of Projects	Estimated Construction Schedule
Storage	2	6 yrs
Pipelines	4	3.4 yrs
Wells	12	4.1 yrs
Treatment	8	3 yrs

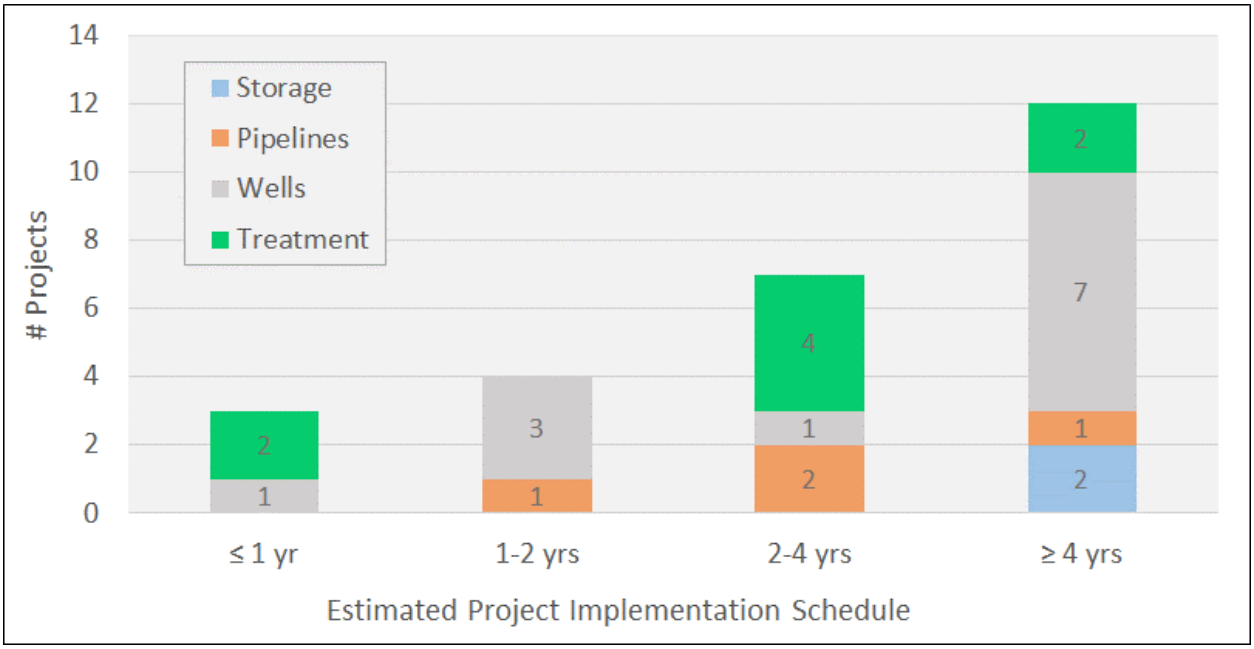

Figure 5-2. Grouped Summaries of Proposed Infrastructure Project Implementation Schedules

Key Observations:

- Most of the proposed projects have implementation schedules of greater than 4 years. These projects typically require external funding and collaboration from multiples agencies for implementation.
- However, there are 7 projects in three categories (wells, treatment, and pipelines) that are estimated to be completed in less than two years. These are typically projects that can be implemented by individual agencies as part of local capital improvement plans.
- Storage projects typically fall within the class of longer-range implementation projects which require external funding and regional partnerships.

5.3 Implementation

Table 5-3 and Figure 5-3 present summaries of proposed regional infrastructure project implementation probabilities. Note that the projects included in these summaries include all 26 infrastructure projects described above, not just the infrastructure projects that were submitted with estimated water supply yields as presented in Section 4.3 and Table 4-5.

Table 5-3. Summary of Proposed Infrastructure Project Implementation Probabilities

Type of Project	Number of Projects	Average Implementation Probability
Storage	2	20%
Pipelines	4	40%
Wells	12	52%
Treatment	8	68%

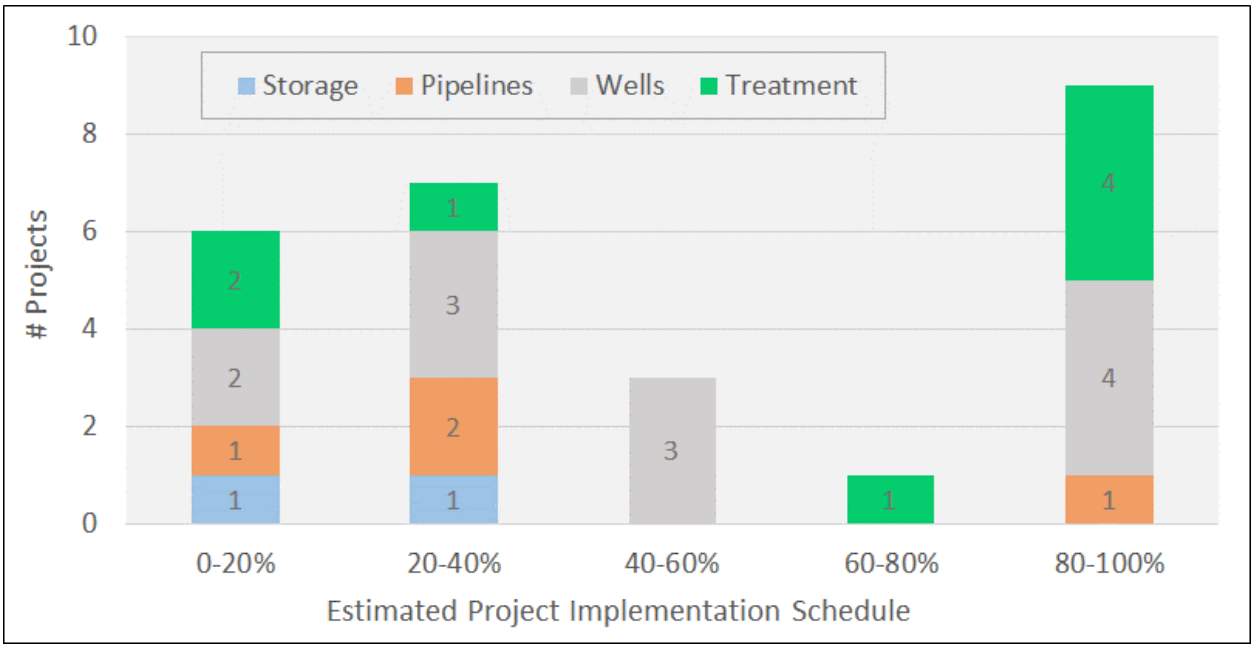

Figure 5-3. Grouped Summaries of Infrastructure Project Implementation Probabilities

Key Observations:

- Approximately half of Treatment and Wells projects are viewed as highly likely to be implemented.
- Storage projects and other infrastructure projects requiring regional partnerships and external funding are viewed as less likely (less than 40% probability) to be implemented.

5.4 Funding Opportunities

Implementation of these regional projects most cost effective with funding from a combination of local, state and federal sources. Federal funding sources have been identified from the Federal Emergency Management Agency (FEMA) and the U.S. Bureau of Reclamation (USBR). State funding has been identified from the State Water Resources Control Board. Additional state funding programs are expected to become available in coming years following the passage in November 2024 of the statewide Proposition 4 ballot measure which authorizes bonds for safe drinking water, wildfire prevention, and protecting communities and natural lands from climate risks.

In general, there are currently several grant programs which could fund treatment and storage infrastructure projects. There are fewer grant programs that are well suited for well and pipeline infrastructure projects. The list of potential grant opportunities which could fund implementation of regional projects in the Three Valley service area are presented in Table 5-4.

Table 5-4. Potential Funding Opportunities for Project Implementation

Organization	Program Name	Type(s) of Projects Funded				Priorities	Timeline(s)	Funding Available ($)		Cost Share / Funding Match
		Storage	Pipelines	Wells	Treatment			Total Funding	Funding / Project	
FEMA	Building Resilient Infrastructure and Communities (BRIC)	x	x	x	x	Research-supported, proactive investment in community resilience	Ongoing ("once the funding opportunity is published, the application period for the BRIC funding cycle will open in the fall and close in early winter")	$800M+	$200K - $12M+[a]	75% federal 25% non-federal
Bureau of Reclamation (USBR)	WaterSmart	x	x	x	x	Water and Energy Efficient Grants	First round of applications has been submitted Second round of applications are due Nov 13, 2024	approx. $50M	Up to $500K: projects completed within two years Up to $5M: projects completed within three years	50% federal 50% non-federal
		x	x	x	x	Drought Response Program - Drought Resiliency	FY25 funding applications received by Oct 7, 2024, are currently under review	up to $40M	Up to $750K: projects completed within two years Up to $3M: projects completed within three years	50% federal 50% non-federal
			x			Small-Scale Water Efficiency Grants	FY25 funding applications received by Oct 7, 2024, are currently under review	approx. $12M	Up to $125K: projects completed within two years Total project costs cannot exceed $250K	50% federal 50% non-federal
					x	Water Recycling and Desalination	FY25 Funding Opportunity expected Dec 2024 Applications due Mar 2025	approx. $30M	n/a	50% federal 50% non-federal
State Water Resources Control Board (SWRCB)	General Drought Funding	x				Projects that address either drought-related urgent drinking water needs or long-term resilience	Next round of applications due Feb 28, 2025	n/a		
	Water Recycling Funding Program				x	Water recycling projects that offset or augment state or local fresh water supplies and water recycling research	Ongoing	approx. $153M[b]	n/a	50% state 50% non-state
	Drinking Water State Revolving Fund (DWSRF)	x	x	x	x	Infrastructure improvements to correct system deficiencies and improve drinking water quality for the health, safety, and welfare of all Californians	Revolving	approx. $220-375M	Low-interest loans, additional subsidy (principal forgiveness), and technical assistance to public water systems	
	Clean Water State Revolving Fund (CWSRF)	x			x	Projects that help protect and improve water quality	Revolving	approx. $600M	Low-interest loans, additional subsidy (principal forgiveness), and technical assistance to public water systems	

[a] Project type-specific funding varies based on type of project being funded (mitigation projects, capability and capacity building activities, management costs, direct technical assistance); for more detailed information, see BRIC website

[b] Total represents sum of funding from multiple sources (Prop 1, Prop 13, Prop 68, General Fund) as of Aug 1, 2024

6 Opportunities for Regional Agency/Project Collaboration

As a region which relies 50 to 60 percent on imported water supplies, it is imperative for Three Valleys to invest in local supplies and supply diversification. Three Valleys has been advocating amongst regional partnering agencies to increase investments in the three groundwater basins that the Three Valleys services are overlies and includes storage accounts, specifically, the Chino, Main San Gabriel, and Six Basins groundwater basins. This section presents four regional projects which were derived from projects proposed by Three Valleys, member agencies, and regional stakeholders. These regional projects are highlighted in this section because they address the regional goals of increasing water supply reliability and reducing dependence on imported water supplies (see Section 0).

6.1 Description of Regional Projects

6.1.1 Regional Project #1 – External Partnership with Covina Valley Water Company (Main San Gabriel Basin)

This regional project would include construction of an intertie to access existing water supply from CVWC. Through Puente Basin Water Agency (PBWA), a joint powers authority between WVWD and RWD, WVWD and RWD would lead the construction of this intertie, which would allow pumping of surplus CVWC well and surface water into the Badillo-Grand pipeline via the new interconnection. Table 6-1 shows the regional needs addressed by this regional project.

Table 6-1: Regional Needs addressed by Regional Project 1

Regional Needs	Components of Regional Project 1
Extraction Wells	
'Put' Facilities	
Regional Pipelines	X
Increase in Treatment Facilities	
Increase in Storage	
Increase of Local Supply	X

This project would increase regional water supply reliability and reduce overall dependence on imported water supplies, thereby improving operational flexibility by integrating additional water sources into the existing network within the Three Valleys service area. This regional project would provide an estimated 2 TAF toward Three Valleys' goals of reducing overall dependency on imported water by 10 TAF and increasing overall water supply by 15 TAF.

6.1.2 Regional Project #2 – Three Valleys Groundwater Reliability Improvement Program (GRIP)

This regional project would include a Three Valleys partnership with the City of Glendora and PBWA to implement a regional distribution network and local supplies by utilizing 9,000 AF/year of stranded City assets. The regional distribution network would be augmented by the construction of new treatment facilities and conveyance pipelines. Three Valleys, as the lead agency, will develop the project that includes new replacement wells with wellhead treatment for City of Glendora's Wells #3, 4, and 7, and the pipeline and pumpstations. This regional project could also be expanded to address

water quality concerns for more member agencies. Table 6-2 shows the regional needs addressed by this regional project.

Table 6-2: Regional Needs addressed by Regional Project 2

Regional Needs	Components of Regional Project 2
Extraction Wells	X
'Put' Facilities	
Regional Pipelines	X
Increase in Treatment Facilities	X
Increase in Storage	X
Increase of Local supply	X

This project would increase regional water supply reliability, thereby improving operational flexibility by integrating additional water sources into the existing network. This regional project would provide an estimated 9 TAF toward Three Valleys' goal of increasing overall water supply by 15 TAF.

6.1.3 Regional Project #3 – Three Valleys Storing Water in Main San Gabriel Basin (GRIP+)

This regional project would include a Three Valleys partnership with the City of Glendora and City of Pomona in which Three Valleys would store surplus imported water in wet years for the Cities via groundwater recharge at the Santa Fe Spreading Grounds in the Main San Gabriel Basin. The project would also include the drilling of five new wells (two for Glendora, three for Pomona) along with wellhead treatments for all five wells, as well as the installation of approximately 5 miles of potable water pipeline by connecting Main San Gabriel Basin supplies to the City of Pomona's distribution system via the Pomona-Walnut-Rowland Joint Water Line (JWL). Table 6-3 shows the regional needs addressed by this regional project.

Table 6-3: Regional Needs addressed by Regional Project 3

Regional Needs	Components of Regional Project 3
Extraction Wells	X
'Put' Facilities	
Regional Pipelines	X
Increase in Treatment Facilities	
Increase in Storage	X
Increase of Local Supply	X

Most of City of Pomona's groundwater supply comes from the Chino and Six Basins groundwater basins, which have degraded water quality; this affects 1) their ability to maximize their groundwater rights, and 2) their reliance on imported water, as their existing wells need blending to remove contaminants. This regional project, therefore, would increase water supply reliability and improve operational flexibility by expanding water storage via the Main San Gabriel groundwater basin, creating infrastructure to integrate supplies into the existing network, and increasing groundwater

treatment capacity. This project would produce approximately 9.2 TAF of local groundwater supply, increasing water supply reliability toward Three Valleys' goal of increasing overall water supply by 15 TAF.

6.1.4 Regional Project #4 – Chino Basin Conjunctive Use with Three Valleys

This regional project would include a partnership between Three Valleys and the City of Pomona. Three Valleys will store water in the Chino Basin and fund City of Pomona's infrastructure projects in exchange for the pumping and delivery of water for use by the Three Valleys member agencies, such as the City of La Verne, Golden State Water Company and the Puente Basin Water Agency. The exchange water could also be conveyed from the Chino Basin to respective member agencies via the Joint Water Line (JWL) and the Badillo/Grand Transmission Main. Alternate water conveyance arrangements could also be considered to enable broader participation and access to water supply benefits by interested member agencies. This local groundwater source could be particularly helpful to member agencies with high dependencies on imported water to meet their demands, such as RWD and WVWD. Table 6-4 shows the regional needs addressed by this regional project.

Table 6-4: Regional Needs addressed by Regional Project 4

Regional Needs	Components of Regional Project 4
Extraction Wells	
'Put' Facilities	
Regional Pipelines	
Increase in Treatment Facilities	
Increase in Storage	X
Increase of Local Supply	X

This project would increase regional water supply reliability and reduce dependence on imported water during droughts, thereby improving operational flexibility by integrating additional water sources into the existing network, contributing toward Three Valleys' goals of reducing overall dependency on imported water by 10 TAF and increasing overall water supply by 15 TAF.

6.2 Risk Analysis and Prioritization of Regional Projects

In this master planning process, member agencies are trying to determine which regional projects deliver the broadest combination of regional benefits with the lowest risk. As projects progress from initial conception to preliminary design, quantitative benefit-cost analyses will need to be conducted. However, the regional projects included in this masterplan are currently at the early stages of initial conception. Qualitative methods applied for evaluating the benefits and risks of the regional projects are described in this section of the report.

6.2.1 Assessing Project Benefits

A pairwise comparison analysis was used to compare the regional projects on multiple benefit criteria. Pairwise comparison is a decision analysis method which allows evaluators to rank multiple decision alternatives by iteratively comparing two alternatives at a time. The pairwise comparison allows

member agencies to compare two projects at a time for each regional benefit. The comparisons are repeated until all project pairs have been compared for each regional benefit of interest. The list of project benefits used as evaluation criteria is shown in Table 6-5.

Table 6-5: Evaluation Criteria used for Project Benefits

Goal	Regional Project Needs as Evaluation Criteria
10 TAF	1. Reduce dependency on imported water during drought years
10 TAF	2. Reduce overall dependency on imported water
60 TAF	3. Increase total water in storage to about one year of imported supplies from Metropolitan
15 TAF	4. Increase Three Valleys PUT capacity by 15 TAF/year
15 TAF	5. Increase climate resilience – need to meet additional 15 TAF/year[2]
	6. Increase operational flexibility with additional Three Valleys conveyance facilities to transmit water from West to East, through a shared program with member agencies.
	7. Affordability of marginal cost of water produced compared to Metropolitan water
	8. Increase local groundwater treatment capacity
	9. Increase local extraction capacity

For each of the 9 evaluation criteria listed, the project being evaluated is placed on a row and compared to other regional (comparison) projects listed on columns. Pairwise comparison scores are assigned as follows:

- A score of 0 is assigned if the evaluation project is worse the comparison project
- A score of 0.5 is assigned if the evaluation project is equal to the comparison project
- A score of 1.0 is assigned if the evaluation project is better than the comparison project

The full pairwise comparison scores are presented in separate tables for each evaluation criterion in Appendix B of this report. The combined pairwise analysis scores assigned by member agencies (aggregated from all 9 evaluation criteria) are shown in Table 6 6.

Table 6 6: Combined Pairwise Benefit Evaluation Scores Assigned by Member Agencies

	Project 1: CIC - Main Basin	Project 2: GRIP	Project 3: GRIP+	Project 4: Chino Basin	Sum
Project 1: External Partnership with Covina Irrigation Company (Main SG Basin)	X	3.25	2.75	3.667	9.667

[2] *Compliance with State 2030 goal for 42 GPCD reduces total member agency demand by approximately 5 TAF/year*

	Project 1: CIC - Main Basin	Project 2: GRIP	Project 3: GRIP+	Project 4: Chino Basin	Sum
Project 2: Three Valleys Groundwater Reliability Improvement Program (GRIP)	5.75	X	3.5	4.833	14.083
Project 3: Three Valleys Storing Water in Main SG Basin (GRIP+)	6.25	5.5	X	4.833	16.583
Project 4: Chino Basin Conjunctive Use with Three Valleys	5.333	4.167	4.167	X	13.667

The average benefit scores assigned by member agencies to each project are also shown by each evaluation criterion in Table 6-7. Note that each project can attain a maximum score of 3 per criterion (if it scores 1 when compared with the other three comparison projects). Since there are 9 evaluation criteria, the maximum sum of benefit scores per project is 27.

Table 6-7: Project Benefit Evaluation Scores Assigned by Member Agencies to Each Criterion

Project	Crit.1	Crit.2	Crit.3	Crit.4	Crit.5	Crit.6	Crit.7	Crit.8	Crit.9.	Sum
Project 1: External Partnership with Covina Irrigation Company (Main SG Basin)	1.000	1.667	1.000	0.917	1.417	0.417	1.833	0.500	0.917	9.667
Project 2: Three Valleys Groundwater Reliability Improvement Program (GRIP)	1.583	1.500	1.583	1.500	1.333	1.750	1.333	1.750	1.750	14.083
Project 3: Three Valleys Storing Water in Main SG Basin (GRIP+)	1.667	1.500	2.167	2.167	1.417	2.083	1.500	2.250	1.833	16.583
Project 4: Chino Basin Conjunctive Use with Three Valleys	1.750	1.333	1.250	1.417	1.833	1.750	1.333	1.500	1.500	13.667

The results show that member agencies identified Project 3: Three Valleys Storing Water in Main San Gabriel Basin (GRIP+) as the project that would deliver the broadest set of regional benefits. Project 1: External Partnership with Covina Irrigation Company (Main SG Basin) is identified the project that would deliver the least amount of regional benefits.

6.2.2 Evaluation of Project Risks

A qualitative risk analysis was used to compare the regional projects on multiple risk categories. The risk categories include 1) Costs Risk, 2) Implementation Risk, 3) Operations Risk, and 4) Stakeholders Risk. Various elements of risk were identified for consideration when assessing each risk category as shown in Table 6-8.

Table 6-8: Project Risk Categories with Associated Elements of Risk

Risk Category	Risk Elements
Costs	Risk of capital cost overruns
	Risk of partner agencies not paying their share
	Risk of not securing external financing and funding
	Risk of increasing long-term operations and maintenance costs
Implementation	Risk of project duration and schedule overruns
	Risk of land not being available
	Risk of running into constructability issues
	Risk of having limited implementation options
	Risk of permitting complications such as permit conditions and denials
	Risk of the project not being thoroughly planned
Operations	Risk of yield variability and reliability
	Uncertainty of operating partnerships
	Risk of inter-dependent projects not coming through
	Risk of environmental and water quality regulations (e.g., PFAS)
	Lack of redundancy for emergency operations/asset failures
Stakeholders	Lack of ratepayer support
	Risk of not garnering Three Valleys and member board support
	External stakeholder opposition
	Opposition from environmental/special interest groups

A risk score is computed to each regional project based on the Severity and likelihood scores assigned by member agencies for each of the four categories of risk. The risk score is determined as a product of the Severity score and the Likelihood score.

*Risk = Severity * Likelihood*

Severity is a measure of how adversely the occurrence of a category of risk would impact a given project. Severity scores assigned to each risk category range from 1 to 4 as follows:

1. Low Severity = Low to no effect on project
2. Medium Severity = Minor to modest impacts
3. High Severity = Significant or substantial impacts
4. Very High Severity = Extreme potential impacts

Likelihood is a measure of whether a risk category is likely to materialize on a given project. Likelihood scores assigned to each risk category range from 1 to 4 as follows:

1. Very Unlikely = Risks will not materialize
2. Unlikely = Risks probably will not materialize
3. Likely = Risks probably will materialize
4. Very Likely = Almost certain risks will materialize

Table 6-9: Results of Project Risk Evaluation by Risk Categories.

Project	Risk Scores	Costs	Implementation	Operations	Stakeholders
Project 1: External Partnership with Covina Irrigation Company (Main SG Basin)	Severity	2.00	2.00	2.00	1.71
	Likelihood	2.14	2.29	2.14	1.71
	Risk	**4.28**	**4.58**	**4.28**	**2.92**
Project 2: Three Valleys Groundwater Reliability Improvement Program (GRIP)	Severity	3.00	3.14	2.57	3.14
	Likelihood	2.71	3.00	2.86	3.00
	Risk	**8.13**	**9.42**	**7.35**	**9.42**
Project 3: Three Valleys Storing Water in Main SG Basin (GRIP+)	Severity	2.50	2.33	2.33	2.67
	Likelihood	2.50	2.33	2.33	2.50
	Risk	**6.25**	**5.43**	**5.43**	**6.68**
Project 4: Chino Basin Conjunctive Use with Three Valleys	Severity	2.20	2.00	2.20	2.20
	Likelihood	2.40	2.40	2.20	2.00
	Risk	**5.28**	**4.80**	**4.84**	**4.40**

The results show that member agencies identified Project 1: External Partnership with Covina Irrigation Company (Main San Gabriel Basin) as the lowest risk project. Conversely, Project 2: Three Valleys GRIP was identified as the highest risk project.

6.2.3 Summary of Project Benefit-Risk Results

The final preferred project rankings are determined by combining the results of the project benefit evaluation and the risk analysis. For each project, the total risk scores from all four risk categories are divided by the maximum possible risk score of 64 to create a risk index. Similarly, the total benefit scores from all nine evaluation criteria are divided by the maximum possible benefit score of 27 to create a benefit index. The integrated benefit-risk ratio is computed by dividing the benefit index by the risk index as shown in Table 6-10.

Table 6-10: Project Ranking Results for Benefit-Risk Assessment

Regional Project	Sum of Risk (max = 64)	Risk Index	Sum of Benefits (max = 27)	Benefit Index	Benefit - Risk Ratio	Preferred Project Rank
Project 4: Chino Basin Conjunctive Use with Three Valleys	19.32	0.302	13.67	0.506	1.677	1
Project 3: Three Valleys Storing Water in Main San Gabriel Basin (GRIP+)	23.81	0.372	16.58	0.614	1.651	2
Project 1: External Partnership with Covina Irrigation Company (Main San Gabriel Basin)	16.08	0.251	9.67	0.358	1.425	3
Project 2: Three Valleys Groundwater Reliability Improvement Program (GRIP)	34.35	0.537	14.08	0.522	0.972	4

The results show that 'Project 4: Chino Basin Conjunctive Use with Three Valleys' has been identified by member agencies as best suited to provide the best combination of high benefits with lower risk. Project 3 (GRIP+) and Project 1 (CIC - Main San Gabriel Basin) are ranked second and third, respectively. Project 2 (GRIP) is viewed as having the lowest benefits relative to its associated risks.

7 Summary and Recommendations

7.1 Summary

The Three Valleys region relies on a variety of sources for its water supply including groundwater (41%), imported water (48%), purchased water (4%), surface water (3%), and recycled water (4%). The region's water supplies are vulnerable to regional and statewide droughts and climate change which can cause disruptions in water availability. The region actively manages changes in annual water supply availability by using groundwater basin storage accounts to store excess water for use during periods of drought and other disruptions. Water stored in these storage accounts currently amounts to approximately 58 percent of the region's annual water supply requirements.

Future uncertainties such as aging infrastructure and climate change could also impact the region's water supply uncertainty. Projections of future water budgets indicate that the Three Valleys region will require up to 15.4 TAF/year of additional imported water supply due to the impacts of climate change. This deficit could be partially mitigated through full implementation of the state's indoor residential water use targets for 2030 which would result in water conservation savings of up to 5.6 TAF/Year. However, the region needs to develop additional infrastructure to maintain current levels of service and build up a recommended year of total water supply in storage in local groundwater basin storage accounts.

Three Valleys has worked with member agencies to identify 26 infrastructure projects including 2 projects to enhance Storage capacity, 4 pipeline reliability projects, 12 projects to enhance well extraction capacity, and 8 water treatment infrastructure projects. The estimated total cost of the 26 proposed projects is over $660 million. Treatment and wells projects are the most common type of projects proposed because they are generally the most cost-effective source of supply (in terms of cost per acre-foot) for agencies with existing, unused pumping rights. While storage projects are generally expensive, they can greatly improve water supply reliability and reduce dependence on imported water during periods of drought.

Implementation of these projects will require a mix of local, state and federal funds. A list of current state and federal funding programs has been developed to align with the types of water supply and infrastructure projects proposed by Three Valleys and its member agencies. These grant funding programs are generally more likely to fund regional projects which involve multiple partnering agencies using shared infrastructure to provide benefits to a wider group of communities, including disadvantaged communities where possible. To enhance the region's competitiveness when pursuing state and federal grant funding opportunities, this WRMP has identified four regional projects which could leverage regional infrastructure to meet the needs of multiple member agencies.

7.2 Next Steps

The regional infrastructure needs and plans included in this WRMP were derived from information compiled by staff of member agencies. While this information has helped to highlight common areas of infrastructure need, it likely reflects current system performance and reliability concerns. To more accurately capture the impact of aging infrastructure on the extent and timing of future infrastructure

needs, the Three Valleys region should undertake a comprehensive assessment of water infrastructure to:

- Quantify the number and characteristics of existing wells, pipelines, pumping, and treatment assets
- Establish the remaining life and replacement schedule of existing assets
- List all existing infrastructure that are no longer functioning or in use
- Assess the timing of future changes in infrastructure performances and water supply reliability if the aging infrastructure is not replaced.

The region also needs to continue development of the regional projects identified in this WRMP. Actions that could be taken to advance the development of these regional projects could include:

- Initiating conceptual planning to establish project components, physical and environment constraints, establish project costs, and review project alternatives
- Engage member agencies to recruit project participants, establish participation agreements, and seek approval of agency boards to seek implementation funds
- Initial development of funding proposals and engaging funding agencies to solicit early input on project fundability

8 References

Three Valleys Municipal Water District (2021), 2020 Urban Water Management Plan.

Three Valleys Municipal Water District (2024), Climate Change Vulnerability Assessment

Three Valleys Municipal Water District (2024), 2024 Regional Drought Contingency Plan.

Appendix A – List of Mitigation Projects

Agency/Organization	Project/Program Name	Project/Program Description
Three Valleys	Filter Drain Valves	Upgrade of existing under drain system within each of the eight existing filter basins. The upgrade will include granular activated carbon, which would also be able to address constituents of emerging concern, especially for the portion of groundwater that could be routed through the treatment plant. This project would be modeled after the recent Weymouth Filter Basin Upgrade.
Three Valleys	Padua Pump Station	The project would construct pump station and pipeline from San Gabriel MWD's pipeline to Three Valleys' Miramar distribution system to provide for reliability to the SWP dependent area's service from the Metropolitan Rialto Feeder.
Three Valleys	Sludge Pond Mixing Upgrade	Better mixing will prevent the growth of algae and other organic material and will increase the amount of water recovered when the sludge is sent to the belt filter press.
Three Valleys	Grand Avenue Well Improvement	Inspection and rehabilitation of the Grand Ave Well as needed. Additionally includes the installation of a VFD to increase Grand Ave Well's operational efficiency.
Three Valleys	Well 2 Improvement	Inspection and rehabilitation of Well 2 and installation of sunshade covers over the VFD to prevent overheating.
Three Valleys	PM-21 [Miramar] Bypass Magmeter	Miramar Treatment Plant's design capacity is 40 cubic feet [cfs]. Lower demands due to factors of water use efficiency and water shortage conditions requires the plant to operate at minimal flows of 8 cfs. This effort initiates a project with Metropolitan Water District to install a meter suitable for lower flow conditions, increasing meter accuracy and reduce potential for apparent water losses.
Three Valleys	Miramar Pumpback	Upgrade to the existing Miramar Pumpback system through a connection with Metropolitan's Weymouth Treatment Plant. This connection adds an alternative source of water, Colorado River water, to the Three Valleys service area which includes SWP dependent areas.
Three Valleys	Hydroelectric Facilities Efficiency Upgrades	The Miramar hydroelectric generators are nearing 40 years of service and require a reassessment of its structural and mechanical integrity. This project will upgrade current hydroelectric facilities and provide repairs if found.
Three Valleys	Groundwater Reliability Improvement Program[a]	Partnership with the City of Glendora and the Puente Basin Water Agency (PBWA), a joint powers authority between Walnut Valley Water District and Rowland Water District, to implement a regional distribution network and local supplies by utilizing 9,000 AF/year of stranded City assets.

Agency/Organization	Project/Program Name	Project/Program Description
Three Valleys	Renewable Energy Project	Installation of solar panels and battery storage to enhance sustainable energy production.
Three Valleys	Miramar System Condition Assessment	The Miramar distribution pipeline, initially constructed during the 1950s and 1980s, is reaching over 40 years of age and requires an assessment to determine its current condition.
Cal Poly Pomona	VOC Treatment at Well 2	Install VOC treatment at Cal Poly Pomona's Well No. 2. Well No. 2 has known VOC contamination. Cal Poly Pomona would need to use this well as an additional source of water for the RO Water Treatment Plant in producing more potable water.
Cal Poly Pomona	Install Additional RO Train at ROWTP	Install an additional RO train to an existing Cal Poly Pomona Water Treatment Plant to utilize the additional water source from Well No. 2 to produce additional potable water for local use. See Spadra GSP.
Cal Poly Pomona	Repurpose Farm Well #4 water	Over time campus farm operation will diminish and consider repurposing the Farm Well #4 to use for either irrigation or potable water. Advance RO treatment considerations to produce provide potable water for the old Lanterman Hospital property or connect via a pipeline to convey water back onto the main campus for irrigation use; a distance of about 1.25 miles.
Cal Poly Pomona	Future wells w/Three Valleys as injection (recycled water) and extraction - 2 sites	Partner with 3Vs and City of Pomona to develop an injection/extraction well on 3Vs two well sites available at Corporate Center Dr next to I57 & I71 freeways. Treatment of recycled water may be upgraded to advanced treatment by LA County Sanitation District. Use advance treated recycled water to inject into Spadra basin for storage.
Rowland Water District & Walnut Valley Water District (through Puente Basin Water Agency)	Six Basins Groundwater Project	Two new wells are being activated in the Six Basins Groundwater Basin to offset imported water supplies.
Rowland Water District & Walnut Valley Water District (through Puente Basin Water Agency)	Covina Irrigating Company Interconnection	Pump surplus Covina Irrigating Company well and surface water into the Badillo-Grand pipeline via a new interconnect.
Walnut Valley Water District (through Spadra Basin GSA)	Spadra Basin Optimization Scenario 3	Underground recharge gallery, seven injection wells, five production wells, expansion of CPP RO plant, all related pipelines.
City of Covina Water Department	Grand Avenue Water Main Replacement Project	The existing water main was installed in 1939 and is in bad condition. The planned work includes replacement of approximately 1.25 mi of 12-inch- diameter steel from San Bernardino Road to Southerly City Limit including the upgrade of existing services and fire hydrants.

Agency/Organization	Project/Program Name	Project/Program Description
City of Covina Water Department	Water Loss Reduction - through Pipeline Replacement	Auditing reports available for last few years.
City of Covina Water Department	Hurst Tract Water Main Replacement Project from Cypress Avenue to Covina Boulevard and Grand Avenue to Brightview Drive	Existing water main, valves, hydrants and services have exceeded their useful life. All water mains, valves, hydrants and services are to be replaced.
City of Covina Water Department	Edna Place Pipe Improvements Project Grand Avenue to Barranca Avenue	Existing water main, valves, hydrants and services have exceeded their useful life. All water mains, valves, hydrants and services are to be replaced.
City of Covina Water Department	Navilla and Forestdale Main Replacement Project from Puente Street to Rowland Avenue and From Grand to Barranca Avenue	Existing water main, valves, hydrants and services have exceeded their useful life. All water mains, valves, hydrants and services are to be replaced.
City of Covina Water Department	Azusa Avenue Main Installation Project from Badillo Street to Edna Place	Existing water main, valves, hydrants and services have exceeded their useful life. All water mains, valves, hydrants and services are to be replaced.
City of Covina Water Department	Fourth Avenue Water Main Replacement Project from Badillo Street to San Bernardino Road Cypress Avenue Water Main Replacement Project from Citrus Avenue to Barranca Avenue	Existing water main, valves, hydrants and services have exceeded their useful life. All water mains, valves, hydrants and services are to be replaced.
City of Covina Water Department	Cypress Reservoir Water Booster Improvement Project 1051 E. Cypress Street	Install new backup generator, MCC panels, and switchgear.
City of Covina Water Department	Rancho La Merced Water Improvement Project (Design Only) Rancho La Merced	

Agency/Organization	Project/Program Name	Project/Program Description
City of Covina Water Department	Water Master Plan & Rate Update City-Wide	Water Master Plan update & cost study for next 5 years.
City of Covina Water Department	San Joaquin Road and Rambling Road Main Replacement from Covina Hills to Navilla Place	Existing water main, valves, hydrants and services have exceeded their useful life. All water mains, valves, hydrants and services are to be replaced.
City of Glendora	Well #7 (Vosburg) Replacement	Rehabilitation of Well #7 which is located at 201 South Virginia Ave in the City of Azusa almost 3 miles to the southwest of the City of Glendora. The city would conduct a water quality study to address contaminant concerns and well profiling to better understand flow contributions. Project to include design, public bid and construction.
City of Glendora	North Glendora Tank Replacement	This 318,000-gallon reservoir is crucial to the operation of Zone 19 and was installed in 1996 using bolted steel plate construction as this was an inexpensive and viable option for the remote and difficult to access location. Bolted steel tanks have a certain leak allowance in the design and this tank has had a small amount of leakage since installation. The tank is now 25 years old and is nearing the end of its expected service life of 30 years. Current leak rates vary from 35 to 50 gallons per minute depending on water level in the tank and weather conditions. This reservoir is one of two storage reservoirs that serve this pressure zone, the other is Glencoe Reservoir with a maximum capacity of only 212,000 gallons. Over the last few years, the area has seen some growth and there is an increased awareness of fire protection needs within the Urban Wildland Interface of which Zone 19 is entirely within. As a result, the combined storage of approximately 0.5 MG is insufficient for extended outages and for fire protection needs and a larger reservoir for this zone is needed.
City of Glendora	Well #14 Replacement	Well #14 is located along Little Dalton Wash just north of Leadora. The city would conduct a study to investigate low production and address contaminant concerns. This would include some well development work and well profiling to better understand flow contributions. Project to include design, public bid and implementation.

Agency/Organization	Project/Program Name	Project/Program Description
City of Glendora	Turf Removal for Large Commercial and Municipal Properties	As part of our on-going effort to encourage water conservation, The City offers multiple rebate incentives for customers. There are two primary programs that are currently being highlighted as outlined below: 1) Turf Removal Program: Installation of drought tolerant landscaping, synthetic turf, and other non-irrigated ground cover. 2) Rebate Program for the purchasing of water efficient devices, such as toilets, sprinkler nozzles, irrigation controllers, etc.
City of Glendora	Redrilling Wells 10 and 11 for Exploration	
City of Glendora	Pipeline Intertie Replacements	
City of La Verne	Connections to Weymouth WTP	Connection to Weymouth without PWR.
City of La Verne	Well Treatment 6th and White, Lincoln and Mills - Ion-Ex Plant	Ion exchange treatment to reduce blending.
City of La Verne	La Verne Heights Well #1 Replacement-Ion-Ex	Low production on LVH#1.
City of La Verne	Conjunctive Use Concepts (Six Basins, Pomona Basin, Live Oak Basin)	
City of La Verne	AMI	Automated meter reading.
City of Pomona	Groundwater Quality Improvement	The project includes well head treatment and well equipping for wells that are currently stranded: - Well 34 – TCP Treatment [GAC} is required for the well (1,200 gpm) - Well 20 – Re-equip the existing well. (700 gpm) - Well 29 – Install NO3 treatment and rebuild well. (600 gpm) - Well 30 – Drill new well onsite. (800 gpm)
City of Pomona	Anion Exchange Plant	Increasing reliance on groundwater, preserves ability to operate wells.
City of Pomona	Reservoir 5 (per PDR)	Increasing reliance on groundwater, reduce reliance on MET/SWP.
City of Industry	Surface Water Storage Project	

Agency/Organization	Project/Program Name	Project/Program Description
City of Industry	Water Distribution System Reliability Project	
Suburban Water System	201 PFOA/PFAS treatment	Plan, design and construct ground water treatment facilities to remove PFOA/PFAS from ground water sources.
Suburban Water System	Plant 410 Treatment Plant	Construction of a 1,000 gpm (1.4 MGD) treatment plant to remove Manganese from a potable water well.
Suburban Water System	Plant 128 Pump Station and Reservoir Replacement	Remove and replace reservoir and pump station. The existing 0.5MG reservoir is nearly 100 years old and does not meet current seismic requirements. It will be replaced with a 0.5 MG above ground steel reservoir. The pump station is does not meet the reliability requirements and the electrical equipment is unsafe.
Valencia Heights Water Company	Grand Ave waterline replacement	Replace approximately 1300 feet of old steel 12-inch waterline with 12- and 16- inch c-900 PVC.
Valencia Heights Water Company	Reservoir rehab and retrofitting #4a	Repaint and recoat interior and exterior of reservoir and retrofit inlet and outlets to improve water quality and add earthquake shut off valves.
Valencia Heights Water Company	Reservoir rehab and retrofitting #6b	Repaint and recoat interior of reservoir and retrofit inlet and outlets to improve water quality and add earthquake shut off valves.
Valencia Heights Water Company	Reservoir rehab and retrofitting #6a	Repaint and recoat interior of reservoir and retrofit inlet and outlets to improve water quality and add earthquake shut off valves.
Valencia Heights Water Company	Reservoir rehab and retrofitting #4a	Repaint and recoat interior and exterior of reservoir and retrofit inlet and outlets to improve water quality and add earthquake shut off valves.
Valencia Heights Water Company	Golden Bough Waterline Replacement	Replace approximately 1800 feet of old steel 6-inch waterline with 8-inch c-900 PVC.

Appendix B – Results of Pairwise Benefit Evaluation for each Metric

1. Metric: reduce dependency on imported water during drought years.					
	Project 1: CIC - Main Basin	Project 2: GRIP	Project 3: GRIP+	Project 4: Chino Basin	Sum
Project 1: External Partnership with Covina Irrigation Company (Main SG Basin)	X	0.5	0.25	0.25	1.000
Project 2: Three Valleys Groundwater Reliability Improvement Program (GRIP)	0.5	X	0.583	0.5	1.583
Project 3: Three Valleys Storing Water in Main SG Basin (GRIP+)	0.75	0.417	X	0.5	1.667
Project 4: Chino Basin Conjunctive Use with Three Valleys	0.75	0.5	0.5	X	1.750

2. Metric: Provides benefits to two or more agencies.					
	Project 1: CIC - Main Basin	Project 2: GRIP	Project 3: GRIP+	Project 4: Chino Basin	Sum
Project 1: External Partnership with Covina Irrigation Company (Main SG Basin)	X	0.583	0.5	0.583	1.667
Project 2: Three Valleys Groundwater Reliability Improvement Program (GRIP)	0.417	X	0.5	0.583	1.500
Project 3: Three Valleys Storing Water in Main SG Basin (GRIP+)	0.5	0.5	X	0.5	1.500
Project 4: Chino Basin Conjunctive Use with Three Valleys	0.417	0.417	0.5	X	1.333

3. Metric: Increase total basin storage in the 3Vs region to a target of one year of supplemental storage equivalent to TVMWD's annual import from Metropolitan, or about 60 TAF.					
	Project 1: CIC - Main Basin	Project 2: GRIP	Project 3: GRIP+	Project 4: Chino Basin	Sum
Project 1: External Partnership with Covina Irrigation Company (Main SG Basin)	X	0.25	0.25	0.5	1.000
Project 2: Three Valleys Groundwater Reliability Improvement Program (GRIP)	0.75	X	0.25	0.583	1.583
Project 3: Three Valleys Storing Water in Main SG Basin (GRIP+)	0.75	0.75	X	0.667	2.167
Project 4: Chino Basin Conjunctive Use with Three Valleys	0.5	0.417	0.333	X	1.250

4. Increase Three Valleys PUT capacity by 15 TAF/year.					
	Project 1: CIC - Main Basin	Project 2: GRIP	Project 3: GRIP+	Project 4: Chino Basin	Sum
Project 1: External Partnership with Covina Irrigation Company (Main SG Basin)	X	0.25	0.25	0.5	1.000
Project 2: Three Valleys Groundwater Reliability Improvement Program (GRIP)	0.75	X	0.25	0.583	1.583
Project 3: Three Valleys Storing Water in Main SG Basin (GRIP+)	0.75	0.75	X	0.667	2.167
Project 4: Chino Basin Conjunctive Use with Three Valleys	0.5	0.417	0.333	X	1.250

5. Metric: Increase climate resilience – need to meet additional 15 TAF/year					
	Project 1: CIC - Main Basin	Project 2: GRIP	Project 3: GRIP+	Project 4: Chino Basin	Sum
Project 1: External Partnership with Covina Irrigation Company (Main SG Basin)	X	0.583	0.5	0.333	1.417
Project 2: Three Valleys Groundwater Reliability Improvement Program (GRIP)	0.417	X	0.417	0.5	1.333
Project 3: Three Valleys Storing Water in Main SG Basin (GRIP+)	0.5	0.583	X	0.333	1.417
Project 4: Chino Basin Conjunctive Use with Three Valleys	0.667	0.5	0.667	X	1.833

6. Metric: Increase operational flexibility with additional Three Valleys conveyance facilities to transmit water from West to East, through a shared program with member agencies.					
	Project 1: CIC - Main Basin	Project 2: GRIP	Project 3: GRIP+	Project 4: Chino Basin	Sum
Project 1: External Partnership with Covina Irrigation Company (Main SG Basin)	X	0.083	0.083	0.25	0.417
Project 2: Three Valleys Groundwater Reliability Improvement Program (GRIP)	0.917	X	0.25	0.583	1.750
Project 3: Three Valleys Storing Water in Main SG Basin (GRIP+)	0.917	0.75	X	0.417	2.083
Project 4: Chino Basin Conjunctive Use with Three Valleys	0.75	0.417	0.583	X	1.750

7. Metric: Affordability of marginal cost of water produced compared to Metropolitan water					
	Project 1: CIC - Main Basin	Project 2: GRIP	Project 3: GRIP+	Project 4: Chino Basin	Sum
Project 1: External Partnership with Covina Irrigation Company (Main SG Basin)	X	0.583	0.583	0.667	1.833
Project 2: Three Valleys Groundwater Reliability Improvement Program (GRIP)	0.417	X	0.5	0.417	1.333
Project 3: Three Valleys Storing Water in Main SG Basin (GRIP+)	0.417	0.5	X	0.583	1.500
Project 4: Chino Basin Conjunctive Use with Three Valleys	0.333	0.583	0.417	X	1.333

8. Metric: Increase local groundwater treatment capacity					
	Project 1: CIC - Main Basin	Project 2: GRIP	Project 3: GRIP+	Project 4: Chino Basin	Sum
Project 1: External Partnership with Covina Irrigation Company (Main SG Basin)	X	0.333	0	0.167	0.500
Project 2: Three Valleys Groundwater Reliability Improvement Program (GRIP)	0.667	X	0.417	0.667	1.750
Project 3: Three Valleys Storing Water in Main SG Basin (GRIP+)	1	0.583	X	0.667	2.250
Project 4: Chino Basin Conjunctive Use with Three Valleys	0.833	0.333	0.333	X	1.500

9. Metric: Increase local extraction capacity					
	Project 1: CIC - Main Basin	Project 2: GRIP	Project 3: GRIP+	Project 4: Chino Basin	Sum
Project 1: External Partnership with Covina Irrigation Company (Main SG Basin)	X	0.167	0.333	0.417	0.917
Project 2: Three Valleys Groundwater Reliability Improvement Program (GRIP)	0.833	X	0.417	0.5	1.750
Project 3: Three Valleys Storing Water in Main SG Basin (GRIP+)	0.667	0.583	X	0.583	1.833
Project 4: Chino Basin Conjunctive Use with Three Valleys	0.583	0.5	0.417	X	1.500

Appendix C – Three Valleys Regional Drought Contingency Plan

(Available upon request from Three Valleys as a separate attachment)

THREE VALLEYS
MUNICIPAL WATER DISTRICT

Regional Drought Contingency Plan

JANUARY 2025

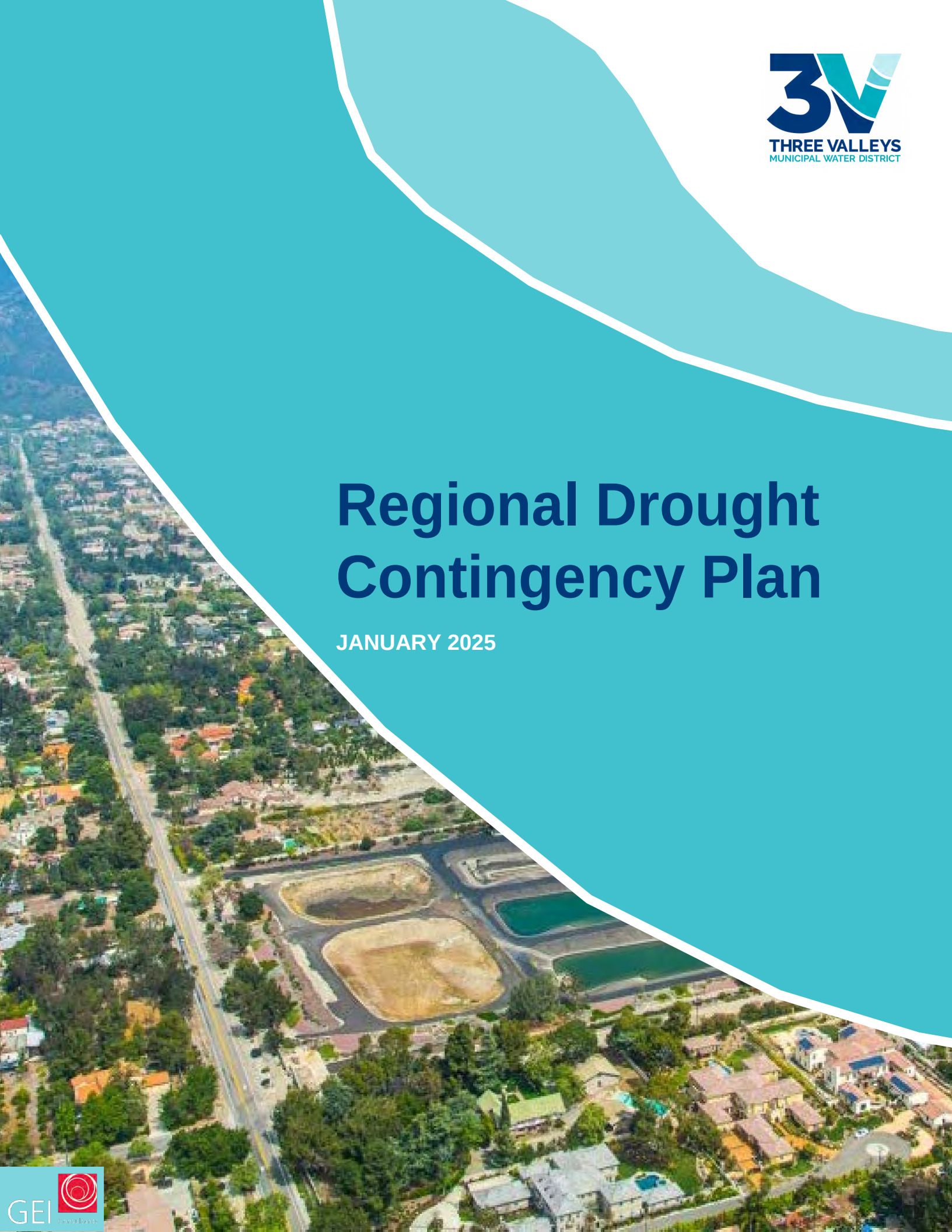

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Table of Contents

Figures

Tables

Acronyms and Abbreviations

1,2,3-TCP	1,2,3-Trichloropropane
AF	acre-feet
AF/year	acre-feet per year
CDEC	California Data Exchange Center
CRA	Colorado River Aqueduct
CWW	California Water Watch
DBCP	Hexavalent Chromium, Arsenic, 1,2-Dibromo-3-chloropropane
DCP	Drought Contingency Plan
DMF	Drought Monitoring Framework
DWR	California Department of Water Resources
ET	evapotranspiration
FERIX	Flood Emergency Information Exchange
GAMA	Groundwater Ambient Monitoring and Assessment
GEI	GEI Consultants, Inc.
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
GSWC	Golden State Water Company
HUC	Hydrologic Unit Code
IRP	Metropolitan 2020 Integrated Water Resources Plan
Main Basin	Main San Gabriel Basin
Metropolitan	Metropolitan Water District of Southern California
MCL	Maximum Contaminant Level
PFA	polyfluoroalkyl substances
PCE	Trichloroethene
TAF	thousand acre-feet

TAF/year	thousand acre-feet per year
TCE	Trichloroethene
TDS	Total Dissolved Solids
Three Valleys	Three Valleys Municipal Water District
RACI	Responsible, Accountable, Consulted, Informed
Reclamation	United States Bureau of Reclamation
RWD	Rowland Water District
SGMA	Sustainable Groundwater Management Act
SWP	State Water Project
SWS	Suburban Water Systems
UWMP	2020 Urban Water Management Plan
VIC	Variable Infiltration Capacity
Watermasters	groundwater basin watermasters
WRMP	Water Resource Master Plan
WSAP	Water Supply Allocation Plan
WSCP	Water Shortage Contingency Plan
WVWD	Walnut Valley Water District

1 Introduction

Three Valleys Municipal Water District (Three Valleys) was formed in 1950 and provides water supply and water resource management to over 500,000 people through its member agencies in a 133 square mile area in eastern Los Angeles County. Three Valleys delivers wholesale water to its 13 member agencies, which includes Boy Scouts of America, California State Polytechnic University at Pomona, Cities of Covina, Glendora, La Verne, Pomona, Golden State Water Company (Claremont and San Dimas systems), Mount San Antonio College, Rowland Water District, Suburban Water Systems, Valencia Heights Water Company, and Walnut Valley Water District.

Three Valleys is one of 26 member agencies of the Metropolitan Water District of Southern California (Metropolitan), who sources around 35 percent of their water from the State Water Project (SWP), with another 25 percent sourced from the Colorado River Aqueduct (CRA). Both of these supply sources are impacted by hydrology. As a result of extreme drought conditions, the SWP allocation for 2021 was 5 percent of requested supplies. Furthermore, in August 2021 for the first time in recorded history, the federal government declared a water shortage at one of the Colorado River's main reservoirs, Lake Mead. This historic declaration came after years of severe climate change and long-term drought impacts. Consequently, the Governor of the State of California issued a statewide drought emergency in October 2021, urging Californians to advance their water conservation efforts. Thus, in November 2021, Three Valleys activated Stage 2 of their Water Shortage Contingency Plan (WSCP) for their entire service area, requiring up to a 20 percent reduction in water use. In June 2022, Metropolitan adopted the Emergency Water Conservation Program, implementing restrictions for member agencies reliant solely on SWP supplies, known as "SWP Dependent Areas." For Three Valleys, this includes the cities of Claremont and La Verne. In April of 2022, Three Valleys activated Stage 5 of their WSCP, urging up to a 50 percent reduction in water use, for their SWP Dependent Areas.

However, between late 2022 and early 2023, California experienced several atmospheric rivers that resulted in record snowfall and rainfall. Consequently, the California Department of Water Resources (DWR) announced a 100 percent SWP allocation for 2023. Despite this short-term improvement in SWP supply, the Colorado River watershed remains in a 23-year drought, the most severe in 1,200 years (https://www.theguardian.com/environment/2023/may /23/colorado-river-water-usage-deal-analysis). While Metropolitan lifted the emergency drought restrictions in March 2023, California remains under a statewide drought emergency, and ongoing climate change suggests that drought conditions will persist. As droughts become more frequent and climate change is expected to increase natural variability in the long term, coupled with increasing statewide demand, imported water may become increasingly scarce. A broader, more integrated Drought Contingency Plan (DCP) is needed to strengthen the region's water supply resilience to provide an adequate and reliable water supply into the future.

To increase water supply reliability and proactively address the region's concern with drought, in 2023 Three Valleys embarked on the preparation of a DCP, funded in part by the United States Bureau of Reclamation (Reclamation). The DCP has several elements in common with Three Valleys' Water Resource Master Plan (WRMP), such as the assessment of water shortage conditions based on current

and future water supply needs and anticipated impacts to supplies from climate change and other risks, along with the identification and review of projects to enhance the region's water supply portfolio. Therefore, the WRMP and DCP were largely prepared in parallel as a joint project with a coordinated schedule and approach. The elements of the DCP are described below in Section 1.1.

As part of this joint project, Three Valleys performed outreach and engagement with various stakeholder groups which is described in Section 1.2. Part of this outreach and engagement involved establishing a Drought Task Force, which as described in Section 1.3, was comprised of Three Valleys member agencies and local stakeholder representing diverse water needs and planning expertise to inform the DCP and WRMP development. Together with the Drought Task Force, Three Valleys developed several overarching objectives and guiding principles to inform development of the DCP, which was prepared with input from the Drought Task Force via several workshops and project information requests in 2023 and 2024. These objectives and principles, along with details related to the DCP development process and its elements are summarized in Section 1.4 and 1.5. The DCP was formally adopted by Three Valleys on Month XX, 2025. Details related to this adoption and final submittal to Reclamation are provided in Section 1.6.

1.1 DCP Elements

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

- Chapter 1: Introduction – this section describes the elements of the DCP, outreach and engagement performed during the development of the DCP, and regional drought goals and guiding principles used to develop the DCP. This section also describes the DCP development process, and information related to plan adoption and submittal.
- Chapter 2: Background – this section briefly describes the regional water suppliers, along with key water resource supplies and regional water demand to provide a critical foundation for the DCP.
- Chapter 3: Regional Drought Monitoring Framework (DMF) – the regional DMF establishes a process for monitoring near- and long-term water availability and developing a framework for predicting the probability of future droughts or confirming an existing drought.
- Chapter 4: Vulnerability Assessment – the vulnerability assessment aims to improve the understanding of climate change impacts on future water demand in Three Valleys' wholesale service area and the sources of Three Valleys' water supplies during normal and drought periods.
- Chapter 5: Mitigation Actions – this section describes projects or programs that can be implemented ahead of a drought to lessen the future impacts of drought.
- Chapter 6: Response Actions – this section describes near-term actions to address the demand side of the water balance in periods where water supply cannot meet demand.
- Chapter 7: Operational and Administrative Framework – the operational and administrative framework identifies who is responsible for implementing each element of the DCP and the process and schedule for monitoring, evaluating, and updating the DCP.

1.2 Outreach and Engagement

Three Valleys actively engaged with diverse stakeholder groups throughout the development of the DCP. This was a collaborative effort among Three Valleys, its 13 member agencies and the cities they serve, and other regional stakeholders that may be impacted by drought. The various stakeholder groups involved in the DCP and their roles are summarized in Table 1-1 below, which includes a RACI (Responsible, Accountable, Consulted, Informed) chart indicating the level of participation for each stakeholder in developing the DCP. Each stakeholder group and the methods of outreach and engagement are described in the following sections.

Table 1-1. Regional Drought Contingency Plan Key Stakeholders and Roles

Group	Level of Participation			
	R	A	C	I
Planning Lead				
Three Valleys Municipal Water District	X[1]	X[2]		
Drought Planning Task Force Members				
Three Valleys Member Agencies			X	
City Representatives (planning, schools, fire, law)			X	
Metropolitan Water District of Southern California				X[3]
Watermasters				X[3]
Other Interested Stakeholders				X[3]
General Public				X
Drought Contingency Plan Consultant				
GEI Consultants, Inc. (GEI)	X			

[1] Chief Water Resources Officer

[2] General Manager

[3] The stakeholders are expected to participate in the planning process at an "informed" level. However, they will also be provided the opportunity to review and comment on the DCP at various stages throughout the planning process.

1.3 Drought Task Force

As previously noted, the DCP was developed in parallel with the WRMP. As part of this consolidated effort, Three Valleys recruited, convened, and engaged a Drought Task Force comprised of 27 organizations represented by knowledgeable community leaders who can offer diverse, informed perspectives to support effective drought contingency planning. The members of the Drought Task Force are presented in Table 1-2. All Three Valleys' member agencies are part of the Drought Task Force.

Table 1-2 List of Stakeholders by Category

Three Valleys Regional DCP Stakeholders by Category
Member Agencies
Boy Scouts of America: Firestone Reservation
California Polytechnic University, Pomona

Three Valleys Regional DCP Stakeholders by Category
City of Covina
City of Glendora
City of La Verne
City of Pomona
Golden State Water Company (Claremont and San Dimas systems)
Mount San Antonio College
Rowland Water District
Suburban Water Systems
Valencia Heights Water Company
Walnut Valley Water District
Local Government
City of Claremont
City of Industry
City of San Dimas
City of West Covina
Los Angeles County Chief Executive Office
Local Education Agency
Charter Oak Unified School District
Glendora Unified School District
Hacienda La Puente Unified School District
Rowland Unified School District
Local Fire and Law Enforcement
Los Angeles County Fire
Los Angeles County Fire Department Station 118
Los Angeles County Sheriff's Department
Watermasters
Main San Gabriel Watermaster
Nonprofit Organizations
Day One
San Gabriel Valley Economic Partnership

As of September 25, 2024

1.3.1 Three Valleys Board of Directors

Three Valleys' Board of Directors (Board) is the formal decision-making body that adopts the DCP (and WRMP) and recommends it for submittal to Reclamation. To keep the Board informed, Three Valleys staff provided periodic updates during regularly occurring quarterly Board meetings throughout the development of the DCP.

1.3.2 General Public

To reach all customers within Three Valleys' service area, Three Valleys used outreach activities that are not specific to the Drought Task Force. This included receiving Regional DCP updates during regular meetings such as the Three Valleys Board of Directors meetings and the Three Valleys Member Agency Managers meetings, which can be found at https://www.threevalleys.com/home. The public can also check the Three Valleys website at https://storymaps.arcgis.com/stories/6e03e0070af84d7f93aba75a13398d01. This webpage offers another opportunity for interested individuals to learn about the DCP and WRMP planning efforts, view workshop materials, and subscribe to project updates.

1.4 Regional Drought Planning Objectives and Priorities

Early in the planning process for the DCP, key objectives and regional drought priorities were identified to ensure a comprehensive approach. The planning effort was guided by several essential objectives:

- Task Force Collaboration: Facilitate consistent communication and execute the process transparently and collaboratively with stakeholders.
- Planning Consistency: Align the DCP/WRMP with Metropolitan's Water Shortage Allocation Plan, Dry Year Yield policies, and other planning documents from Three Valleys and member agencies.
- Environmental Stewardship and Sustainability: Ensure that the needs of the present are met without compromising the needs of future generations.

Regional drought priorities were identified to guide and inform the DCP's development. These priorities serve as the foundation for the plan's key focus areas and overall approach. During the initial workshops, members of the Drought Task Force were invited to rank these priorities based on their perceived importance. Figure 1-1 illustrates the outcomes of this ranking effort, highlighting the collective priorities identified by the Drought Task Force. These objectives and priorities form the overarching framework that guides the planning effort and development for the DCP.

Figure 1-1. Regional Priorities Ranked by the Drought Task Force

1.5 DCP Development Process

As previously indicated, the DCP was prepared concurrently with the WRMP; however, this section specifically focuses on the DCP, which was developed with consideration of the objectives and regional priorities detailed in Section 1.4. The DCP is organized into five key steps:

- Development of a drought monitoring framework for predicting the probability of future droughts or confirming an existing drought
- A vulnerability assessment to evaluate the risks within the planning area from drought and other factors
- Identification of potential mitigation actions to be implemented ahead of drought to address potential risks
- Identification of potential response actions to be implemented during drought
- An operational and administrative framework to identify the roles, responsibilities, and procedures necessary to implement the DCP.

A planning schedule for the preparation of the DCP is presented in Figure 1-2.

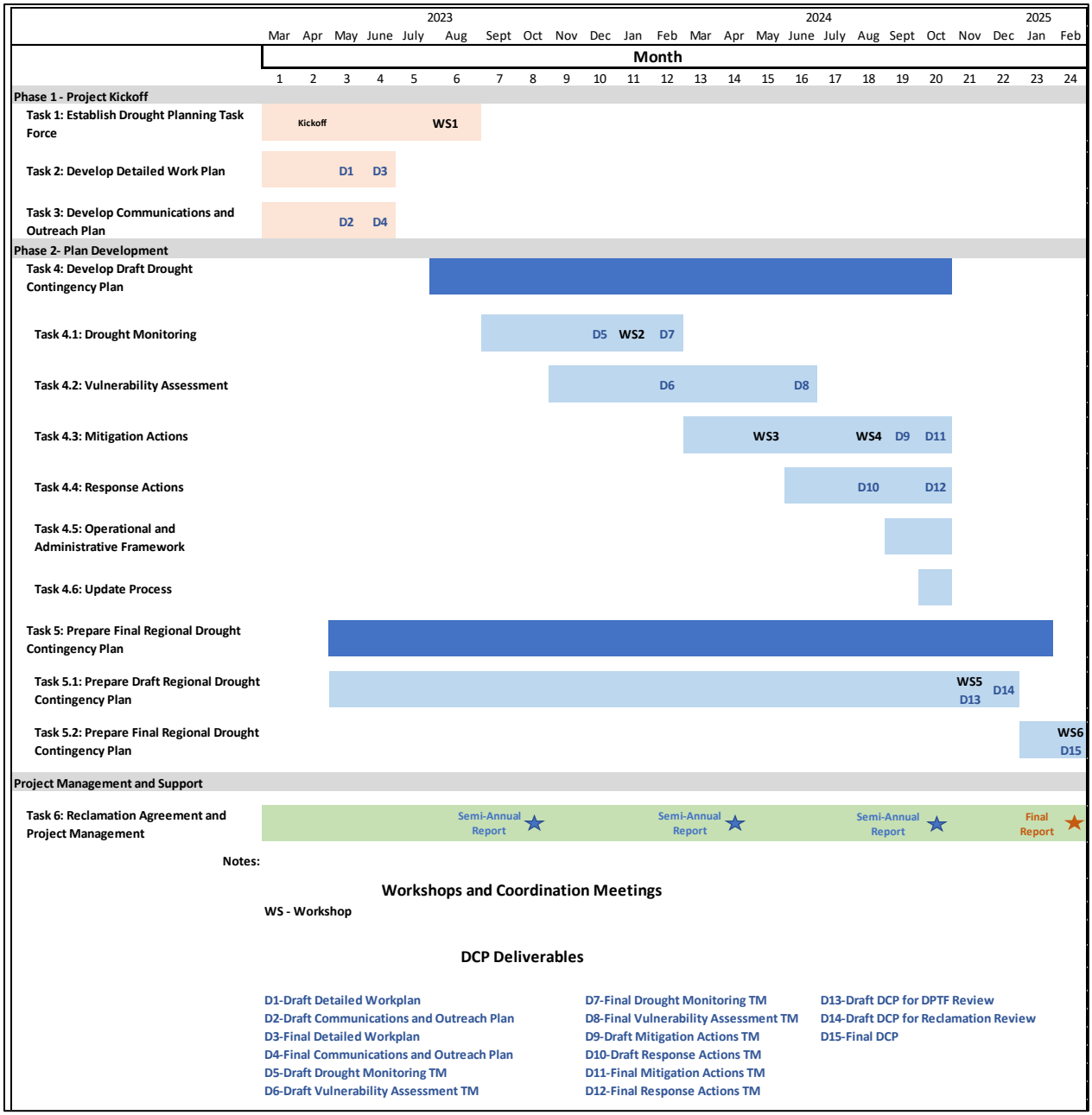


Figure 1-2. Three Valleys Municipal Water District Drought Contingency Plan Schedule

As previously mentioned, the development of DCP involved collaboration with the Drought Task Force and other interested parties. To facilitate participation, Three Valleys and the Drought Task Force members provided multiple opportunities for public input. Various communication channels were utilized, including the Three Valleys website, regular member agency meetings, and Drought Task Force workshops. A schedule of workshops is provided in Table 1-3. The timing of the workshops was strategically aligned with the DCP planning schedule, ensuring that input can be gathered during the most relevant phases of the planning process.

Table 1-3. Drought Planning Task Force Workshop Dates and Topics

Description	Anticipated Date
Drought Task Force Kickoff/Workshop #1	
• Provide DCP overview to Three Valleys Member Agency Managers Meeting (DCP Kickoff Meeting) • Email Workshop 1 invitation to full stakeholder list, along with a description of the DCP development process and opportunity to participate via the Drought Task Force • Review Plan schedule and milestones along with information requests that will be provided to the Drought Task Force over the course of the Plan development (Drought Task Force Workshop 1)	April 2023 (DCP Kickoff Meeting) August 2023 (Drought Task Force Workshop 1)
Drought Task Force Workshop #2	
• Review and develop a common understanding of the estimated water supply demands, water supplies conditions, and forecasted shortage conditions • Review the Drought Monitoring Technical Memorandum • Review the Vulnerability Assessment Technical Memorandum • Summarize project description request and review project evaluation criteria	January 2024
Drought Task Force Workshop #3	
• Present the summary of project descriptions received from Drought Task Force • Review the project screening and evaluation process and the draft findings from the screening and evaluation of the projects	May 2024
Drought Task Force Workshop #4	
• Review the Mitigation Actions Technical Memorandum • Review the Response Actions Technical Memorandum	August 2024
Drought Task Force Workshop #5	
• Review the draft Regional DCP	November 2024
Drought Task Force Workshop #6	
• Review the draft-final Regional DCP and discuss next steps	February 2025

1.6 Plan Adoption and Submittal

The final DCP was formally adopted by Three Valleys on Month Day, 2025. A copy of the Adoption Resolution is included in Appendix A . Three Valleys made a copy of the final DCP available on its website within 30 days after the adoption.

2 Background

To provide a critical foundation for the DCP, Chapter 2 defines the services areas for the member agencies within the region (see Section 1 for a list of the member agencies), along with regional water supplies and associated infrastructure and projected regional demands.

2.1 Water Supplier Service Area

Wholesale water within the region is supplied by Three Valleys by importing and distributing water obtained from Metropolitan to its 13 member agencies.

2.1.1 Three Valleys Municipal Water District

Three Valleys is a wholesale water agency that serves over 500,000 people in a 133 square mile area in eastern Los Angeles County via 13 member agencies. The estimated population within the Three Valleys wholesale service area in 2020, along with future population projections documented in Three Valleys' 2020 Urban Water Management Plan (UWMP), is presented in Table 2-1.

Table 2-1. Population projections for the Region

	2020	2025	2030	2035	2040	2045
Three Valleys	513,623	523,167	532,888	542,790	552,204	561,782

Three Valleys' member agencies retail the water directly to their customers, or wholesale it to other water systems for resale. Three Valleys' member agencies produce water from local sources; however, when water demands exceed these local supplies, the member agencies may rely on Three Valleys to supply their supplemental water needs. Three Valleys' service area includes the Cities of Claremont, Covina, Diamond Bar, Glendora, Industry, La Verne, Pomona, San Dimas, Walnut, West Covina, and unincorporated areas of Los Angeles County (including Charter Oak and Rowland Heights) (Figure 2-1).

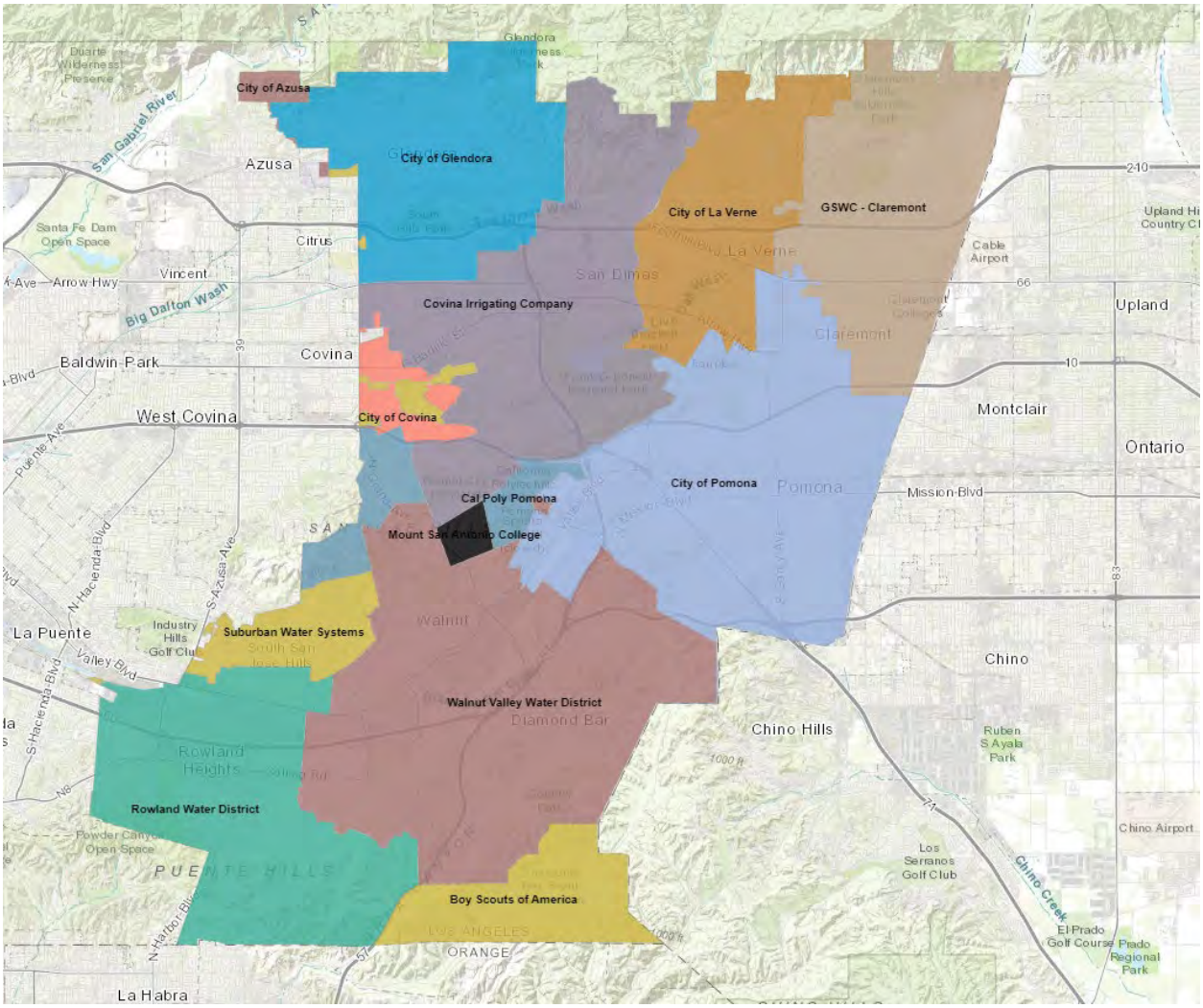


Figure 2-1. Three Valleys Municipal Water District Service Area

Three Valleys is one of 26 member agencies of Metropolitan. Three Valleys' water supply sources consist of untreated imported water purchased from Metropolitan, treated imported water purchased from Metropolitan, and groundwater from the Six Basins groundwater basin, with imported water from Metropolitan accounting for the majority of Three Valleys' supply. Water purchased from Metropolitan comes from the CRA and the SWP. The 13 member agencies use a combination of imported water, groundwater, recycled water, and surface water. Several of these agencies are in SWP dependent areas, meaning they cannot receive Colorado River supplies from Metropolitan, and are solely dependent on imported water from the SWP.

2.1.2 Boy Scouts of America

Boy Scouts of America is one of three institutions that receive imported water from Three Valleys. They own and operate the Firestone Scout Reservation, a campground and wilderness facility located in the southern part of the Three Valleys' service area.

2.1.3 California State Polytechnic University at Pomona

California State Polytechnic University is one of three institutions that receives imported water from Three Valleys, located within the City of Pomona.

2.1.4 City of Covina

The City of Covina has a service area of approximately 7 square miles, encompassing the majority of the City of Covina, a portion of the City of West Covina and an unincorporated portion of Los Angeles County. In 2020, the City of Covina served a population of approximately 29,287 through about 8,500 municipal connections.

2.1.5 City of Glendora

The City of Glendora's service area covers approximately 11 square miles encompassing the majority of the City of Glendora and a portion of the Cities of San Dimas, Azusa and an unincorporated portion of Los Angeles County. In 2020, the City of Glendora served a population of approximately 45,551 through about 13,468 municipal connections.

2.1.6 City of La Verne

The City of La Verne has a service area of approximately 8.56 square miles bounded on the west by the City of San Dimas, on the south by the Puddingstone Recreation area, on the east by Fulton Road and the prolongation of Williams Avenue, and on the north by the Los Angeles National Forest. In 2020, the City of La Verne served a population of approximately 31,321 through about 8,800 municipal connections.

2.1.7 City of Pomona

The City of Pomona's service area covers approximately 22.9 square miles encompassing the majority of the City of Pomona and portions of the Cities of La Verne, Claremont, and Chino Hills. In 2020, the City of Pomona served a population of approximately 153,988 through about 30,041 municipal connections.

2.1.8 Golden State Water Company (Claremont and San Dimas systems)

Golden State Water Company (Claremont system) provides water service to the City of Claremont, portions of the Cities of Montclair, Pomona, and Upland, and adjacent unincorporated areas of Los Angeles County, which encompasses approximately 9.2 square miles. The San Dimas system serves portions of the Cities of La Verne, Walnut, and Covina, and adjacent unincorporated areas of Los Angeles County, covering approximately 13.7 square miles. In 2020, Golden State Water Company served a population of approximately 36,713 through about 11,076 municipal connections in the Claremont system. In the San Dimas system, Golden State Water Company served a population of approximately 53,120 through about 16,033 municipal connections.

2.1.9 Mount San Antonio College

Mount San Antonio College is one of three institutions that receives imported water from Three Valleys, located within the City of Walnut.

2.1.10 Rowland Water District

Rowland Water District's water service area covers approximately 17.2 square miles encompassing portions of the Cities of Industry, La Puente, and West Covina, and unincorporated areas of Los Angeles County including Rowland Heights and Hacienda Heights. In 2020, Rowland Water District served a population of approximately 59,283 through about 13,202 municipal connections.

2.1.11 Suburban Water Systems

Suburban Water Systems has a service area of approximately 41.7 square miles encompassing the Cities of Glendora, Covina, West Covina, La Puente, Walnut, Whittier, La Mirada, La Habra, and Buena Park as well as sections of unincorporated Los Angeles County and Orange County. Suburban Water Systems' service area is currently divided into two main service areas: the San Jose Hills Service Area, and the Whittier/La Mirada Service Area. In 2020, Suburban Water Systems served a population of approximately 298,367 through about 42,512 municipal connections. This includes approximately 175,529 residents in the San Jose Hills service area and approximately 122,838 residents in the Whittier/La Mirada service area.

2.1.12 Valencia Heights Water Company

Valencia Heights Water Company is a mutual water company serving portions of the City of West Covina and unincorporated areas of Los Angeles County. Valencia Heights Water Company serves less than 3,000 customers and does not supply more than 3,000 acre-feet of water annually, and thus is not required to prepare a UWMP.

2.1.13 Walnut Valley Water District

Walnut Valley Water District's water service area covers approximately 29 square miles covering the City of Diamond Bar and portions of the Cities of Industry, Pomona, Walnut, and West Covina, as well as unincorporated areas of Los Angeles County including Rowland Heights. In 2020, Walnut Valley Water District served a population of approximately 99,956 through about 27,100 municipal connections.

2.2 Regional Water Supply

This section summarizes all 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

An overview of the water sources used by each agency within Three Valleys' service area is shown in Table 2-2. This summary highlights the diversity of water supply portfolios among the water agencies in the region. As a result, each agency is impacted differently by drought, driving a need for regional solutions that are flexible and adaptable to different community needs.

Based on the historical water use, all of Three Valleys' member agencies rely on imported water as a major supply source. Imported water constitutes the largest portion of the region's supply, accounting for about 51 percent of the total from 2018 to 2022 (Figure 2-2).

Table 2-2. Current Water Sources by Agency

Agency	Groundwater	Imported Water	Surface Water	Recycled Water
Boy Scouts of America		X		
Cal Poly Pomona	X	X		X
City of Covina*		X	X	
City of Glendora*	X	X	X	
City of La Verne	X	X		
City of Pomona	X	X	X	X
Golden State Water Company (Claremont)	X	X		
Golden State Water Company (San Dimas)*	X	X	X	
Mount San Antonio College		X		
Rowland Water District	X	X		X
Suburban Water Systems*	X	X	X	X
Valencia Heights Water Company*	X	X	X	X
Walnut Valley Water District	X	X		X

*Purchases water from Covina Irrigating Company which produces water from local surface and groundwater sources and treats imported water from Three Valleys.

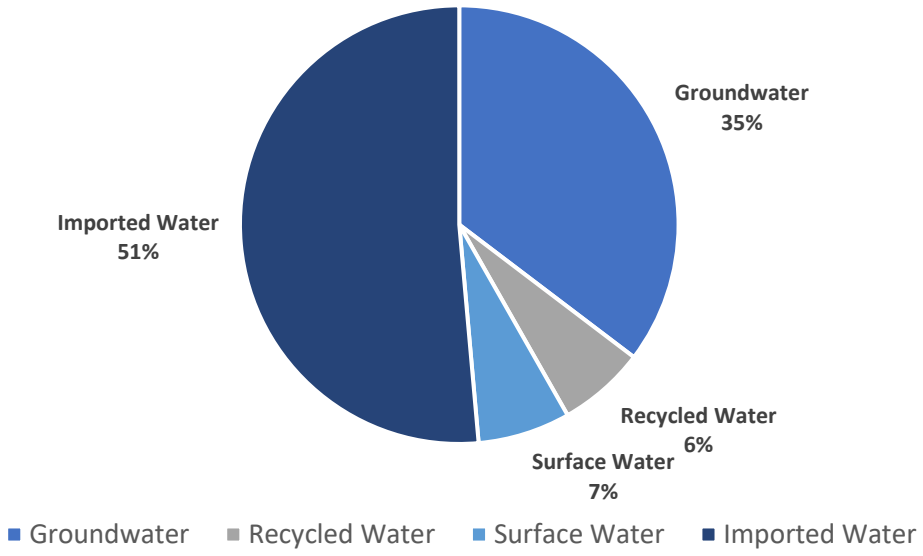


Figure 2-2. Percent Regional Water Use by Source

Based on water use data aggregated from Three Valleys' Local Supply Production Surveys (which are compiled form member agency data) and Three Valleys' Water Sales records, the total water supply within the region has ranged from approximately 104,000 acre-feet (AF) to more than 121,000 AF from 2018 to 2022 as shown in Figure 2-3.

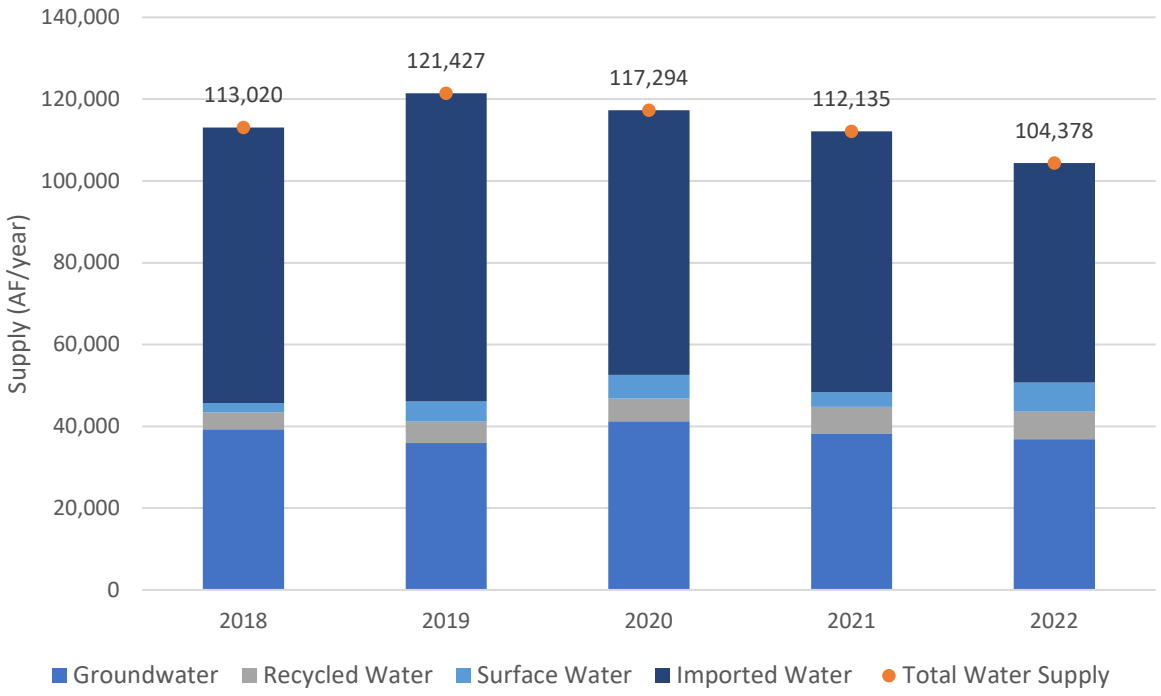


Figure 2-3. 2018-2022 Regional Water Supply by Source

2.2.2 Sources of Supply

This section describes each of the water supplies available to the region.

2.2.2.1 Imported Water

Three Valleys purchases both untreated and treated imported water from Metropolitan and wholesales it to its member agencies. Currently, Three Valleys receives a Tier 1 water supply allotment from Metropolitan of 80,688 acre-feet per year (AF/year). Metropolitan imports water from the SWP which is owned and operated by DWR and conveys water from the Bay-Delta to Southern California via the California Aqueduct, and from the Colorado River through the CRA which is owned and operated by Metropolitan. Generally, Metropolitan sources around 35 percent of its water from the SWP, 25 percent sourced from the CRA, and the remainder sourced from Metropolitan local supplies.

Three Valleys supplies treated imported water directly to its member agencies through service connections from the Metropolitan distribution system, but it does not provide water directly to retail customers. Untreated imported water is sent to Three Valleys' Miramar Water Treatment Plant for processing before being distributed to the member agencies. This untreated water is also used to replenish portions of the Six Basins and is delivered to the Main Basin to meet Replacement Water obligations specified in the Main Basin Judgment. Furthermore, Three Valleys obtains untreated imported water supplies from Metropolitan for delivery to the Covina Irrigating Company, which treats these deliveries at its William B. Temple Treatment Plant before supplying other member agencies within the Three Valleys' region.

Each year, Metropolitan member agencies communicate their anticipated water needs for the next five years, allowing Metropolitan to collaborate with them on forecasts for long-term future water supply. Imported water sources are described further in Section 3.2.1.

2.2.2.2 Groundwater

The region primarily uses local groundwater from six different groundwater basins: the Six Basins, Chino Basin, Main San Gabriel Basin (Main Basin), Spadra Basin, Central Basin, and Puente Basin. Five basins (Six Basins, Chino Basin, Main Basin, Central Basin, and Puente Basin) are adjudicated groundwater basins; therefore, they are exempt from the requirement to designate a Groundwater Sustainability Agency (GSA) as mandated by the Sustainable Groundwater Management Act (SGMA). These basins are managed by their respective Watermaster to manage the ownership of water rights and water use with goals similar to that of SGMA. The Spadra Basin is a small, non-adjudicated subbasin of the San Gabriel Valley Basin, designated as a 'very low-priority' basin by DWR. However, the Walnut Valley Water District and the City of Pomona collectively formed the Spadra Basin GSA to manage the basin. Groundwater basin management activities are described further in Section 3.2.2.

According to the State Water Resources Control Board's Groundwater Ambient Monitoring and Assessment (GAMA) Program, groundwater from these basins has exhibited Maximum Contaminant Level (MCL) exceedances for numerous constituents, including 1,2,3-Trichloropropane (1,2,3-TCP),

Hexavalent Chromium, Arsenic, 1,2-Dibromo-3-chloropropane (DBCP), Perchlorate, Tetrachloroethene (PCE), Trichloroethene (TCE), Total Dissolved Solids (TDS), and Uranium. To remove these contaminants, agencies use a combination of blending and wellhead treatment, both of which are resulting in greater reliance on imported water.

2.2.2.3 Recycled Water

Several member agencies in the region also use recycled water to meet non-potable demands. Recycled water sources in the region are primarily from the Pomona Water Reclamation Plant and San Jose Creek Water Reclamation Plant, both owned and operated by the Los Angeles County Sanitation District.

2.2.2.4 Surface Water

Some member agencies in the region also use surface water to meet potable demands. The City of Pomona sources local surface water from San Antonio Creek, which is then purchased by Three Valleys to replenish the Six Basins. Additionally, some member agencies obtain surface water from the Covina Irrigating Company, which treats water from the San Gabriel River.

2.3 Regional Water Demand

In 2020, the wholesale demand from Three Valleys was nearly 77,000 AF. Over the past ten years, Three Valleys' total water demands have ranged from 57,472 AF/year to 76,723 AF/year, with an average of 67,327 AF/year. Retail water usage includes residential, commercial, industrial, agricultural, and institutional/governmental. Among those uses, residential generally accounts for 70 percent of total demand.

Based on aggregated water demand data from member agency UWMPs, the total water demand for 2020 was nearly 135,000 AF/year (see Table 2-3), with nearly 60 percent of that demand associated with from residential sources.

Table 2-3. 2020 Distribution of Water Demand (in Acre-Feet) for the Three Valleys Service Area

Use Type	Demand (AF/year)	Contribution to Demand (%)
Single-Family Residential	69,639	51.6%
Commercial	18,822	14.0%
Other	11,712	8.7%
Multi-Family Residential	10,233	7.6%
Losses	5,726	4.2%
Recycled Water Demand	6,463	4.8%
Institutional	6,026	4.5%
Landscape & Agriculture	4,789	3.6%
Industrial	1,434	1.1%
Total Demand from Member Agencies	**134,844**	**100%**

Source: Data aggregated from member agencies' 2020 UWMPs

Projections of future water demand due to growth, aggregated from the member agency 2020 UWMPs, are shown in Table 2-4. The cumulative annual growth rates are calculated based on the change in population from the baseline 2020 values. These growth rates, along with climate change factors, were used to develop new demand projections, which are discussed in Chapter 4.

Table 2-4. Three Valleys Service Area Water Demand Projections due to Growth

	FY 2020	FY 2025	FY 2030	FY 2035	FY 2040
Projected Demand from Member UWMPs (AF/year)	134,844	144,665	146,338	147,524	149,480
Implied Cumulative Annual Growth Rate (%)		100.95%	100.07%	100.15%	100.23%

Refer to Three Valleys' member agency UWMPs for additional details on water usage by sector within the region.

2.4 Land Uses within Service Area

Much of Three Valleys' service area is filled with urban development, leaving a relatively small balance of open space for future improvement and population growth. Still, the region is expected to experience some increase. As of 2023, residential (single-family and multi-family), commercial, and industrial uses account for the majority of land use, in Equivalent Dwelling Units, within Three Valleys' general service area, as shown in Figure 2-4.

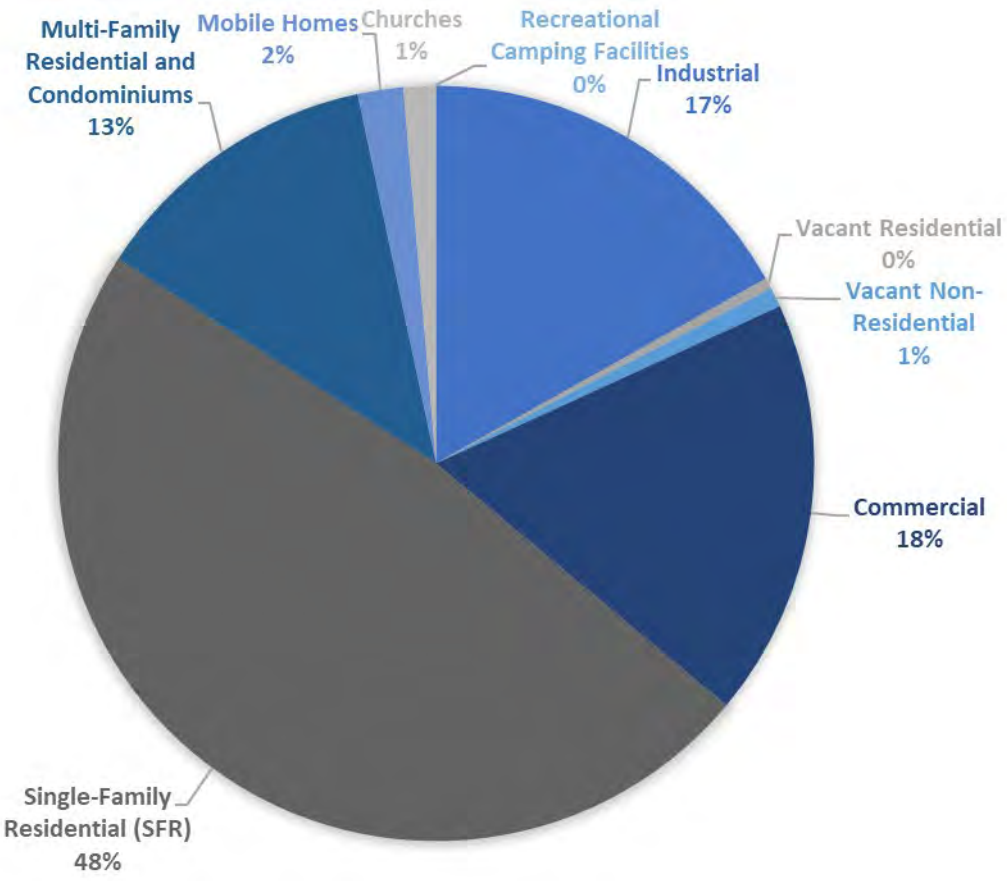


Figure 2-4. Three Valleys Land Use in Equivalent Dwelling Units

3 Drought Monitoring Framework (DMF)

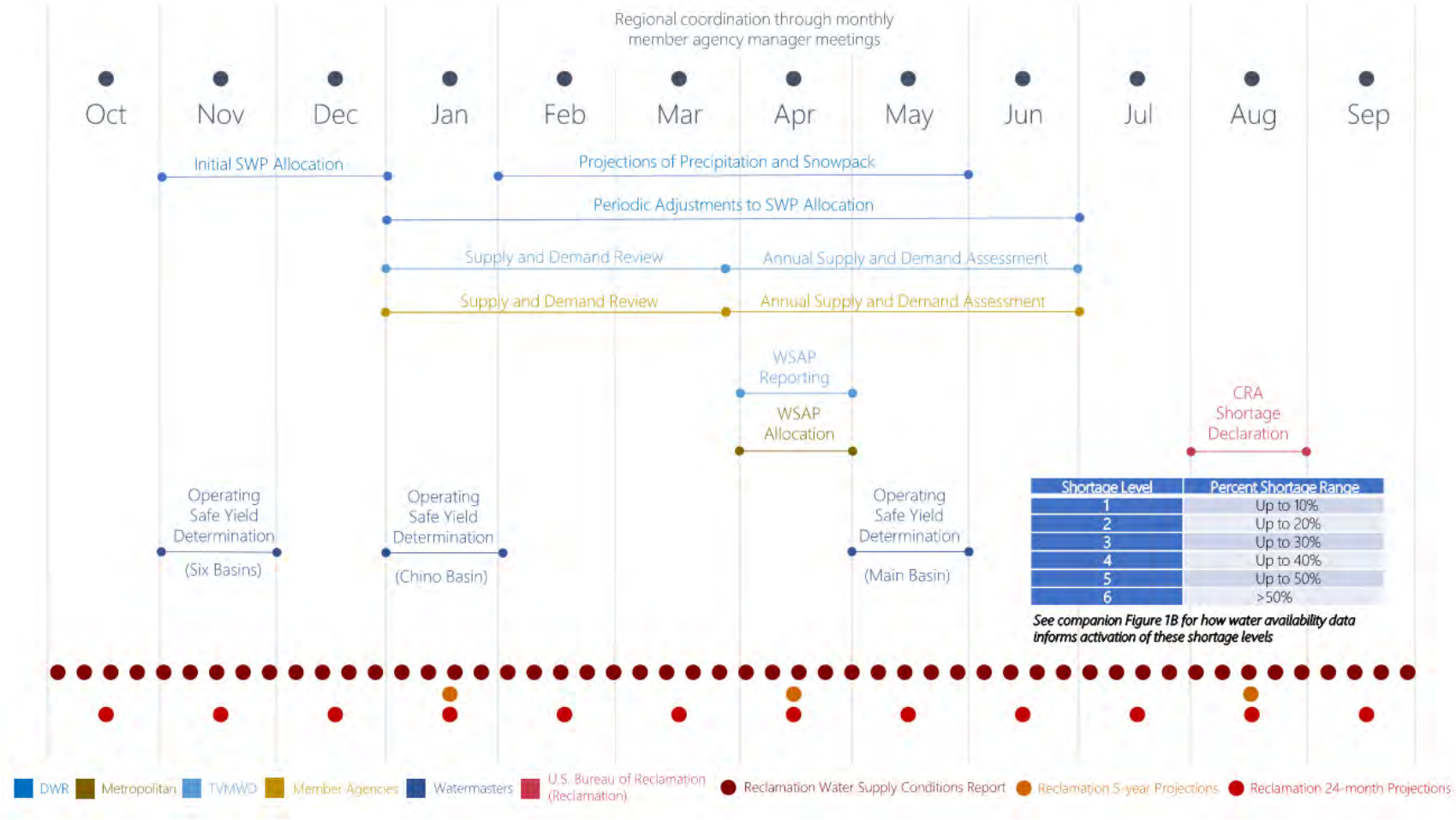
This chapter discusses the DMF, which establishes a process for monitoring near- and long-term water availability and develops a framework for predicting the probability of future droughts or confirming an existing drought. The DMF was informed through collaboration with the Drought Task Force.

3.1 DMF Primary Elements

The DMF includes three primary elements:

1. Monitoring for near- and long-term water availability: The region has access to considerable water availability data that is made available throughout the year by DWR, Metropolitan, Reclamation, and groundwater basin watermasters (watermasters). Key indicators for water availability include SWP allocations by DWR, CRA shortage declarations made by Reclamation, Water Supply Allocation Plan (WSAP) allocations by Metropolitan, and operating groundwater safe yield determinations made by watermasters in the region.
2. A process for predicting future droughts or confirming an existing drought: The region has existing processes and frameworks for predicting or confirming droughts. These processes and frameworks include Annual Supply and Demand Assessments (Annual Assessments) which are informed by water availability data and other factors, and a set of triggers that are used to initiate preparation for and response to water shortages.
3. Regional coordination: Regular and ongoing monthly meetings between Three Valleys and its member agencies are used to review and analyze water availability data, Annual Assessments, and to make decisions regarding declaring water supply shortages, instituting water restrictions, and pursuing additional supplies.

These elements are discussed in the following sections and the DMF is provided as Figure 3-1 and Figure 3-2.



Note: See companion

Figure 3-1. Drought Contingency Plan Regional Drought Monitoring Framework

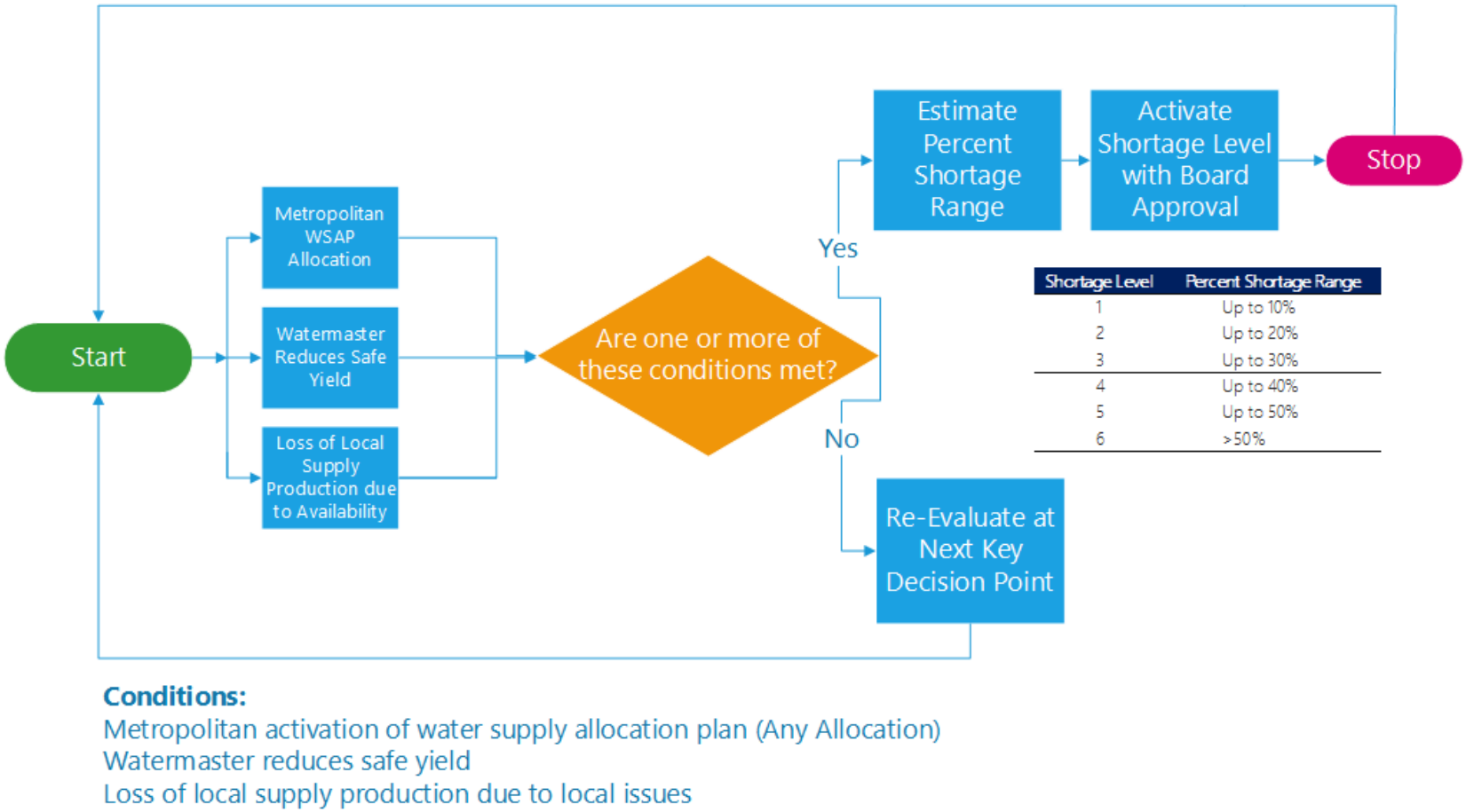


Figure 3-2. Drought Contingency Plan Regional Drought Monitoring Framework

3.2 Water Availability Data

As discussed in Section 3.1, imported water and groundwater data are key indicators for monitoring near- and long-term water availability in the region. This data is made available throughout the year by DWR, Metropolitan, Reclamation, regional watermasters, and others. This data directly informs the region's water supply projections and is used to develop Annual Assessments as described in Section 3.3.

3.2.1 Imported Water

The region's water supply portfolio consists of 50 to 60 percent imported water. Imported water supplied to the region through Three Valleys is purchased from Metropolitan, who can source these supplies from the Sacramento and San Joquin rivers via the SWP, and the Colorado River via the CRA.

3.2.1.1 State Water Project

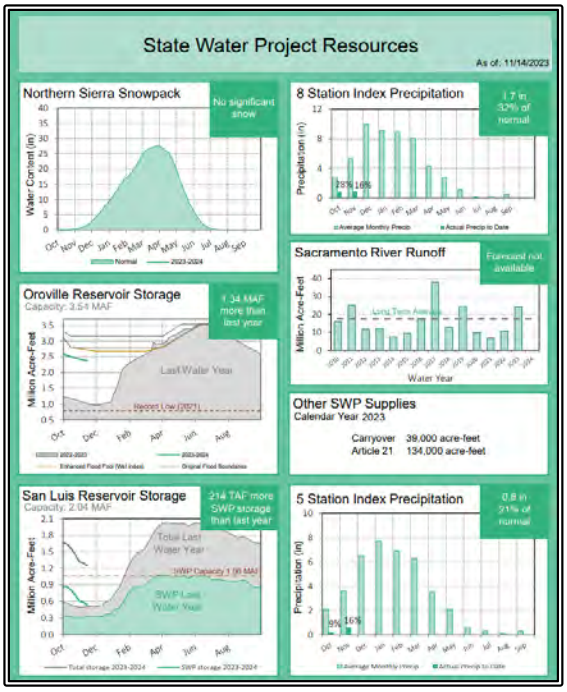
Roughly 30 percent of Metropolitan's water is imported from the SWP. The SWP is a water storage and delivery system of reservoirs, aqueducts, pumping plants, and power plants owned by the State of California. Water delivered by the SWP originates in the Sierra Nevada mountains in northern California and is pumped into the SWP from the Sacramento-San Joaquin River Delta near Stockton. Water from the SWP serves agencies within California's Central Valley, San Francisco Bay Area, central coast, and Southern California.

DWR administers long-term water supply contracts to 29 local agencies, including Metropolitan, for water service from the SWP. Each contract identifies the maximum volume of SWP water to be made available to each agency on an annual (calendar year) basis, also known as the "Maximum Table A amount." The available volume of SWP water to be delivered to each agency, or the "Table A Allocation," often differs each year, and is subject to refinement over the course of a water year as hydrologic conditions unfold and periodic adjustments to SWP allocations are made.

In determining available SWP supplies, DWR considers several factors including agency projected demands, existing storage in SWP facilities, estimates of future runoff, SWP operational and regulatory requirements, and water rights obligations. Estimates of future runoff are primarily based on DWR's forecasted projections of precipitation and snowpack. These forecasts are typically conducted using data collected by DWR's California Cooperative Snow Surveys program between February through May of each year. Consequently, initial SWP allocations, which are generally made around the November to December timeframe each year and are based on conservative dry hydrologic conditions, are subject to refinement between January to June based on forecasted and actual runoff conditions. These conditions start to become apparent generally around the February to March timeframe, with the outlook for imported water supplies from the SWP becoming more certain around April to May.

DWR's California Data Exchange Center (CDEC) provides access to historical and forecasted hydrologic and reservoir data used to inform water supply conditions. This data is collected through an exchange with various agencies including the National Weather Service, Reclamation, the U.S. Geological Survey, the U.S. Army Corps of Engineers, and other state and public agencies. Real-time

water availability data is also provided by DWR via the California Water Watch (CWW) website, which consolidates precipitation, reservoir conditions, streamflow, groundwater, and snowpack data in a single location.



Select data from CDEC and CWW are also used by Metropolitan to produce a water supply conditions report. This report consolidates key information related to reservoir storage, snowpack and snowfall, precipitation, and runoff to provide an overview of SWP resources. The report is generally updated by Metropolitan as forecasts are updated and made available throughout the water year.

3.2.1.2 Colorado River Aqueduct

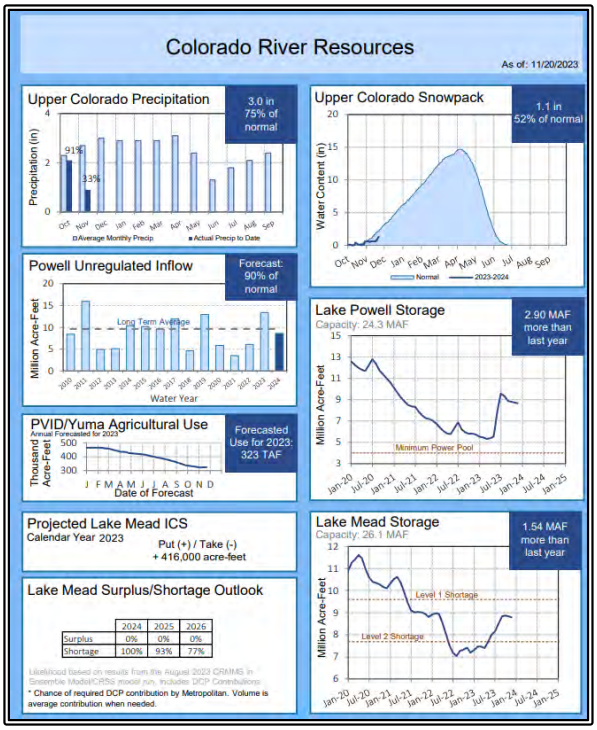
Roughly 25 percent of Metropolitan's water is sourced from the CRA. Built and operated by Metropolitan, the CRA carries water from the Colorado River system 242 miles across the desert to Southern California. Reclamation operates the Colorado River system, which provides water to users within seven western states – Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming. California's legal apportionment from the Colorado River is 4.4 million acre-feet on an annual basis. Roughly 70 percent of this allocation goes to the Imperial Irrigation District, with the remainder allocated to Metropolitan and the San Diego County Water Authority.

Similar to the SWP, hydrologic conditions have the potential to impact CRA diversions to California and users within the other six western states. CRA diversions to California are governed by the Lower Colorado River Basin DCP. The Lower Colorado River Basin DCP outlines five tiers and corresponding reductions to diversions for Arizona, California, Nevada, and Mexico. These tiers are triggered based on forecasts of reservoir levels in Lake Mead, the largest reservoir in the Colorado River Basin. These forecasts are reviewed, and shortage declarations are made for the following calendar year around August of each year.

Reclamation monitors levels in Lake Mead as an indicator of Colorado River Basin storage conditions. Monitoring is similarly done for Lake Powell, another significant reservoir for the Colorado River Basin. Projections of reservoir levels are made 24 months into the future and released on a monthly basis. These projections take into account forecasted hydrology, reservoir operations, and diversion and consumptive use schedules to model a single scenario of reservoir conditions. Reclamation also conducts five-year projections of future conditions in the Colorado River system which are typically updated every January, April, and August of each year.

Data that reflects water availability from the Colorado River Basin is also made available in Metropolitan's water supply conditions report. Conditions for the Colorado River Basin are generally

reflected in this report through a reporting of actual and projected precipitation and snowpack in the Upper Colorado River, unregulated inflow into Lake Powell, and storage in Lake Powell and Lake Mead.



3.2.1.3 Metropolitan Water Supply Allocation Plan

As stated in Section 3.2.1.1 and 3.2.1.2, roughly 55 percent of Metropolitan's imported water supply comes from the SWP and the CRA. Metropolitan's WSAP is Metropolitan's policy and formula for equitably allocating available water supplies to member agencies during extreme water shortages when Metropolitan determines it is unable to meet all its demands. Metropolitan's WSAP identifies ten levels of shortage designed to reduce demands by up to 50 percent of the WSAP's calculated base demand. Based on the shortage level established by Metropolitan, the WSAP provides a reduction allocation to a member agency for its Municipal and Industrial (M&I) retail demand and replenishment demand. The WSAP considers historical local water production, full service treated water deliveries, agricultural deliveries and water conservation efforts when calculating each member agency's allocation.

Three Valleys has developed a WSAP to implement Metropolitan's WSAP within the Three Valleys service area in a manner that is fair and equitable to Three Valleys' member agencies. Three Valleys' WSAP was prepared in collaboration with its member agencies and adopted in 2009. Three Valleys' WSAP limits how much water can be purchased during the fiscal year without incurring a penalty. The limit varies depending on a number of factors, but mainly local groundwater extracted during the fiscal year. Three Valleys' WSAP mirrors the 10 stages of Metropolitan's WSAP.

Metropolitan's and Three Valleys' WSAPs do not require Three Valleys' member agencies to reduce demands during shortage, rather they incentivize demand reduction through fees for excessive use. Metropolitan charges penalties for use above an allocation established by implementing one of the ten stages of its WSAP and Three Valleys' WSAP passes any penalties charged through to the member agencies that contributed to accruing the penalties. Demand reductions are voluntary and supplies beyond the allocation can still be purchased at higher penalty rates.

Metropolitan is responsible for recommending a WSAP shortage level for each allocation year which is defined as the period between July 1 to June 30. To facilitate this recommendation, Metropolitan tracks and reports on storage reserve levels and projected supply and demand conditions between January and March of each year. In April, Three Valleys along with other Metropolitan member agencies report their projected supplies for the coming allocation year. This information is incorporated in Metropolitan staff analysis of storage reserves and projected supply and demand

conditions in order to provide an allocation recommendation to the Board of Directors during their April meeting. The recommendation of a WSAP allocation directly informs Three Valleys and member agency Annual Assessments (*see* Section *3.3*).

3.2.2 Groundwater

Groundwater accounts for 35 to 45 percent of the region's water supply portfolio. Local groundwater supplies are provided from six different groundwater basins: Central Basin, Chino Basin, Main San Gabriel Basin (Main Basin), Puente Basin, Six Basins, and Spadra Basin, with the Chino Basin, Main Basin, and Six Basins providing the majority of the local groundwater supplies.

As previously mentioned, the Spadra Basin is managed by a GSA under SGMA. Under SGMA, groundwater basins are categorized into one of four priority categories: high-, medium-, low-, or very-low priority. SGMA requires medium- and high-priority basins to develop a Groundwater Sustainability Plan (GSP) with the goals of:

- Developing water budgets
- Assessing groundwater storage
- Developing sustainable management criteria, undesirable results to be avoided, and minimum thresholds to protect the basin for future supply.
- Identifying projects needed to ensure future sustainability of supplies and avoidance of undesirable results

While the Spadra Basin is designated as a very-low priority basin, a GSP was developed in early 2022 with the main objective of encouraging collaborative management of the Basin between all pumpers and maximizing beneficial use of the basin in a sustainable fashion under SGMA.

The remaining groundwater basins are adjudicated and managed by a watermaster. In general, each watermaster is responsible for managing and controlling the withdrawal and replenishment of water supplies into the basin; determining annually the operating safe yield (or the amount of groundwater that can be safely extracted); acquiring and spreading replenishment water as needed; and coordinating local involvement in efforts to preserve and restore the quality of groundwater in the basin. Annually, each adjudicated basin is generally required to report to DWR:

- Groundwater elevation data
- Groundwater extraction for the preceding year
- Surface water supply used for or available for use for groundwater recharge or in-lieu use
- Total water use
- Change in groundwater storage

To that end, each watermaster produces an annual report that identifies this information along with other information relevant to each basin, such as groundwater quality data.

The watermasters for those groundwater basins that provide the majority of the groundwater supplies for the region (Chino Basin, Main Basin, and Six Basins) reassess the operating safe yield of each basin on an annual basis. The Main Basin watermaster typically updates their 5-year outlook of the

operating safe yield on a fiscal year basis around May of each year. The Six Basins watermaster typically makes the determination of the operating safe yield for the subsequent calendar year by November of each year. The operating safe yield for the Chino Basin is recalculated around January of each year.

These frameworks provide the mechanisms to monitor groundwater availability in the near- and long-term to ensure that the groundwater basins relied upon by the region are sustainably managed into the future.

3.3 Annual Supply and Demand Assessments

Three Valleys and its member agencies who are defined as urban water suppliers[1] are required to submit an Annual Assessment on or before July 1 of each year. The Annual Assessment is an evaluation of the near-term outlook for supplies and demands and is instrumental in providing guidance to Three Valleys and its member agencies for decisions regarding:

- Potential declarations of a water supply shortage and implementation of water shortage stages
- Instituting mandatory water restrictions
- Promoting water use efficiency and conservation programs
- Water rates and drought rate surcharges, and
- The necessity of pursuing alternative water supplies

The Annual Assessment is generally initiated between January and March of each year. During this timeframe, Three Valleys and its member agencies review demands from the previous July to December time period along with groundwater basin conditions (as applicable), local hydrology, and the imported water supply outlook as projected during the initial SWP allocation announced in the November to December timeframe. Following this review, Three Valleys and its member agencies initiate the Annual Assessment following Metropolitan's decision to recommend a WSAP allocation in April, since this recommendation directly impacts the imported water supplies that will be made available to the region. The methodology for the Annual Assessment includes the evaluation of supplies, demands, and other factors that might affect the availability of water supplies:

- Water Supplies: Available water supply sources within the region are quantified based on a review of current production capacities, historical production, and existing water supply planning documents.
- Unconstrained Water Demand: Unconstrained demands (i.e., demands prior to any projected response actions) are estimated for the current year and the upcoming year (which is assumed to be a dry year). This estimation will include factors such as weather, existing and projected land uses and populations, actual customer consumption and water use factors,

[1] Urban water supplier is defined as a supplier, either publicly or privately owned, that provides water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually.

monthly urban water supplier monitoring reports, existing water shortage levels, and existing water conservation ordinances.

- Planned Water Use for Current Year Considering Dry Subsequent Year: The water supplies available to meet demands during the current year and the upcoming single dry year will be identified. This evaluation will include factors such as estimated water demands, weather, groundwater basin operating safe yields, water quality results, existing available pumping capacities, imported water allocations, contractual obligations, regulatory issues, use of emergency interconnections, and the costs associated with producing each water supply source.
- Infrastructure Considerations: The capabilities of the water distribution system infrastructure to meet the water demands during the current year and the upcoming (single dry) year are considered. Available production capacities (e.g., groundwater well capacities) and distribution system water losses are reviewed. In addition, capital improvement and replacement projects, as well as potential projects which may increase water system and production capacities are considered.
- Other Factors: Additional local considerations which may affect the availability of water supplies are also described.

As stated above, the Annual Assessments by Three Valleys and its member agencies are required to be completed by July 1 of each year.

Information from each Annual Assessment is required by DWR to be summarized in an Annual Shortage Report, which also must be submitted to DWR by July 1 of each year. The Annual Shortage Report summarizes information from the Annual Assessment and includes information on anticipated shortage, triggered shortage response actions, compliance and enforcement actions, and communication actions.

3.4 Triggers

In response to Three Valleys and member agency Annual Assessments along with water availability data which is made available throughout each year, Three Valleys and its member agencies may have a need to manage water supplies to minimize the impacts of potential shortages. To that end, Three Valleys and its member agencies that are considered urban water suppliers have each developed a WSCP. The WSCP serves as a framework for preparing for and responding to water shortages within each respective agency's service area boundary. Collectively as a region, Three Valleys and its member agencies that are defined as urban water suppliers identify six standard water shortage levels that correspond to a gap in supply compared to normal year availability. The six standard water shortage levels correspond to progressively increasing estimated shortage conditions (up to 10, 20, 30, 40, 50 percent, and greater than 50 percent shortage compared to the normal reliability condition) and align with the response actions that each water supplier will implement to meet the severity of the impending shortages. These six standard water shortage levels (Table 3-1) serve as the region's triggers for responding to supply shortages and initiating response actions to help manage available supplies.

Table 3-1. Regional Water Shortage Levels and Corresponding Shortage Ranges

Shortage Level	Percent Shortage Range
1	Up to 10%
2	Up to 20%
3	Up to 30%
4	Up to 40%
5	Up to 50%
6	>50%

As part of the development of this DCP, the region has developed a set of three key conditions that could suggest an imminent water shortage. If one or more of these conditions are met, Three Valleys and its member agencies will estimate the percent shortage range and activate the necessary shortage level as shown in Table 3-1. These conditions are as follows:

- Condition A: Metropolitan activates their WSAP (any allocation)
- Condition B: Reduced safe yield
- Condition C: Loss of local supply production

The region has also established triggers for initiating a surplus conditions stage. Currently, the region has existing mechanisms to purchase surplus water supplies for recharge into the local groundwater basins, where it can be held for use in future drought conditions. During the surplus conditions stage, Three Valleys and its member agencies will initiate coordination to ensure the region is maximizing its ability to recharge all available surplus waters for use during future dry years. The triggers that the region will use to activate the surplus conditions stage are provided in Table 3-2.

Table 3-2. Surplus Conditions Stage Triggers

Surplus Water Source	Entity Source is Available To	Stage Trigger
SWP – Table A (Metropolitan)	Three Valleys	+50% allocation
SWP – Article 21 (Metropolitan)	Three Valleys	Any allocation

3.5 Regional Coordination

Three Valleys and its member agencies have an existing mechanism in place to facilitate the coordination and information sharing associated with monitoring near- and long-term water availability. Each month, Three Valleys holds a member agency manager's meeting where each of its member agency general managers and support staff are invited to attend. The meetings serve as a forum to review water availability data, discuss the need for triggering water shortage levels, and coordinate drought responses and messaging.

The cities of Claremont and La Verne are known as "SWP Dependent Areas" – meaning that they are solely dependent on imported water from the SWP and cannot receive CRA supplies. Consequently, at the height of the last drought in 2022, Claremont and La Verne activated a Stage 5 shortage level,

indicating a 50 percent shortage condition. During the timeframe that these agencies were in Stage 5, additional meetings outside of the regular member agency manager's meeting took place to facilitate increased coordination and information sharing. During the implementation phase of this DCP, Three Valleys will increase the frequency of meetings with any member agency or agencies that are in Stage 5 or above. These meetings will take place at least twice monthly.

4 Vulnerability Assessment

The study of climate change impacts on water resources continuously produces new models and updates to local and regional datasets. This continuous improvement necessitates a focused selection of data sources and analysis methods that are most applicable to local conditions. The scope of this vulnerability assessment is specifically geared towards enhancing the understanding of the impacts of climate change on future water demand in Three Valleys wholesale service area and the sources of Three Valleys water supplies during normal and drought periods.

This chapter describes the retrieval and analysis of climate data provided by DWR to project the impact of climate change on future water supplies and demands within the Three Valleys service area. The DWR climate data combines findings from 20 global climate models that closely represent California's climate processes. To account for biases in the climate model results, climate projections are presented as relative changes from historical conditions rather than absolute values. This adjustment is achieved by referencing historical hydrologic data in the state, covering the period from 1915 to 2011. The resulting ratio of a simulated future value to its corresponding simulated historical value is termed a "change factor." The change factors are applied to baseline water supply and demand to project changes in the water budget within the Three Valleys service area.

4.1 Summary of Vulnerability Assessment Results

Overall, the results of the vulnerability assessments indicate:

- Minor decreases projected in average annual water supplies from the San Gabriel River basin during drought (single year and multi-year) years relative to baseline conditions due to shifts in precipitation from winter to fall and projected increases in surface water evaporation caused by increasing temperatures, particularly under the extreme warming climate scenario.
- A shorter rainy season with potential for higher intensity precipitation events resulting in higher peak flows of shorter duration. The net impact on annual groundwater recharge will be minimal if flow diversion facilities and recharge basins maintain adequate capability to handle the increased flow rates.
- Projected increases in outdoor water uses under normal, single dry, and multi-year drought conditions, caused by projected temperature increases, which lead to higher evapotranspiration (ET) rates for landscaping, irrigated crops, and native vegetation. Average annual outdoor water use by customers within the Three Valleys service area could increase by up to six percent under the most severe (Dry Hot) climate change scenario.
- A comparison of Three Valleys and Metropolitan's water budget projections under future climate conditions shows similar total demand projections, with Three Valleys showing increased reliance on imported surface water (supplied by Metropolitan) in its future projections. This increased reliance in Three Valleys projections occurs because local water supplies are projected to remain nearly constant while water demand increases due to future growth and increased climate-related water deficits. This highlights the need to develop mitigation actions to reduce future reliance on imported surface water.

These results are described in greater detail throughout Chapter 4 which provides:

- A description of the area that is the subject of the vulnerability assessment
- A description of the analysis approach and the data sources
- Narrative discussions regarding the climate change factors calculated for local supply and demand conditions in various scenarios
- Discussion of the water supply and demand projections resulting from the vulnerability assessment
- A comparison of Three Valleys water supply and demand projections resulting from the vulnerability assessment with the regional projections developed as part of the ongoing Metropolitan 2020 Integrated Water Resources Plan (IRP) process

4.2 Details of Vulnerability Assessment Results

4.2.1 DCP and Water Resources Master Plan Requirements for Climate Change Analysis

As part of the DCP, a vulnerability assessment is essential to understand the characteristics and potential risks associated with future droughts and to formulate appropriate mitigation and response actions. Since future droughts cannot be predicted solely based on observed past drought information, it becomes necessary to include a climate change analysis. This analysis incorporates historical and future climate projections to assess the hydrological impacts of climate change on drought conditions, ultimately leading to the development of a more effective plan. The DCP necessitates both qualitative and quantitative assessments of potential drought conditions derived from climate change information to evaluate potential risks to critical resources.

Imported water projections are also a crucial element for development of the Water Resources Master Plan and DCP. Projections for imported water in the Three Valleys service area were developed by Metropolitan as part of their 2020 UWMP Drought Risk Assessment and the Metropolitan 2020 IRP. Metropolitan's 2020 UWMP Drought Risk Assessment (dated June 2021) indicates that Metropolitan has adequate supplies to meet imported water demands in its State Water Project-dependent areas (including Three Valleys) during normal, single dry years, and 5-year drought periods before 2045 (Metropolitan 2020 UWMP, Table 2-4 and Table 2-5). However, the UWMP analysis was conducted assuming historical climate conditions.

The Metropolitan 2020 IRP considered a range of more extreme potential future scenarios, including: low demand with stable imported supplies, high demand with stable imported supplies, low demand with reduced imported supplies, and high demand with reduced imported supplies. The IRP analysis revealed that service reliability issues could occur more frequently and lead to increasingly severe deficits of imported supplies under the high future demand scenarios in the 2045 period. Options for managing these potential future imported water supply deficits will be explored more extensively as part of the analysis for the DCP. The climate change analysis developed for Three Valleys, as described herein, enhances knowledge of the relative vulnerability of different water supplies for the service area and supports the development of mitigation actions to reduce or eliminate future deficits.

4.2.2 Prior Climate Studies

Climate change is primarily caused by the increasing global concentrations of greenhouse gases, resulting in higher temperatures, disruptions in the hydrologic cycle, and increased precipitation variability. This section provides a summary of the regional impacts of climate change, which were analyzed in California's Fourth Climate Change Assessment (2018). California produces periodic assessments of the potential impacts of climate change in the state and reports on potential adaptation responses as required by Executive Order #S-03-05. California's Fourth Climate Change Assessment includes a Statewide Summary Report (Bedsworth et al., 2018), nine regional summary reports, a climate justice summary report, and over 40 technical reports that translate climate science into actionable adaptation and resilience policies and plans. The Los Angeles Regional Report (Hall et al., 2018) summarizes climate science, impacts, and adaptation information for Ventura, Los Angeles, Orange, San Bernardino, and Riverside counties. This study projects regional increases in average maximum temperatures of approximately 4 to 5 degrees Fahrenheit (°F) by the mid-21st century and 5 to 8°F by the late 21st century. The hottest days of the year could be up to 10°F warmer for many locations in the region by the late 21st century.

California's report also projects slight changes in average annual precipitation and the frequency of extreme dry and wet years. However, there could be intensified rainfall leading to more severe atmospheric river events and up to a 25 to 30 percent increase in rainfall on the wettest days of the year. While these assessments offer insights into the regional climate impacts' magnitude, they do not provide information at a scale directly applicable to local watersheds, water supplies, and demands.

4.2.3 Vulnerability Assessment Objectives

The objectives of this vulnerability assessment are to:

1. Identify the appropriate datasets for use in this analysis
2. Project the magnitude of climate-driven changes in water supply and demand for the Three Valleys service area
3. Estimate the projected future impacts by applying climate change factors to the water supply sources and water demands in the Three Valleys service area

Temperature increases and changes in precipitation patterns due to climate change are expected to alter the balance between local water supply and demand within the Three Valleys service area and other parts of the state. Rising temperatures will result in higher consumptive water use, both for irrigated agriculture and for maintaining landscaping in residential, commercial, and recreational areas. This increased consumptive water use will be compounded by greater evaporation from open spaces and water bodies, as well as by water consumption by native vegetation outside of urban zones. Furthermore, population growth in the planning area may further drive increased demand.

Annual precipitation in Southern California exhibits significant variability, with a substantial portion of regional rainfall occurring during the winter months from November to April. There are typically years characterized by significantly above-average precipitation as well as those with notably below-average precipitation. During wet years, seasonal precipitation serves to replenish aquifers, streams,

rivers, and reservoirs, all of which constitute vital water supply sources. Conversely, during dry years, there is heightened reliance on groundwater reserves to compensate for the deficit. Climate change is expected to intensify year-to-year precipitation variability in the region, as well as in other areas of the state that serve as sources of imported water.

4.2.4 Baseline Water Budget

Estimates of baseline water supply are compiled from Three Valleys' Local Supply Production Surveys and Three Valleys' Water Sales records. The Local Supply Production Survey data are compiled from member agency data documents, annual groundwater production, recycled water use, and surface water use. Three Valleys' Water Sales records detail the amount of imported water delivered for direct consumptive use and water delivered for replenishment. The sum of consumptive use and replenishment water supply is the net demand on Metropolitan.

The 5-year period from 2018 to 2022 is adopted as the baseline period for the water budget analysis. This is the most recent 5-year period for which complete water supply data are available from member agencies. In addition, this 5-year period includes a severe drought period with low water availability from 2018 to 2019 as well as a period with high water availability from 2020 to 2021. The total average baseline water supply is shown in Table 4-1.

Table 4-1. Baseline Water Supply Sources in Acre-Feet

Supply (AF)	2018	2019	2020	2021	2022	Average
Groundwater	39,291	35,885	41,260	38,268	36,876	**38,316**
Recycled Water	4,134	5,246	5,518	6,473	6,722	**5,619**
Surface Water	2,252	4,981	5,825	3,622	7,119	**4,760**
Imported Water Consumed	51,342	57,435	59,569	63,377	53,450	**57,035**
Imported Water Replenished	16,001	17,880	5,122	395	211	**7,922**
Total Local Supply	45,676	46,112	52,603	48,362	50,717	**48,694**
Total Imported Water	67,343	75,315	64,691	63,772	53,661	**64,956**
Total Water Supply	113,019	121,427	117,294	112,135	104,378	**113,651**
Contribution of Imported Water to Total Water Supply	**59.6%**	**62.0%**	**55.2%**	**56.9%**	**51.4%**	**57.0%**

Note: AF = acre-feet.

Source: Data aggregated from Three Valleys' Local Supply Production Surveys and Three Valleys' Water Sales records.

The total water demand for 2020, aggregated from member agency UWMPs, is shown in Table 2-3. These demand estimates are much higher than the actual water use baseline. The combination of conservation measures and water use restrictions that has been imposed for most of the past 15 years due to recurring regional droughts has likely contributed to actual water use being lower than estimated water demand.

Projections of future water demand due to growth, aggregated from member agency 2020 UWMPs, are shown in Table 2-4. The cumulative annual growth rates are calculated based on the change in population from the baseline 2020 values. The aggregated demand and associated future projection

are not directly used in the vulnerability assessment because these values exceed the actual baseline water use. Instead, the growth rates are used with the actual baseline water use of 113,651 AF/year and climate change factors to develop new demand projections in subsequent steps.

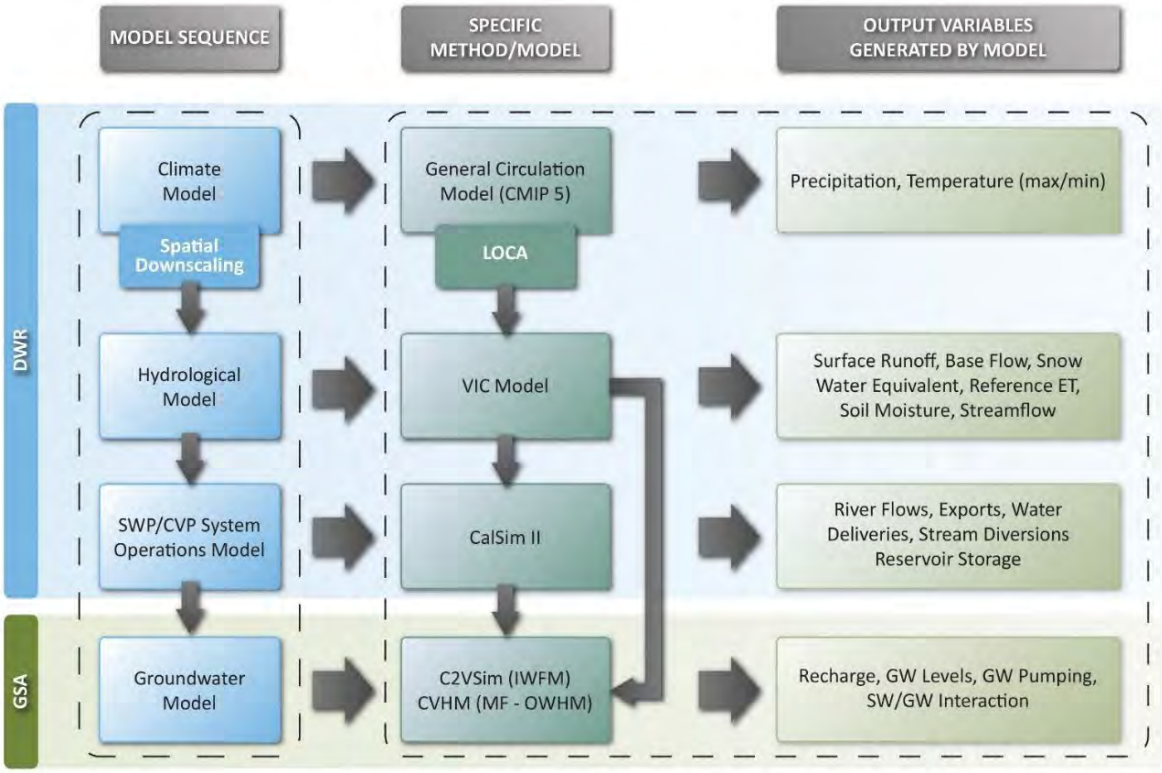
4.2.5 Description of Climate Data Sources

DWR has compiled statewide climate change datasets for utilization in water resource planning. Climate conditions in California under historical and future scenarios are presented in the following datasets:

- Year 2030 future conditions, reflecting projected climate and sea level conditions for a 30-year period centered around 2030
- Year 2070 future conditions, reflecting projected climate and sea level conditions for a 30-year period centered around 2070
- Year 1995 historical conditions, representing climate and sea level conditions for a 30-year period centered around 1995

The 2030 and 2070 climate projections rely on an ensemble of 20 global climate models selected by the DWR Climate Change Technical Advisory Group as the most suitable for assessing and planning California's water resources. This dataset contains data from 1915 through 2011 for the entire state of California at a spatial resolution of 1/16th degree (approximately 3.75-mile grid cells) and a monthly temporal resolution.

Figure 4-1 provides an overview of the modeling processes utilized by DWR, highlighted in blue background. The bottom row of the image highlighted in green, illustrates how individual groundwater sustainability agencies are expected to utilize the data in groundwater models to simulate groundwater conditions to achieve sustainability objectives.



DWR: Department of Water Resources; GSA: Groundwater Sustainability Agency; SWP: State Water Project; CVP: Central Valley Project; LOCA: Localized Constructed Analogs; VIC: Variable Infiltration Capacity; CalSim: SWP & CVP Operations Model; C2VSim: California Central Valley Groundwater - Surface Water Simulation Model; IWFM: Integrated Water Flow Model; CVHM: Central Valley Hydrologic Model; MF - OWHM: MODFLOW One Water Hydrologic Flow Model; ET: Evapotranspiration, SW: Surface Water; GW: Groundwater; CMIP 5: Coupled Model Intercomparison Project

Figure 4-1. Overview of Modeling Processes Used by DWR in Creating the Statewide Climate Datasets (Source: DWR, 2018)

DWR has also processed the climate datasets through a hydrologic model known as the Variable Infiltration Capacity (VIC) model. This model is used to simulate future hydrologic conditions and route runoff to the outlet of subbasins defined by each eight-digit Hydrologic Unit Code (HUC) in California. Streamflow change projections from the VIC model are provided as a monthly time series from 1915 through 2011. As depicted in Figure 4-2, the VIC model takes input climate variables, such as precipitation and temperature, and performs a series of hydrologic computations within each cell to produce variables like soil moisture, ET, and surface runoff within each cell. Subsequently, a streamflow routing algorithm known as RVIC is employed to direct runoff from each cell to its associated subbasin outlet.

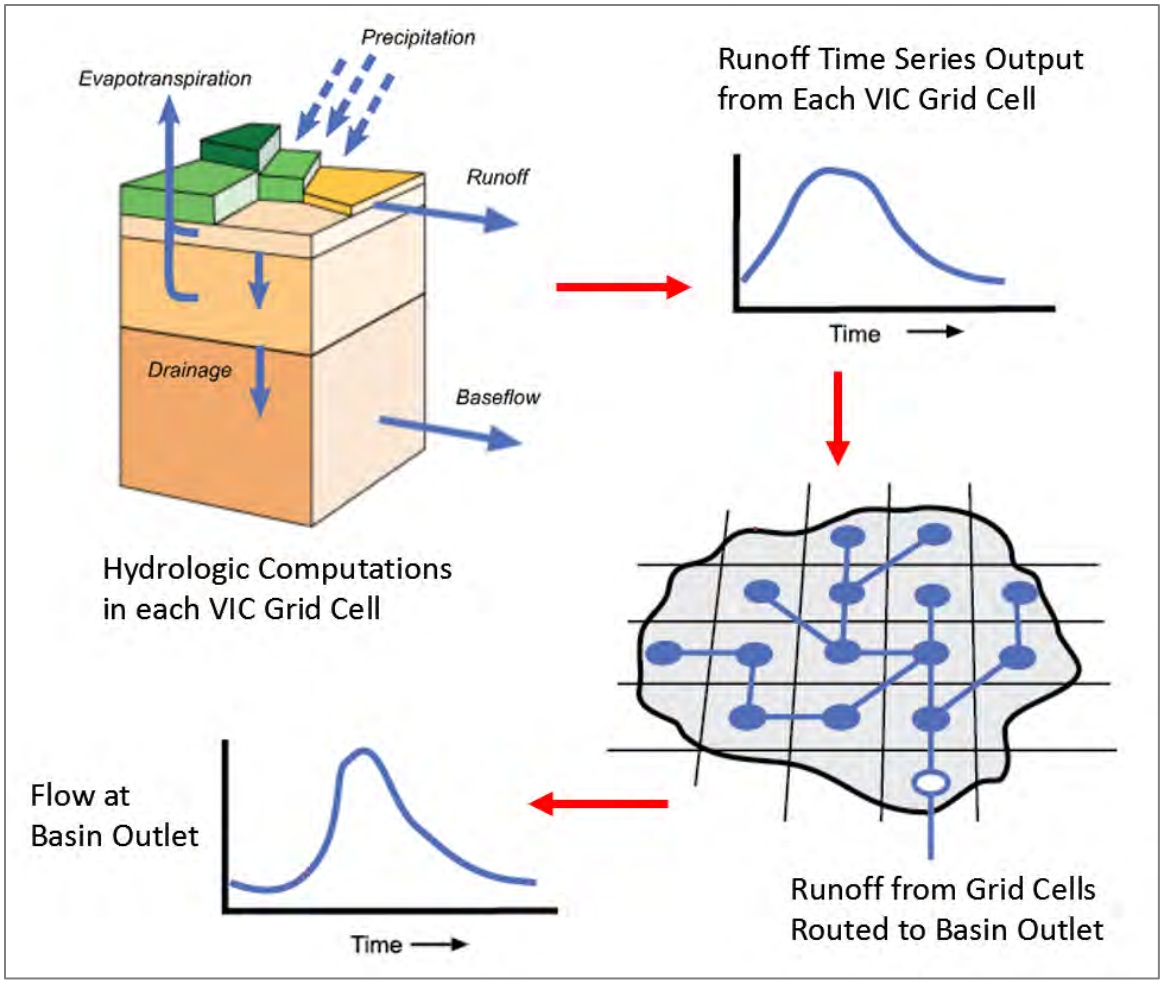


Figure 4-2. Schematic of the VIC Model Showing Hydrologic Computations Within Each Grid Cell and Runoff Routing (Source: University of Washington Computational Hydrology Group, 2016)

DWR has utilized the VIC model to conduct hydrologic simulations under both historical climate conditions and projected future climate conditions in 2030 and 2070 across more than 8,000 grid cells statewide. Runoff from these grid cells has also been directed to the outlet of each eight-digit HUC watershed in the state for incorporation into water resource planning. As depicted in Figure 1, climate assessments involve a sequence of models, each of which introduces certain biases into the modeling process and the derived products. To minimize the impacts of these biases on decision-making processes, DWR presents the simulated climate projections as relative changes from historical conditions rather than absolute values. For instance, each monthly precipitation value simulated under 2030 conditions is divided by the precipitation value simulated for the same month under historical conditions using the same sequence of models. As stated previously, this resulting ratio of a simulated future value to the corresponding simulated historical value is referred to as a "change factor." DWR has computed monthly time series of change factors for precipitation and ET in each VIC grid cell and for streamflow in each HUC-8 watershed. These change factor datasets can be retrieved from the publicly accessible Sustainable Groundwater Management Act Data Viewer (https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer) for use in water resources planning. A

more comprehensive description of the methods used to compute the climate datasets is provided in a publication titled "Guidance for Climate Change Data Use During Groundwater Sustainability Plan Development" (DWR, 2018).

4.3 Climate Analysis Approach

4.3.1 Preprocessing Data for the Three Valleys Service Area

For the Three Valleys service area, the statewide climate datasets comprise 17 grid cells, each with a spatial resolution of 1/16th degree. Each grid cell contains 97 years of monthly time series (1915-2011) displaying projected precipitation and ET changes under 2030 and 2070 climate conditions relative to 1995 conditions. The portion of each grid cell within the Three Valleys service area is estimated by spatially intersecting feature layers of the climate grid with the Three Valleys service area boundary. Regional time series of projected precipitation and ET changes are computed from the cell time series by calculating an area-weighted average of data from grid cells that fall wholly or partially within the service area. Projections of future streamflow change were also obtained for the San Gabriel River (HUC-18070106) basin, which supplies surface water to portions of the service area as shown in Figure 4-3.

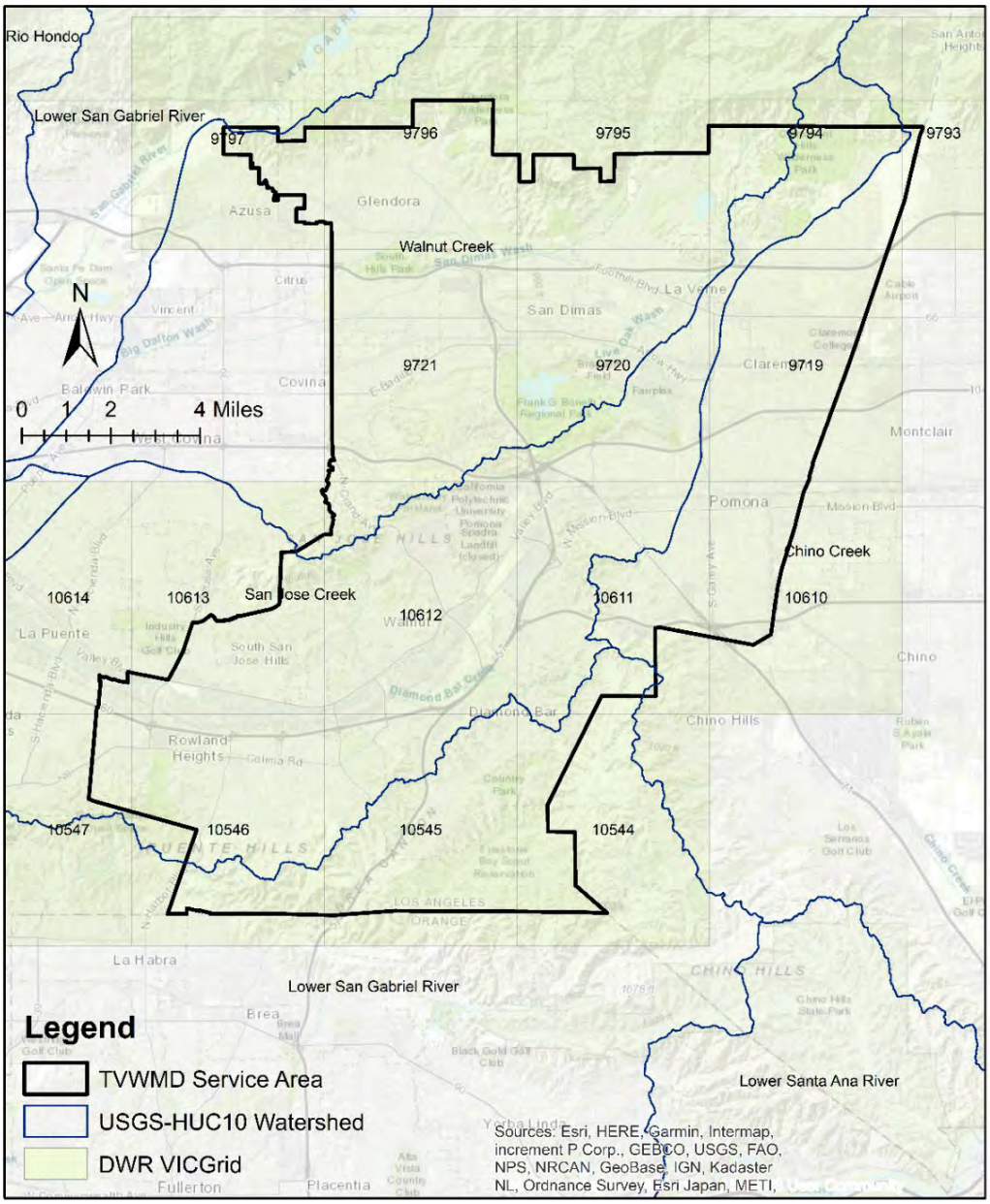


Figure 4-3. Climate Grid Cells and Watersheds Covering the Three Valleys Service Area

Three potential climate conditions were considered for this analysis:

- Drier future conditions with Extreme Warming (Dry Hot)
- Median future conditions (Median)
- Wetter future conditions with Moderate Warming (Wet Warm)

There are two extreme scenarios (Dry Hot and Wet Warm) that are derived from a set of ten global climate models. The first extreme scenario (Dry Hot) employs future projections from the ten global climate models with the least warming and least precipitation, while the second extreme scenario (Wet Warm) utilizes the ten global models with the most warming and highest precipitation.

4.3.2 Analysis of Normal, Single, and Multi-Year Dry and Wet Periods

Every urban water supplier is required to assess water service reliability in normal years, single-dry years, and multiple-dry years lasting 5 years. For imported water supplies, the normal, wet, and dry years used by Metropolitan, based on a historical analysis period of 1922 to 2004, are adopted for Three Valleys since it is the largest source of imported water. For local water supplies, year types are selected from the Glendora West Station gauge, which has extensive historical records from 1883 to 1998. The data are available online from the DWR Flood Emergency Information Exchange (FERIX) website at https://ferix.water.ca.gov/webapp/precipitation/. The analysis of year types for the Glendora West Station gauge and the State Water Project is presented in Table 4-2.

Table 4-2. Analysis Periods for Normal, Single, and Multi-Year Dry and Wet Periods

Year Type	Event Years for Three Valleys (Glendora West Station Gauge)	Event Years for State Water Project Imported Supplies
Normal	1922-1998	1922-2004
Single Dry-Year	1961	1977
5-Year Drought	1959-1963	1988-1992
Single Wet-Year	1978	1999
5-Year Wet	1978-1982	1995-1999

The results in Table 4-2 show that 1961 was the single driest year locally, with only 7.67 inches of rainfall. The driest 5-year period for local supplies spanned from 1959 to 1963. On the contrary, the single wettest year on record occurred in 1978, with 46.55 inches of rainfall. The wettest 5-year period was 1978 to 1982. Despite having similar periods of record, the extreme year types for imported supplies from the State Water Project occur during very different years. The results show that 1977 was the driest year for imported water supplies. The driest 5-year period for imported water supplies was from 1988 to 1992. The single wettest year for imported water supplies was 1999, and the wettest 5-year period was from 1995 to 1999.

These differences between when different year types occur for local and imported water sources have significant implications for managing droughts. Local entities may need to plan implementation of drought management strategies and water shortage operations that consider both local water supply conditions and imported water supply availability. Metropolitan has extensive storage facilities that can provide water supply to buffer short-term reductions in imported supplies from the State Water Project. However, water agencies in the Three Valleys service area must implement plans to enhance their resilience to local droughts and to capture excess water during exceptionally wet periods. The event years from the Glendora West Station gauge are used for assessing drought conditions and regional drought contingency planning.

Figure 4-4 shows the annual and 5-year rainfall from 1922 to 1998 for the Glendora West Station gauge with the wettest and driest 1-year and 5-year periods highlighted in blue and yellow, respectively.

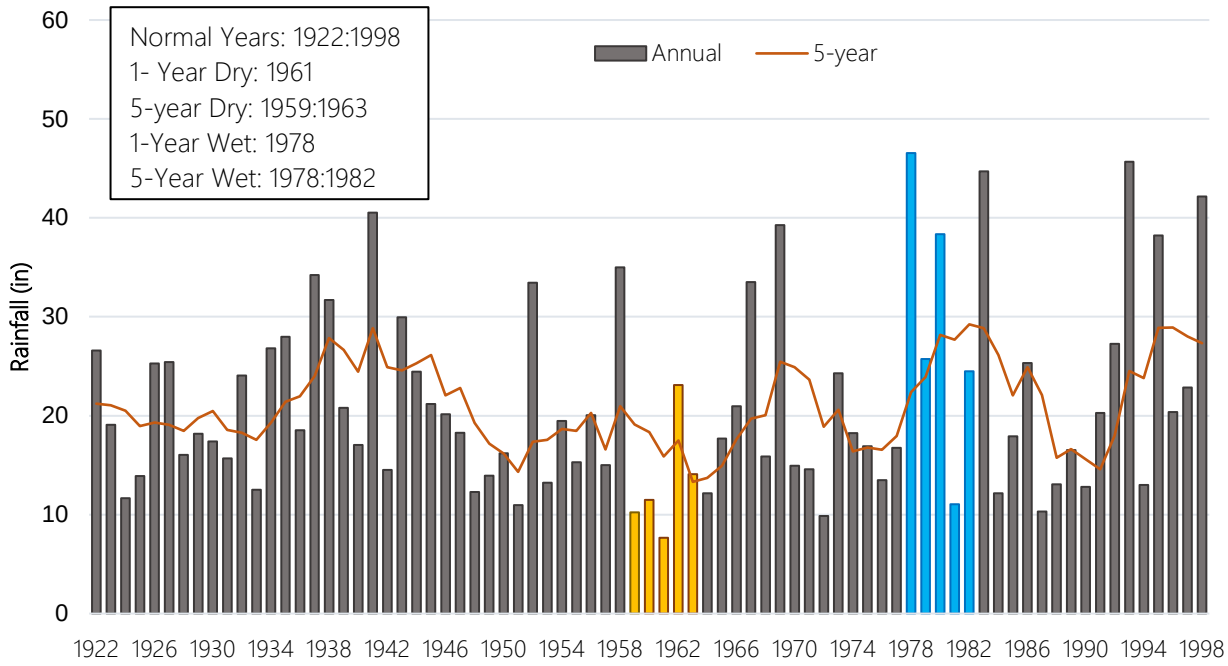


Figure 4-4. Annual Rainfall at Glendora West Station

4.3.3 Computing Water Supply Change Factors

Water sources used within the Three Valleys service area include imported water from Metropolitan, local groundwater from six different groundwater basins, recycled water, and surface water:

Imported water: Imported water accounts for roughly 50 to 60 percent of the region's water supply portfolio. Three Valleys receives imported water from Metropolitan and then distributes it to its member agencies. Treated imported water is directly provided to Three Valleys member agencies through the service connections linked to the Metropolitan distribution system. Untreated imported water is transported to the District's Miramar Water Treatment Plant, where it undergoes treatment before being distributed to member agencies. Untreated imported water may also be used to replenish local groundwater basins.

Groundwater: Groundwater accounts for roughly 35 to 45 percent of the region's water supply portfolio. The region has historically extracted groundwater from the Central Basin, Chino Basin, Main Basin, Puente Basin, Six Basins, and Spadra Basin. Groundwater systems are recharged through various water sources, including:

- Natural recharge: This constitutes the portion of precipitation that infiltrates into the underlying aquifer within the same grid cell where the precipitation occurs. Changes in natural recharge are directly linked to changes in precipitation within the grid cell.
- Artificial recharge (including injection systems): This involves diverting water from rivers and streams to replenish the underlying aquifer. As artificial recharge relies on surface water and other remotely sourced water supplies, it is influenced by cumulative flow changes in the source watersheds.

Recycled water and reclaimed water: Recycled and reclaimed water can also serve as a supply source for local use and groundwater recharge. Historically, recycled water has accounted for roughly 5 percent of the region's water supply portfolio. Supplies of recycled and reclaimed water, derived from indoor uses, are generally less susceptible to changes in climate.

Surface water: Surface water supplies from the San Gabriel River and San Antonio Creek account for roughly 5 percent of the region's water supply portfolio.

Precipitation change projections sourced from the climate change datasets provided by DWR are used to characterize future changes in natural recharge. Computations are based on a 97-year monthly time series of precipitation for the Three Valleys service area. These data are employed to calculate Water Supply Change Factors, which reveal the percentage changes in mean monthly and mean annual precipitation. These changes are assessed under future climate conditions for both 2030 and 2070 in relation to historical conditions under 1995 conditions. The Water Supply Change Factors for 2030 and 2070 are determined using various scenarios, encompassing normal years, single dry years, single wet years, and 5-year wet and dry periods.

Characterizing future changes in the San Gabriel River relies on streamflow projections generated by the VIC model under the climate conditions of 2030 and 2070. These streamflow projections serve as the basis for calculating Water Supply Change Factors, which indicate the percentage shifts in mean monthly and mean streamflow. These shifts are assessed in comparison to historical conditions set at 1995 conditions. Change factors are likewise computed for various scenarios, including normal years, single dry years, single wet years, and 5-year wet and dry periods. Each set of Water Supply Change Factors is interpolated at 5-year intervals from 2020 to 2045. To project climate change conditions up to 2030, data from 1995 to 2011 are utilized. Linear interpolation is applied to determine the climate change factors between 2020 and 2030. This interpolation is based on historical conditions from 2011 and projected conditions for 2030. Different climate change conditions are expected between 2030 and 2070 due to the implementation of policies and practices influencing the rate of climate change over this extended period. For the years between 2030 and 2070, linear interpolation is again employed in 5-year increments, using the difference in projected conditions between 2030 and 2070. Time series of Water Supply Change Factors are likewise interpolated at 5-year intervals for normal years, single dry years, single wet years, and 5-year wet and dry periods, applicable to local water sources from 2020 to 2045.

4.3.4 Computing Water Demand Change Factors

Climate impacts are calculated separately for indoor and outdoor water usage. Generally, outdoor water usage, particularly for landscape irrigation, is sensitive to climate change. Indoor water usage, however, is relatively insensitive to climate change. In warmer climates, plants require more water to support their growth, and people tend to increase landscape irrigation to ensure their health. This increased water demand is quantified in climate models using the ET rate, which accounts for the total water released from soil, plants, and water bodies into the atmosphere through evaporation and transpiration.

For the Three Valleys service area, the statewide climate datasets comprise 17 grid cells, each with a spatial resolution of 1/16th degree (approximately 3.75-mile grid cells). Each grid cell contains a 96-year monthly time series (1915 to 2011) displaying projected ET changes under 2030 and 2070 climate conditions. Initially, an area-weighted average of the ET data from these 17 cells is computed to create a single time series for the Three Valleys service area. This regional time series is then used to calculate Water Demand Change Factors, which indicate the percentage changes in mean monthly and mean annual ET under future 2030 and 2070 climate conditions compared to historical conditions in 1995. Similar values of 2030 and 2070 Water Demand Change Factors are determined for normal years, single dry years, single wet years, and 5-year wet and dry periods. The Water Demand Change Factors are computed for 5-year intervals from 2020 to 2045 through interpolation. Data from 1995 to 2011 are used as a baseline for projecting climate change conditions to 2030. Linear interpolation is employed to determine the climate change factors between 2020 and 2030, utilizing historical conditions from 2011 and projected conditions for 2030.

Several factors are likely to influence the rate of climate change between 2030 and 2070, including the implementation of policies and practices likely to impact the long-term rate of climate change. For the years between 2030 and 2070, linear interpolation is applied in 5-year increments, considering the differences in projected conditions for 2030 and 2070.

Similarly, the 5-year time series of Water Demand Change Factors is interpolated for normal years, single dry years, single wet years, and 5-year wet and dry periods. These factors are then applied to growth-adjusted indoor water use projections for the years 2020 to 2045.

4.4 Local Climate Change Results

4.4.1 Water Supply Change Factor Results

The projected precipitation under the Dry Hot, Median, and Wet Warm scenarios is presented in Figure 4-5 through Figure 4-7. Detailed projected changes in rainfall under all the climate change scenarios are presented in Appendix B (Table B1, Table B2, and Table B3).

All scenarios indicate that changes will become more extreme by 2045. The Dry Hot and Median scenarios predict a decline in annual precipitation, while the Wet Warm scenario projects higher annual precipitation. Specifically, annual rainfall is predicted to decrease by 6.5 and 2.7 percent by 2045 under the Dry Hot and Median scenarios, respectively. In contrast, the Wet Warm scenario predicts a 3.4 percent increase over the same period.

Under the Dry Hot scenario, monthly precipitation gradually declines during most months of the year, particularly during early fall (October through November) and winter to early spring (January to May) when significant amounts of precipitation occur. However, precipitation gradually increases in September, which is also a wet month.

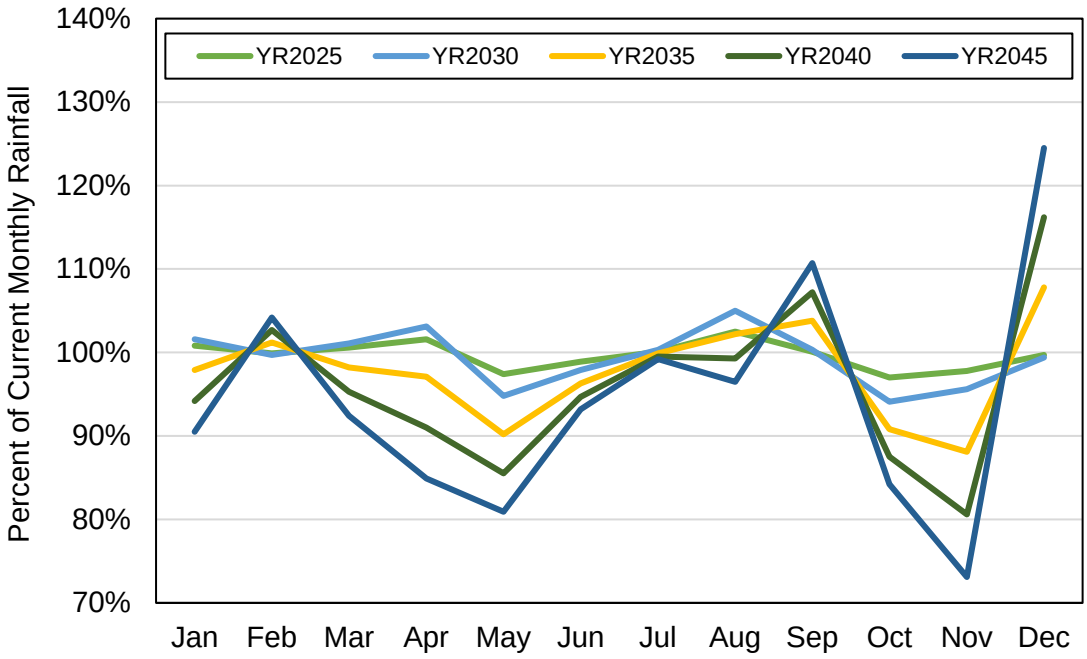


Figure 4-5. Projected Changes in Rainfall under Dry Hot Future Climate 2025 – 2045

The Median Future scenario would also result in decreases of up to 87 percent in May, October, and November, and increases of up to 106 percent during summer months from July to September.

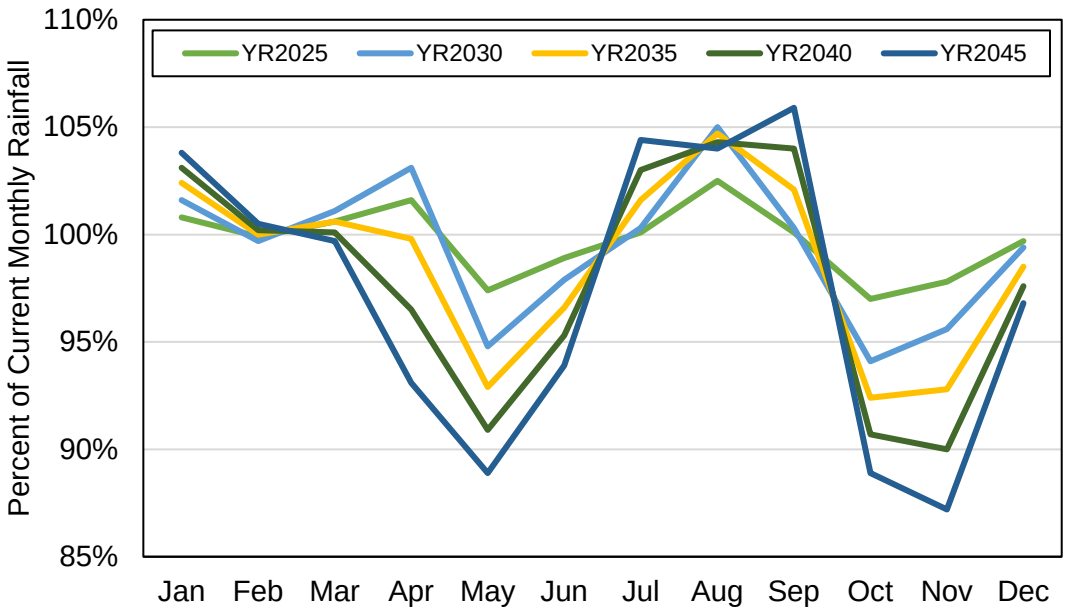


Figure 4-6. Projected Changes in Rainfall under Median Future Climate 2025 – 2045

The pattern of increasing September precipitation also occurs under the Wet Warm Future scenario (shown in Figure 4-7), with increases of up to 158 percent of current precipitation by 2045. The Wet Warm Future scenario would result in increases of up to 124 percent during February and March.

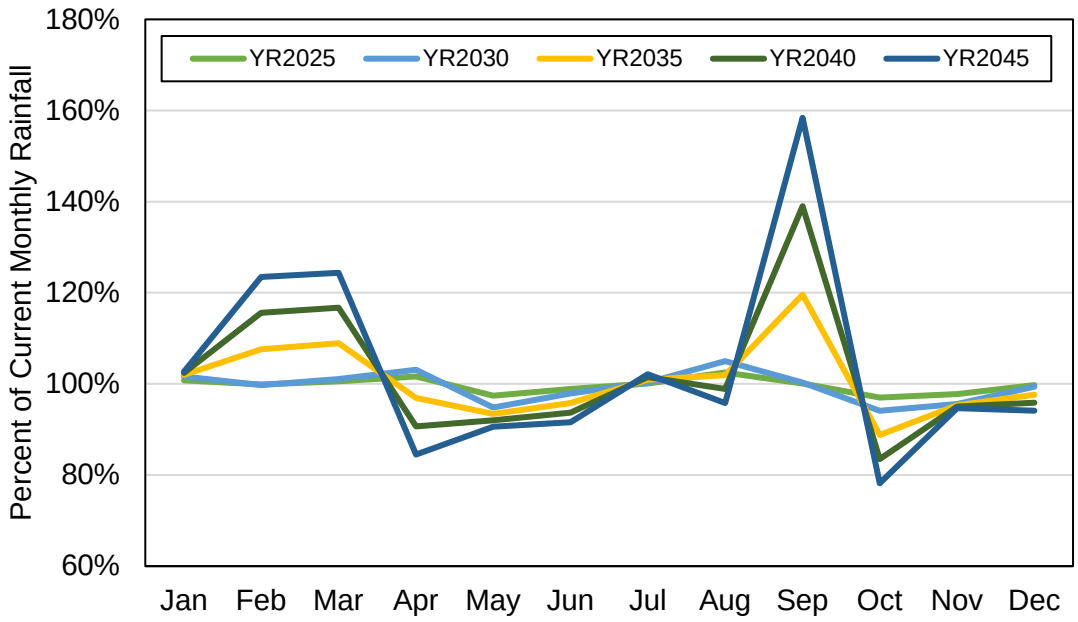


Figure 4-7. Projected Changes in Rainfall under Wet Warm Future Climate 2025 – 2045

Figure 4-8 shows the predicted changes in monthly absolute rainfall amounts under the various climate change scenarios for the year 2045. As shown in Figure 4-5 through Figure 4-7, the largest relative changes are projected to occur in April, May, and September. However, it is projected that the largest absolute changes will occur during the typically more humid months of February and March. Projections indicate an increase of up to 0.82 inches from the current climate during February under the Wet Warm Scenario by 2045.

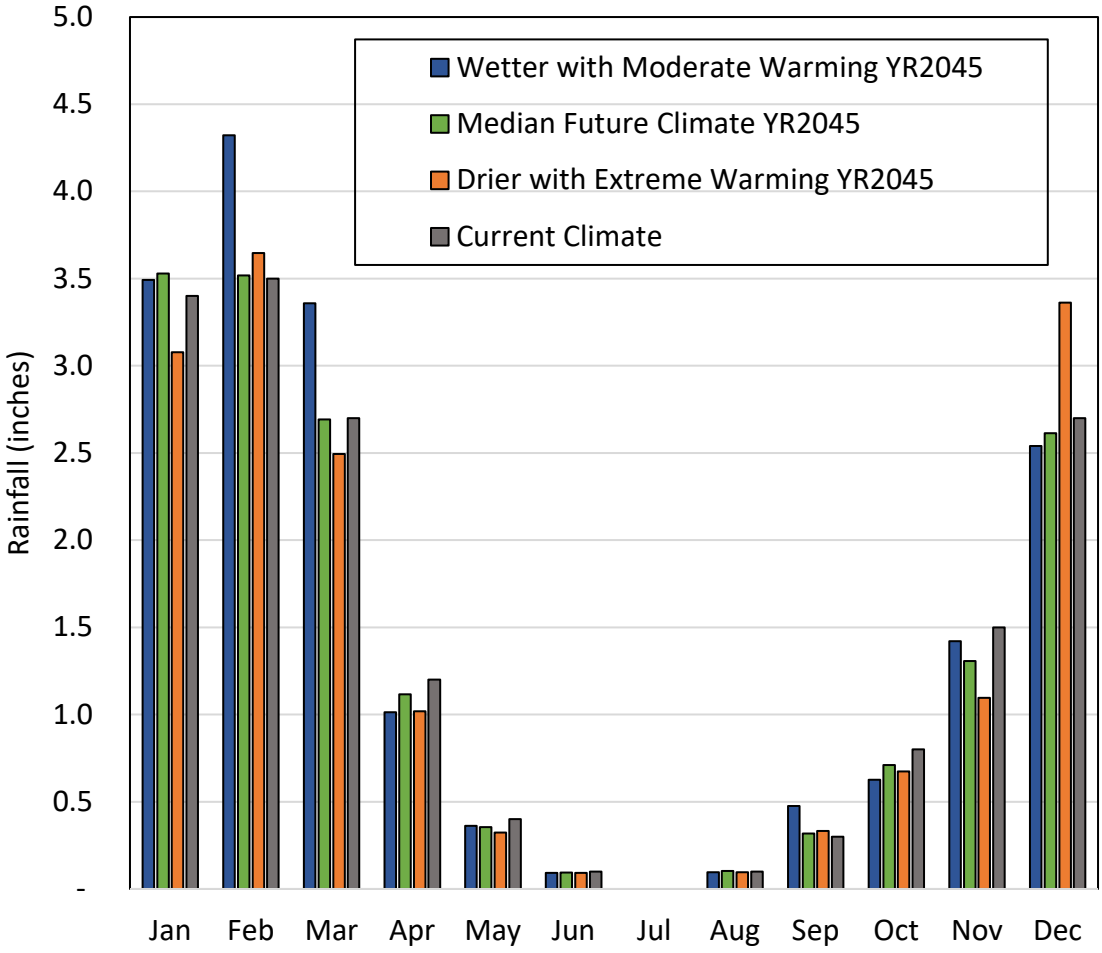


Figure 4-8. Projected Changes in Normal Year Rainfall – 2045

The pattern of change for natural groundwater supply is projected to be similar to rainfall. As shown in Figure 4-9, the most significant monthly increase in normal-year groundwater supply by 2045 is projected to occur during February and March under the Wet Warm scenario, and in December under the Dry Hot scenario. On an annual basis, the Dry Hot scenario predicts a net decrease of 1,110 AF/year in groundwater supply by 2045. The Median scenario would also result in a projected decrease of 780 AF/year of annual groundwater supply from the existing baseline supply of 38,316 AF/year. Under the Wet Warm scenario, groundwater supply is predicted to increase by 2,520 AF/year over baseline supply. These results indicate that there would be less water available from natural recharge under Median and Dry Hot Future scenarios while the Wet Warm scenario would increase natural yield above baseline conditions.

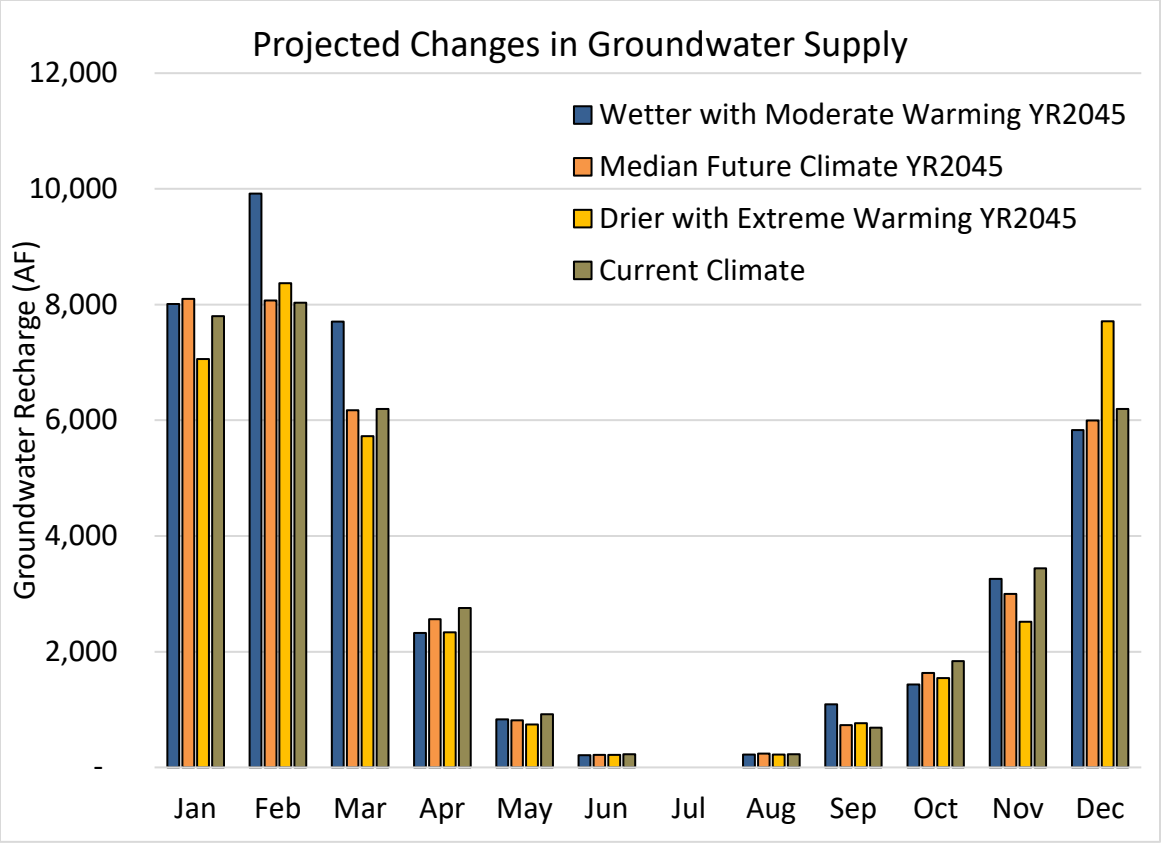


Figure 4-9. Projected Changes in Normal Year Groundwater Supply – 2045

Figure 4-10 displays the projected changes in normal-year flow for the San Gabriel River below Santa Fe Dam near Baldwin (USGS-11085000) by 2045. The Dry Hot and Median scenarios project a 10 percent and 2 percent decrease in annual flow by 2045 relative to the current climate, respectively, while the Wet Warm scenario projects an 18 percent higher annual flow by 2045.

Under the Dry Hot scenario, lower flow is projected during the high-flow months of February and March compared to the current conditions, with discharge decreasing by 20 cubic feet per second (cfs) in February and 21 cfs in March. Conversely, the Wet Warm scenario projects higher flows during the same period, with discharge increasing by 61 cfs in February and nearly 44 cfs in March. Projected flows under the Median scenario are generally consistent with flows projected under the current climate. No notable deviations in flow from the current climate are projected under any of the climate change scenarios between May to December. Detailed projected changes for San Gabriel River flow under all the climate change scenarios are presented in Appendix B (Table B4, Table B5, and Table B6).

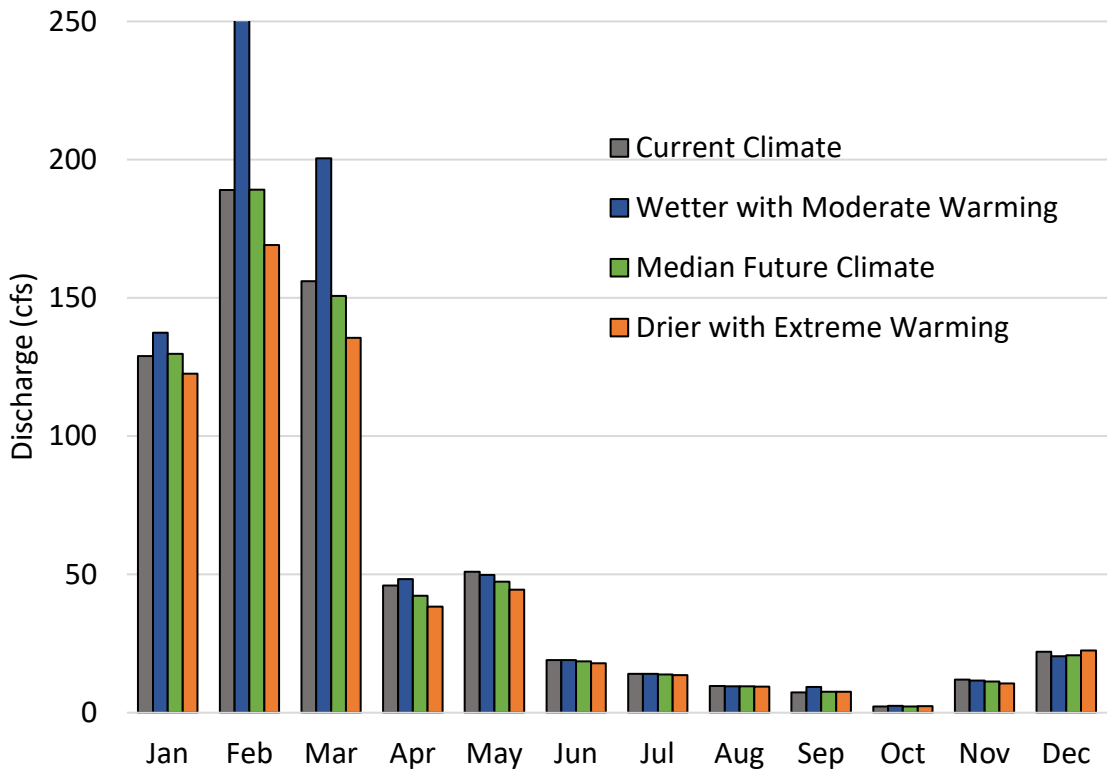


Figure 4-10. Projected Changes in Normal Year Flow by 2045: San Gabriel River Below Santa Fe Dam Near Baldwin (USGS-11085000).

Based on these results, river supplies, which are water sources for artificial recharge, are likely to become less reliable. Natural groundwater recharge will still occur in normal and dry years, but the timing of available water will change. Precipitation will increasingly fall during a shorter rainy season, with a longer dry season each year. Furthermore, the increase in temperatures over time will lead to greater evaporation from surface water bodies and land surfaces, reducing the volume of water available for diversion from rivers. This necessitates a greater understanding of the adequacy and operational constraints of natural and artificial recharge systems in the service area.

4.4.2 Water Demand Change Factors Results

Figure 4-11, Figure 4-12, and Figure 4-13 depict projected changes in outdoor demand from baseline conditions in 2020 under the various climate change scenarios. Water demand change factors are applied to outdoor water use, which has been adjusted for future population growth and conservation measures. Indoor water use is assumed to respond to future population growth and conservation measures as well, but it is not sensitive to climate change. All scenarios indicate an increase in annual outdoor water demand, with the average annual outdoor water demand projected to rise by 5.8 percent for the Dry Hot scenario, 3.4 percent for the Median scenario, and 1.5 percent for the Wet Warm scenario.

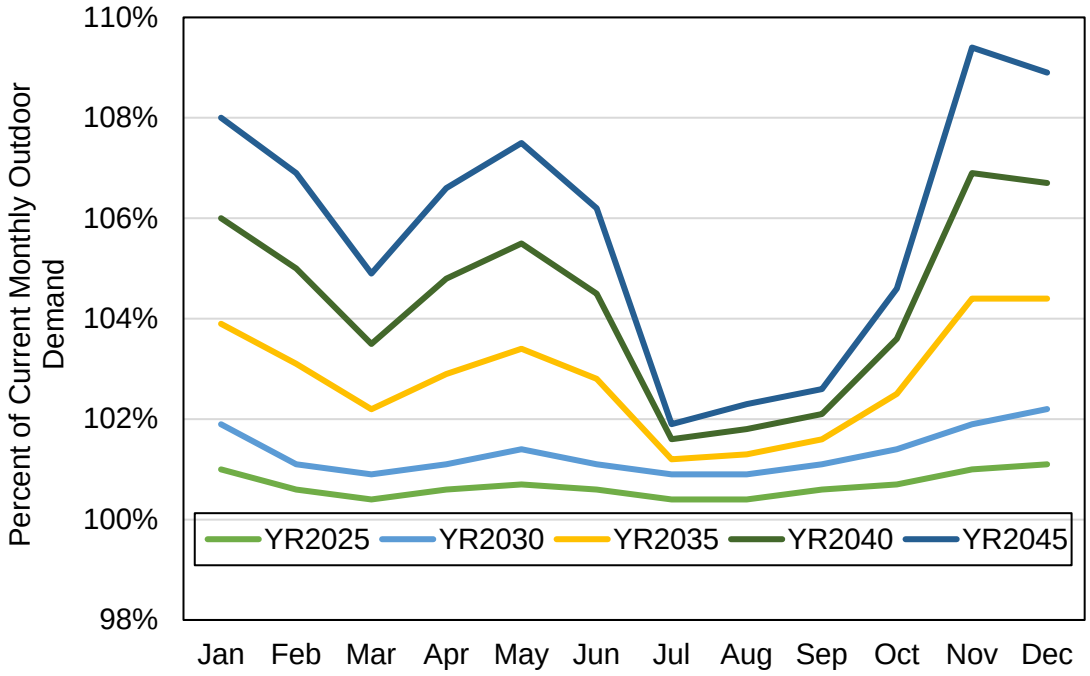


Figure 4-11. Changes in Outdoor Demand Under Dry Hot Future Climate 2025 - 2045

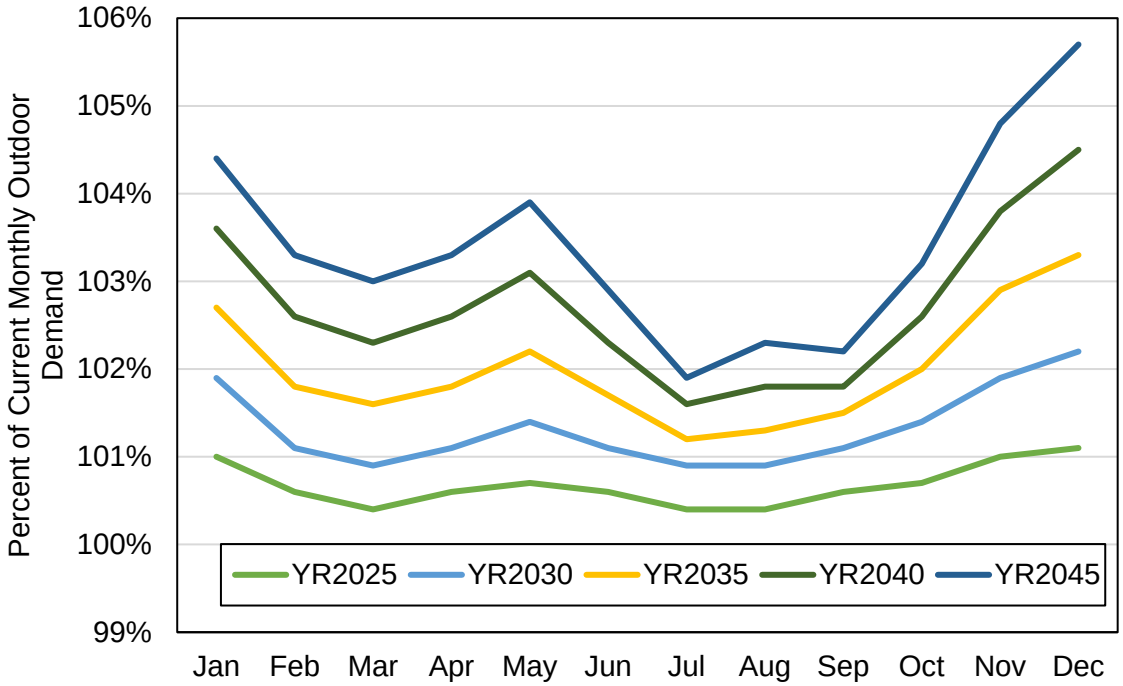


Figure 4-12. Changes in Normal Year Outdoor Demand Under Median Future Climate 2025 - 2045

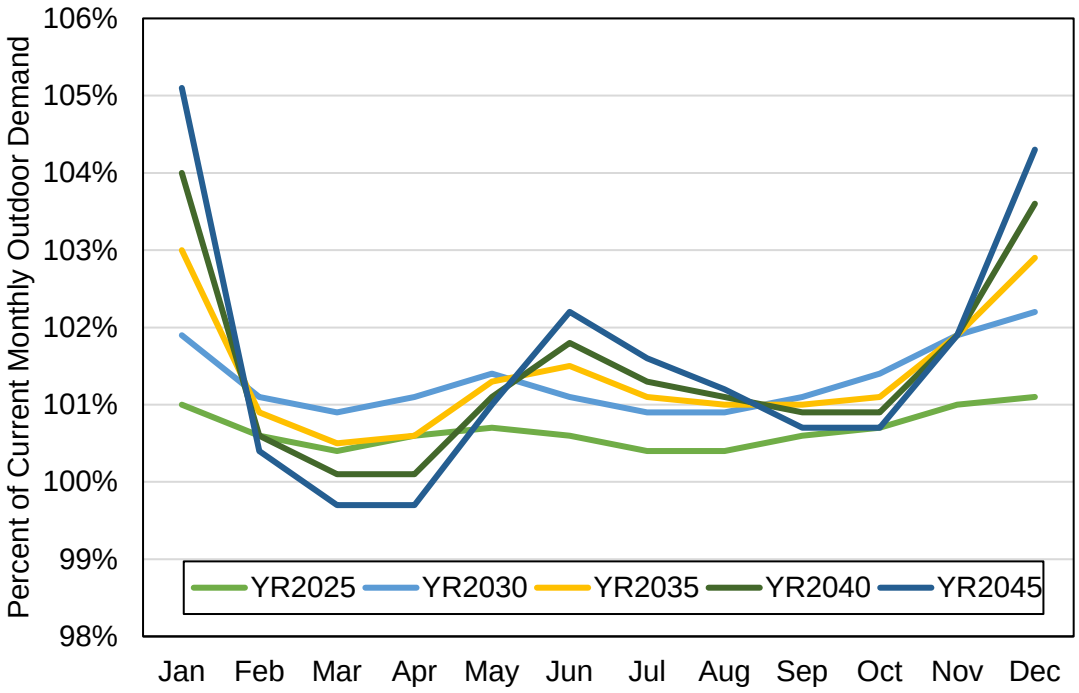


Figure 4-13. Changes in Outdoor Demand Under Wet Warm Future Climate 2025 – 2045

Figure 4-14 and Figure 4-15 illustrate the absolute value of outdoor water demand and total water demand under various climate change scenarios compared to current conditions and normal conditions in 2045. Over the next two decades, climate change is expected to have similar effects on outdoor water demand during both normal and drought years. This is because climate change data indicates that temperatures are expected to increase over time regardless of hydrological conditions. Considering these projected temperature increases, landscaping, irrigated agriculture, and native vegetation are expected to experience higher ET rates. While the relative changes may appear small, the absolute increase during the already high demand months of July and August is significant.

As compared to baseline conditions, the total annual demand is projected to increase by 15 percent by 2045 under the Dry Hot scenario; 13 percent under the Median scenario; and 11 percent under the Wet Warm scenario. The largest increases are projected to occur during the early summer months in June and July. Detailed projections of changes in outdoor water demand under all the climate change scenarios are presented in Appendix B (Tables B7, B8, and B9).

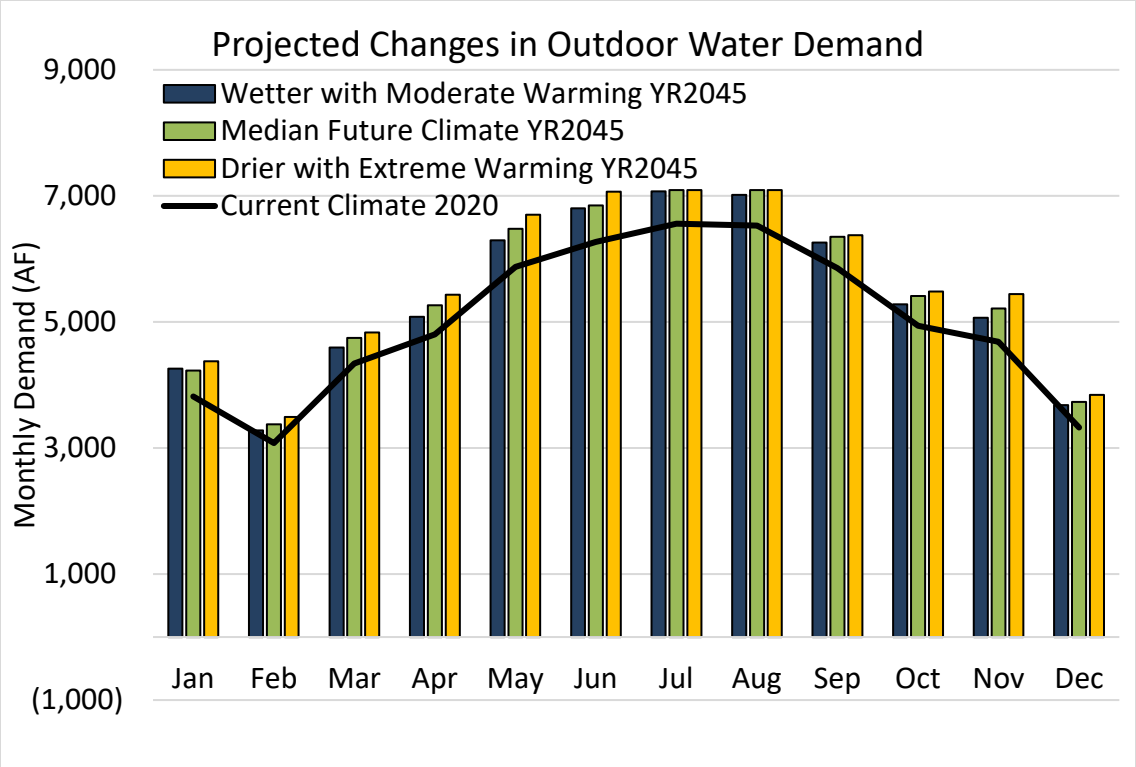


Figure 4-14. Projected Changes in Normal Year Water Demand 2045, Outdoor Water Demand

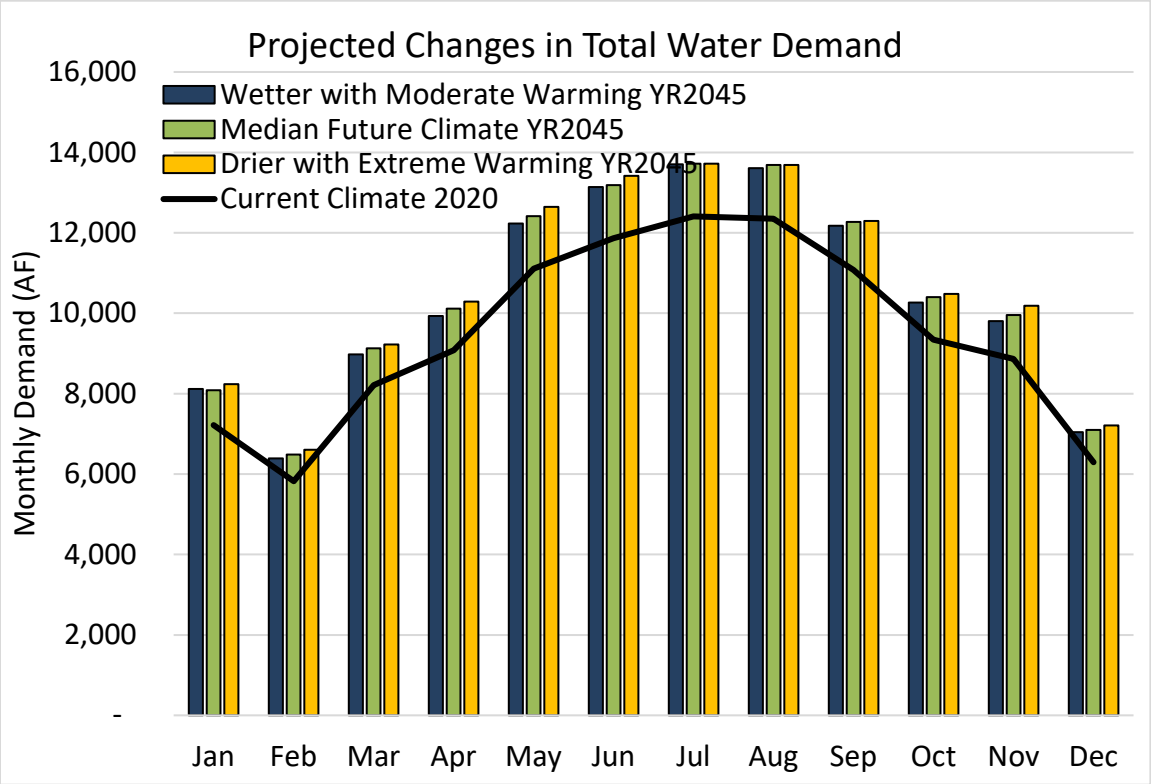


Figure 4-15. Projected Changes in Normal Year Water Demand 2045, Total Water Demand

4.5 Future Water Supply Budgets

The water budgets for the entire Three Valleys service area for each of the three climate change conditions are shown in Table 4-3 through Table 4-5. The water budgets developed for the Three Valleys service area include the following assumptions:

- Climate change factors are applied to local water supplies and demand.
- Projections for groundwater production are based on baseline groundwater supply and climate change factors.
- Recycled water projections are based on baseline data from the Three Valleys' Local Supply Production Surveys, growth rate projections from member agency UWMPs, and climate change factors.
- Surface water projections are based on baseline surface water supply and climate change factors.
- Demand projections are based on baseline water use, growth rate projections from member agency UWMPs, and climate change factors.
- Future requirements for imported water supplies are calculated as the difference between total projected demand and total local supplies.

Table 4-3. Three Valleys Service Area Water Budget – Drier Future Conditions with Extreme Warming

Source (AF/year)*	2018-2022	2025	2030	2035	2040	2045
Total Demand	113,651	120,346	121,219	123,062	125,472	128,004
Groundwater	38,316	38,282	38,234	37,895	37,551	37,202
Surface Water	4,760	4,741	4,718	4,579	4,440	4,301
Recycled Water	5,619	5,929	5,953	6,000	6,073	6,151
Total Local Supply	48,694	48,952	48,905	48,473	48,063	47,655
Net Imported Water Supply Required	64,957	71,394	72,314	74,589	77,409	80,349

*AF/year = acre-feet per year

Table 4-4. Three Valleys Service Area Water Budget – Median Future Climate Conditions

Source (AF/year)*	2018-2022	2025	2030	2035	2040	2045
Total Demand	113,651	120,346	121,219	122,590	124,513	126,557
Groundwater	38,316	38,282	38,234	38,007	37,763	37,535
Surface Water	4,760	4,741	4,718	4,698	4,678	4,658
Recycled Water	5,619	5,929	5,953	6,000	6,073	6,151
Total Local Supply	48,694	48,952	48,905	48,705	48,514	48,345
Net Imported Water Supply Required	64,957	71,394	72,314	73,885	75,999	78,212

*AF/year = thousand acre-feet per year

Table 4-5. Three Valleys Service Area Water Budget – Wetter Future Conditions with Moderate Warming

Source (AF/year)*	2018-2022	2025	2030	2035	2040	2045
Total Demand	113,651	120,346	121,219	122,220	123,723	125,376
Groundwater	38,316	38,282	38,234	39,101	39,983	40,837
Surface Water	4,760	4,741	4,718	5,012	5,304	5,598
Recycled Water	5,619	5,929	5,953	6,000	6,073	6,151
Total Local Supply	48,694	48,952	48,905	50,113	51,360	52,587
Net Imported Water Supply Required	64,957	71,394	72,314	72,107	72,362	72,790

*AF/year = thousand acre-feet per year

The Metropolitan 2020 IRP also developed projected water supply budgets based on its four projected climate change conditions previously described. Table 4-6 shows the Metropolitan 2020 IRP projected total demand for the Three Valleys service area, Table 4-7 shows the Metropolitan 2020 IRP projected local water supply for Three Valleys, and Table 4-8 shows the Metropolitan 2020 IRP projected imported water supply demand for Three Valleys, supplied by Metropolitan, for each of Metropolitan's 2020 IRP climate change scenarios. These IRP projections have a 10-year baseline period of 2010 to 2019, which is different from the 5-year baseline (2018 – 2022) period used by Three Valleys in the projection presented earlier in this document.

Table 4-6. Metropolitan 2020 IRP Projection of Three Valleys Service Area Demand

Projected Three Valleys Demand (AF/year)*	2020	2025	2030	2035	2040	2045
Scenario A	104,515	105,769	107,460	108,013	108,799	109,989
Scenario B	106,437	117,211	122,970	127,383	132,154	137,508
Scenario C	104,513	105,753	107,425	107,954	108,708	109,757
Scenario D	106,454	117,359	123,269	127,971	133,029	138,571

*AF/year = acre-feet per year

Table 4-7. Metropolitan 2020 IRP Projection of Three Valleys Local Water Supply

Projected Three Valleys Local Water Supply (AF/year)*	2020	2025	2030	2035	2040	2045
Scenario A	51,514	52,322	52,584	52,836	53,081	53,345
Scenario B	52,209	54,962	55,863	56,724	57,534	58,090
Scenario C	46,659	46,368	45,729	45,080	44,424	43,686
Scenario D	47,311	48,993	49,035	49,036	48,954	48,394

*AF/year = acre-feet per year

Table 4-8. Metropolitan 2020 IRP Projection of Three Valleys Imported Water Supply Requirement

Projected Three Valleys Imported Water Supply Requirement (AF/year)*	2020	2025	2030	2035	2040	2045
Scenario A	53,001	53,446	54,876	55,177	55,717	56,644
Scenario B	54,227	62,248	67,106	70,658	74,619	79,417
Scenario C	57,854	59,384	61,695	62,873	64,284	66,070
Scenario D	59,142	68,365	74,233	78,934	84,075	90,177

*AF/year = acre-feet per year

As shown in Figure 4-16, water demand calculated for Three Valleys in this climate change analysis is initially higher than the corresponding estimates for the Three Valleys service area in the Metropolitan 2020 IRP. However, the estimates converge by 2030, resulting in comparable long-term projections. Similarly, graphs of Three Valleys imported water supply requirements, in Figure 4-17, show that projections from this study are generally in agreement with projections for the service area in the Metropolitan 2020 IRP.

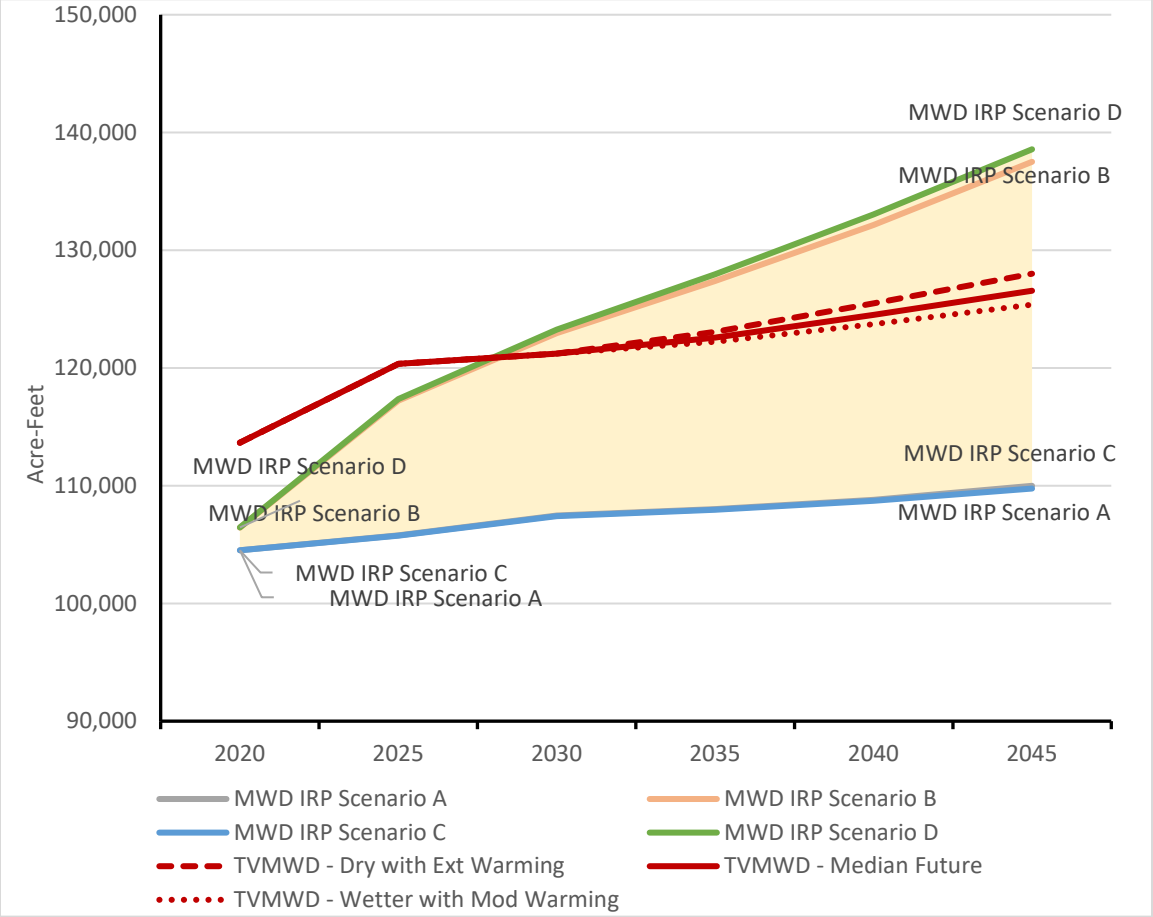


Figure 4-16. Comparison of Metropolitan 2020 IRP and Three Valleys Service Area Total Supply Requirements Under Future Climate Scenarios

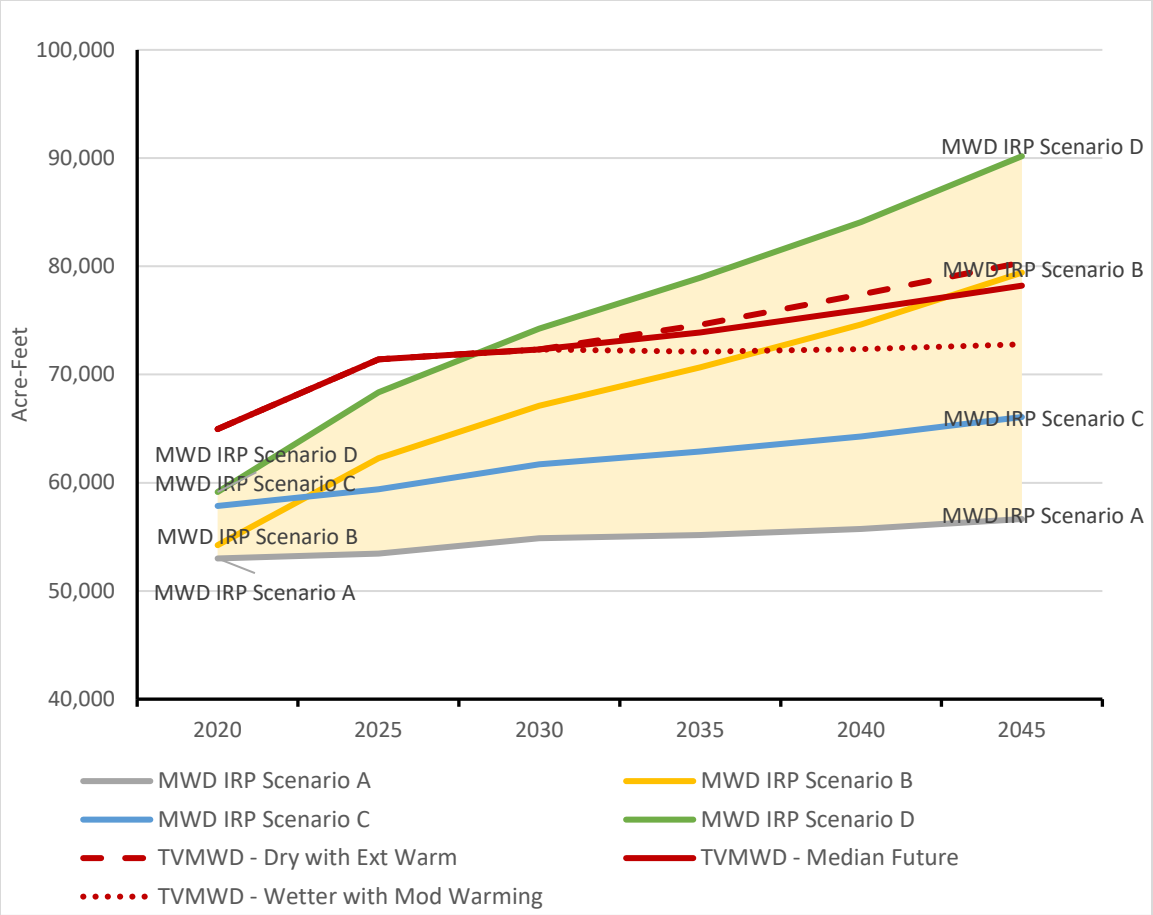


Figure 4-17. Comparison of Metropolitan 2020 IRP and Three Valleys Imported Water Supply Requirements Under Future Climate Scenarios

Based on the Metropolitan 2020 IRP data, Three Valleys will require additional imported water supplies of 3.6 TAF/year under Scenario A, 25.2 TAF/year under Scenario B, 8.2 TAF/year under Scenario C, or 31 TAF/year under Scenario D by 2045 relative to 2020 conditions. By comparison, the projections developed by Three Valleys indicate that between 2020 and 2045, annual imported water supplies requirements will increase by 15.4 TAF/year if future conditions are drier with extreme warming, 13.3 TAF/year under median future climate conditions, and 7.8 TAF/year if future conditions are wetter with moderate warming.

4.6 Applying Results to Local Water Analysis

4.6.1 Computing Future Water Supply and Demand

The monthly change factors developed as part of this analysis are useful for understanding how seasonal changes contribute to the annual changes (see Section 4.4). Additionally, monthly values are useful for planning management actions and mitigation actions in the DCP. The monthly water supply and demand change factors are presented in Appendix B, which comprises the following nine tables:

- Table B1: Monthly Rainfall Change Factors: Drier with Extreme Warming Scenario
- Table B2: Monthly Rainfall Change Factors: Median Scenario

- Table B3: Monthly Rainfall Change Factors: Wetter with Moderate Warming Scenario
- Table B4: Monthly San Gabriel River Flow Change Factors: Drier with Extreme Warming Scenario
- Table B5: Monthly San Gabriel River Flow Change Factors: Median Scenario
- Table A6: Monthly San Gabriel River Flow Change Factors: Wetter with Moderate Warming Scenario
- Table B7: Monthly Water Demand Change Factors: Drier with Extreme Warming Scenario
- Table B8: Monthly Water Demand Change Factors: Median Scenario
- Table B9: Monthly Water Demand Change Factors: Wetter with Moderate Warming Scenario

4.6.2 Constraints and Limitations

A planning-level climate impact analysis for the Three Valleys service area is presented in this chapter. This vulnerability assessment is intended to assist Three Valleys in preparing water supply and demand projections for the Water Resources Master Plan and DCP. These results should not be used in other applications, such as flood resilience planning, infrastructure design, or decision-making regarding the operation of any specific structure. Flood resilience planning requires the analysis of daily or finer temporal resolutions using statistical methods to determine how frequency distributions can best be fitted to extreme values. To design and operate infrastructures, there needs to be a deeper analysis and an additional ground-truthing of specific site characteristics, operational procedures, and regulations that are not included in this assessment.

The effects of climate change on water resources can also be indirect. The risks of wildfire in Southern California, for example, are predicted to increase as a result of climate change. As a result of wildfires, water resources may be affected by increased water usage for firefighting, altered surface vegetation and runoff patterns in burn areas, debris flows, and increased siltation of reservoirs and hydraulic structures. The vulnerability assessment does not capture these secondary impacts of climate change on water resources. It is also possible for future water supplies and demands to be affected by decisions made at the local, state, and federal levels. Policies and regulations that have not yet been implemented are difficult to anticipate and quantify. Thus, the purpose of this Vulnerability Assessment is not to anticipate the impact of future policy or regulatory decisions on future water supplies or demands.

4.6.3 Next Steps

The next step in the planning process is for Three Valleys to collaborate with member agencies to identify opportunities to enhance the region's resilience to projected future increases in imported water supply requirements. The region could develop a resilience portfolio including management actions such as conservation measures to reduce demand, water supply agreements and infrastructure, and augmented storage facilities and programs. The net climate resilience of the region's water budget could be measured in terms of the effectiveness of the portfolio of projects and management actions in reducing the projected future water supply deficit.

Member agencies could also undertake site-specific studies to assess the climate resilience of individual water systems. The climate change factors and analyses provided in Appendix B could be used to compute quantitative impacts of climate change on future supplies and demands during normal and drought years within each member agency's service area. Site-specific studies could identify opportunities to enhance the climate resilience of individual water systems through

management actions, infrastructure improvements, and system interconnections to enhance operational flexibility.

5 Mitigation Actions

Mitigation Actions are projects, programs, and strategies that are implemented prior to the occurrence of a drought to address potential risks and impacts and reduce the need for response actions. These actions are generally beneficial in increasing regional flexibility and resiliency during times of drought.

Within the framework of a DCP, these actions are generally developed in response to vulnerabilities identified through a Climate Change Vulnerability Assessment. As part of this DCP, Three Valleys performed a vulnerability assessment, which is detailed in Chapter 4. Overall, the results of the vulnerability assessments indicate:

- Minor decreases projected in average annual water supplies from the Main San Gabriel River basin during drought (single year and multi-year) years relative to baseline conditions due to shifts in precipitation from winter to fall and projected increases in surface water evaporation caused by increasing temperatures, particularly under the extreme warming climate scenario.
- A shorter rainy season with potential for higher intensity precipitation events resulting in higher peak flows of shorter duration. The net impact on annual groundwater recharge will be minimal if flow diversion facilities and recharge basins maintain adequate capability to handle the increased flow rates.
- Projected increases in outdoor water uses under normal, single dry, and multi-year drought conditions, caused by projected temperature increases, which lead to higher ET rates for landscaping, irrigated crops, and native vegetation[2]. Average annual outdoor water use by customers within the Three Valleys service area could increase by up to six percent under the most severe (Dry Hot) climate change scenario.
- An increase in dependence on imported water if mitigation actions are not implemented. A comparison of Three Valleys and Metropolitan's water budget projections under future climate conditions shows similar total demand projections, with Three Valleys showing increased reliance on imported surface water (supplied by Metropolitan) in its future projections. This increased reliance in Three Valleys projections occurs because local water supplies are projected to remain nearly constant while water demand increases due to future growth and increased climate-related water deficits. This highlights the need to develop mitigation actions to reduce future reliance on imported surface water.

In response to these findings, Three Valleys and the Drought Task Force compiled a suite of mitigations for inclusion into the DCP. The full suite of mitigation actions is identified in Section 5.1, Figure 5-1, and summarized in Table C-1 in Appendix C.

This suite of mitigation actions, developed in collaboration with the Drought Task Force, includes projects that are in various stages of implementation, from pre-planning, planning, design, to construction, and the timelines projected for these projects are estimations. Many of these actions are

[2] The projections do not make assumptions about the outdoor and indoor water use regulations required by the new regulatory framework, *Making Conservation a California Way of Life*.

consistent with existing planning programs and processes of the various regional stakeholders, such as Three Valleys' Capital Improvement Plan. However, numerous factors have the potential to impact implementation of these actions, such as funding availability, regulatory requirements, implementation complexities, and strategic planning priorities that are unique to each regional stakeholder. As such, inclusion of these actions into this DCP does not imply any commitment or obligation for future implementation. Furthermore, the mitigation actions presented are not intended to be exhaustive; thus, this chapter also provides guidance for establishing consistency with this DCP for projects that may be implemented in the future but are not included in the potential suite of mitigation actions. This guidance, along with additional insights on the mitigation actions, is detailed in Appendix C.

Implementing these potential mitigation actions could yield numerous regional benefits, including increasing local water supplies, improving operational flexibility, and enhancing water supply reliability. Several criteria were developed with consideration of these benefits to perform a preliminary review of the potential mitigation actions, which is described further in Section 5.2. The results of the preliminary review are provided in Table C-1 in Appendix C.

5.1 Identification of Potential Mitigation Actions

In June 2024, the Drought Task Force was sent invitations to schedule meetings for discussing potential projects, including mitigation actions for inclusion in the DCP. Organizations that reserved a time and were able to meet received a project information sheet tailored to their agency. In July 2024, Three Valleys and GEI held a total of eight individual meetings with the agencies to review, confirm, and update the mitigation actions.

The project information sheet asked each organization to respond to the following question:

> What projects or programs does your organization have in development that would potentially mitigate drought impacts in the future?

The respondents were asked to classify their responses into one of the five designated categories and, where applicable, provide a relevant metric:

- Water Supply Projects: Projects focused on enhancing water availability and accessibility. For example, by constructing or upgrading infrastructure such as pipelines or treatment plants, a region (or regions) within the Three Valleys service area have access to new, firm local supplies.
- Water Conservation Projects: Projects focused on reducing water usage and promoting efficient water management through measures such as implementing regulations, upgrading systems, or promoting public awareness.
- Groundwater Production Projects: Projects focused on extracting groundwater from underground sources to supplement water supplies, which may include drilling wells, installing pumps, and implementing sustainable groundwater management.
- Groundwater Storage Projects: Projects focused on storing excess water underground in natural aquifers for later use, particularly during times of drought, through recharge methods.

- Projects Increasing External Sources of Supply: Projects focused on enhancing water availability by sourcing water from external sources, which could involve constructing conveyance infrastructure or exploring alternative water transfers.

The project information form also asked each organization to assess whether the mitigation action has the potential to enhance regional water supply reliability. Relevant features that could contribute to improving water supply reliability include: infrastructure such as pipelines and pump stations; reduced reliance on imported water supplies; treatment of groundwater contaminants like polyfluoroalkyl substances (PFAs) or CECs; and system enhancements or repairs to storage facilities or other components.

Additionally, each organization was asked to provide as many key identifiers as possible for each mitigation action, including, but not limited to, the following:

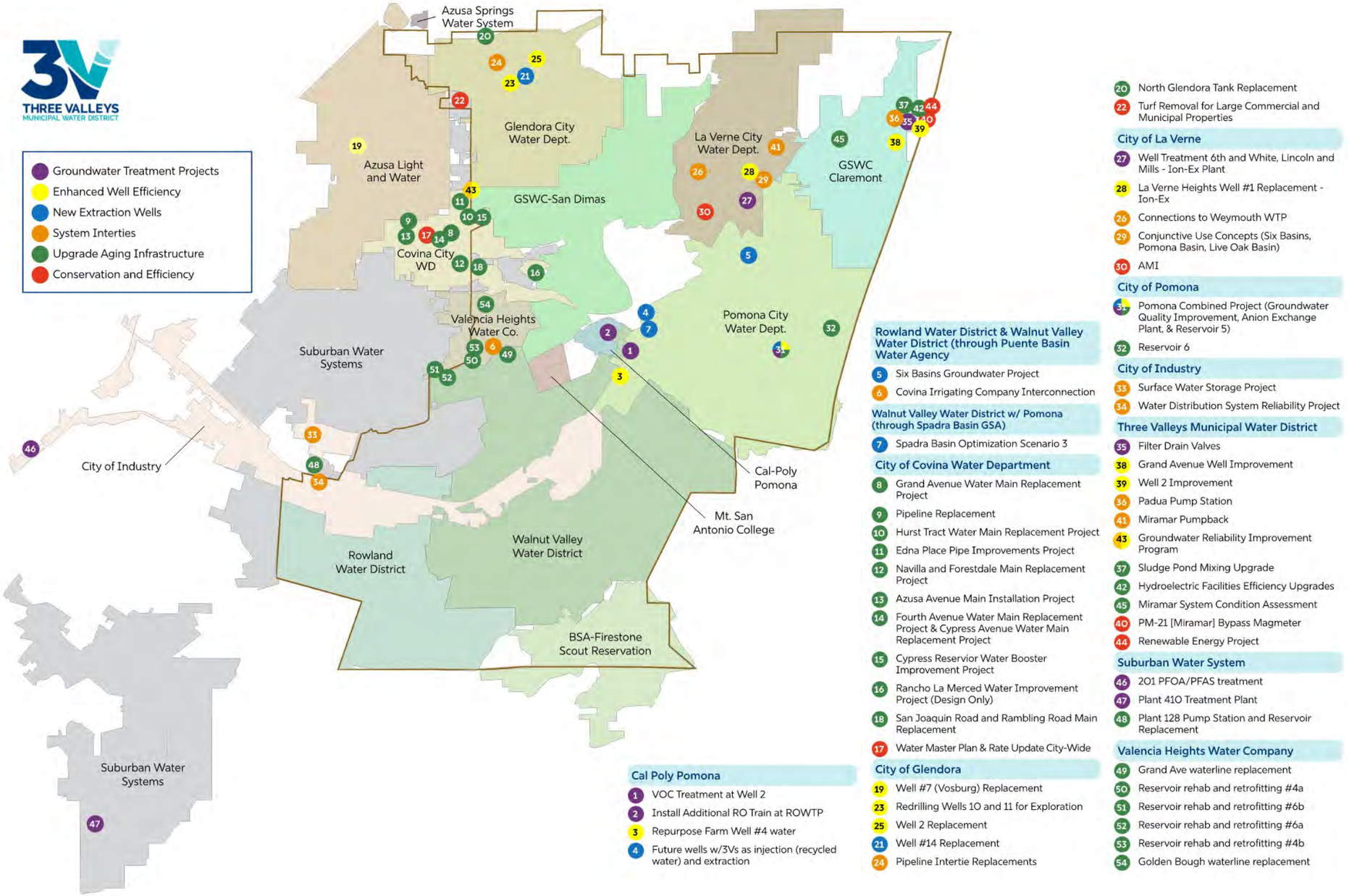
- Project stage (conceptual, feasibility, design, construction)
- Implementation timeline/schedule (year)
- Estimated costs (capital and annual)
- Estimated annual water savings or estimation of the supplemental supplies created as a result of implementation

The data collected from the project information sheets submitted by participating agencies were analyzed to organized into six project types. The corresponding mitigation actions were categorized as follows:

1. System Interties: Create infrastructure to connect water systems and provide operational flexibility to respond to catastrophic supply interruption
2. New Extraction Wells: Develop new wells to increase supply reliability consistent with available supply and adjudicated rights
3. Enhanced Well Efficiency: Enhance the efficiency and reliability of existing wells through upgrades and modifications
4. Upgrade Aging Infrastructure: Upgrade aging urban infrastructure, including drinking water distribution systems, reservoirs, and conveyance
5. Groundwater Treatment Projects: Projects that protect and treat groundwater contamination
6. Conservation and Efficiency: Projects that promote water conservation and enhance water use efficiency

These findings were presented and discussed with the Drought Task Force during Workshop 4, held on August 27, 2024. The workshop aimed not only to address gaps in the data but also to gather additional feedback from other organizations. Though unrelated to the scope of this DCP, the project information forms served a similar purpose of identifying regional projects to address water supply reliability and resiliency. From the data collected and the input received during the workshop, a total of 54 projects, programs, and strategies were identified for the DCP (Figure 5-1). A summary of these mitigation actions and their key identifiers are provided in Table C-1 in Appendix C.

As previously discussed, implementation of the mitigation actions could be impacted by numerous factors including funding availability, regulatory requirements, implementation complexities, and planning priorities. The regular meetings of the Three Valleys member agencies, along with the Drought Task Force meetings, will be used to support implementation of the mitigation actions described in the DCP.



Cal Poly Pomona
- 1 VOC Treatment at Well 2
- 2 Install Additional RO Train at ROWTP
- 3 Repurpose Farm Well #4 water
- 4 Future wells w/3Vs as injection (recycled water) and extraction

Rowland Water District & Walnut Valley Water District (through Puente Basin Water Agency
- 5 Six Basins Groundwater Project
- 6 Covina Irrigating Company Interconnection

Walnut Valley Water District w/ Pomona (through Spadra Basin GSA)
- 7 Spadra Basin Optimization Scenario 3

City of Covina Water Department
- 8 Grand Avenue Water Main Replacement Project
- 9 Pipeline Replacement
- 10 Hurst Tract Water Main Replacement Project
- 11 Edna Place Pipe Improvements Project
- 12 Navilla and Forestdale Main Replacement Project
- 13 Azusa Avenue Main Installation Project
- 14 Fourth Avenue Water Main Replacement Project & Cypress Avenue Water Main Replacement Project
- 15 Cypress Reservior Water Booster Improvement Project
- 16 Rancho La Merced Water Improvement Project (Design Only)
- 18 San Joaquin Road and Rambling Road Main Replacement
- 17 Water Master Plan & Rate Update City-Wide

City of Glendora
- 19 Well #7 (Vosburg) Replacement
- 23 Redrilling Wells 10 and 11 for Exploration
- 25 Well 2 Replacement
- 21 Well #14 Replacement
- 24 Pipeline Intertie Replacements
- 20 North Glendora Tank Replacement
- 22 Turf Removal for Large Commercial and Municipal Properties

City of La Verne
- 27 Well Treatment 6th and White, Lincoln and Mills - Ion-Ex Plant
- 28 La Verne Heights Well #1 Replacement - Ion-Ex
- 26 Connections to Weymouth WTP
- 29 Conjunctive Use Concepts (Six Basins, Pomona Basin, Live Oak Basin)
- 30 AMI

City of Pomona
- 31 Pomona Combined Project (Groundwater Quality Improvement, Anion Exchange Plant, & Reservoir 5)
- 32 Reservoir 6

City of Industry
- 33 Surface Water Storage Project
- 34 Water Distribution System Reliability Project

Three Valleys Municipal Water District
- 35 Filter Drain Valves
- 38 Grand Avenue Well Improvement
- 39 Well 2 Improvement
- 36 Padua Pump Station
- 41 Miramar Pumpback
- 43 Groundwater Reliability Improvement Program
- 37 Sludge Pond Mixing Upgrade
- 42 Hydroelectric Facilities Efficiency Upgrades
- 45 Miramar System Condition Assessment
- 40 PM-21 [Miramar] Bypass Magmeter
- 44 Renewable Energy Project

Suburban Water System
- 46 201 PFOA/PFAS treatment
- 47 Plant 410 Treatment Plant
- 48 Plant 128 Pump Station and Reservoir Replacement

Valencia Heights Water Company
- 49 Grand Ave waterline replacement
- 50 Reservoir rehab and retrofitting #4a
- 51 Reservoir rehab and retrofitting #6b
- 52 Reservoir rehab and retrofitting #6a
- 53 Reservoir rehab and retrofitting #4b
- 54 Golden Bough waterline replacement

Figure 5-1. Potential Suite of Mitigation Actions for the DCP

Note:

1. GSWC = Golden State Water Company, BSA = Boy Scouts of America
2. Project #44 is included to account for all proposed mitigation actions. However, upon further review with Three Valleys, it was determined that Project #44 does not qualify as a drought mitigation action.

5.2 Preliminary Review of Potential Mitigation Actions

Each potential project was classified using the categorization for each criterion provided in Table 5-1. As a wholesaler, Three Valleys is not involved in the prioritization of agency projects. Prioritization of mitigation actions is agency driven and as part of the development of the DCP, Three Valleys provided each member of the Drought Task Force the opportunity to provide and prioritize their own projects. As such, this categorization does not represent a prioritization or ranking of the projects identified, nor is the provided criteria intended to be exhaustive. Rather, these criteria were developed to assist in the identification of the key aspects of each project for the purposes of this DCP. This preliminary review could be used in future planning efforts to further inform regional priorities. Long term, Three Valleys will continue to meet with retail agencies on a regular basis to support them in prioritizing resiliency projects to address agency-specific concerns and needs.

Table 5-1. Review Criteria and Ranking

Criteria	Categorization		
Timing/Schedule	Short-term action (1-2 years)	Mid-term action (2-4 years)	Long-term action (> 4 years)
Enhance Regional Water Supply Reliability and Resiliency	Meets 3 of the regional benefits	Meets 2 of the regional benefits	Meets 1 of the regional benefits
Regional Benefits	Regional action	Action involves multiple adjacent agencies	Single agency action

The preliminary review of the potential suite of mitigation actions with respect to the criteria and categorization identified above is provided in full in Table C-1 in Appendix C. Details with respect to timing/schedule and the potential benefits associated with these mitigation actions are described below.

The 54 potential projects were grouped into short-, mid-, and long-term actions (Figure 5-2). Note that the potential timelines for the projects that are included in the DCP are estimates and as noted previously, depend upon many factors, such as the ability to secure funding, procurement, implementation complexities and permitting challenges, regional priorities, and other factors. However, with the estimates provided, 21 of the potential projects (or 39 percent) identified are projected for implementation in the short-term (by the end of 2026). Implementation for 16 of the potential projects (or 30 percent) is projected in the mid-term (by the end of 2028), and 17 of the potential projects are projected for implementation in the long-term (2029 and beyond).

	Short-Term	Mid-Term	Long-Term
System Interties	34, 41	6, 24, 26	29, 33, 36, 43*
New Extraction Wells	4, 5		21, 31*
Enhanced Well Efficiency	3, 25, 40	39	19, 23, 28, 38
Upgrade Aging Infrastructure	10, 12, 14, 15, 16, 20, 45, 48, 51, 52	8, 11, 13, 18, 37, 49, 50	9, 32, 42, 53, 54
Groundwater Treatment Projects	1, 35	2, 46, 47	7, 27
Conservation and Efficiency	17, 22	30, 44	
TOTAL	**21**	**16**	**17**

**Categorized under multiple project types*

Figure 5-2. Potential Timeline for Mitigation Actions

Note:

2. Project #44 is included to account for all proposed mitigation actions. However, upon further review with Three Valleys, it was determined that Project #44 does not qualify as a drought mitigation action.

The identified regional benefits for enhancing regional water supply reliability and resiliency are listed below. To determine whether a mitigation action contributes to these benefits, categories were specified for each, also detailed below:

Regional Benefits:

1. Increasing Local Supplies
2. Enhancing Operational Flexibility
3. Enhancing Water Supply Reliability

Categories:

1. Increasing Local Supplies:
    a. New Extraction Wells
    b. Enhanced Well Efficiency
    c. Groundwater Treatment Projects
2. Enhancing Operational Flexibility:
    a. System Interties
    b. Upgrading Aging Infrastructure
    c. Conservation and Efficiency Measures

3. Enhancing Water Supply Reliability:
    a. Overall supply increase
    b. Reduction in drought imported water dependency
    c. Decrease in overall imported water dependency

Of the 54 projects, programs, and strategies identified, 69 percent of the projects have the potential to enhance operational flexibility, 35 percent have the potential to increase local supplies, and 26 percent have the potential to enhance water supply reliability (Figure 5-3). Additionally, 74 percent of the projects meet one of the regional benefits, 22 percent meet two of the regional benefits, and only 4 percent meet all regional benefits. Many of the projects identified have multiple benefits and thus the percentages identified in Figure 5-3 do not sum to 100 percent.

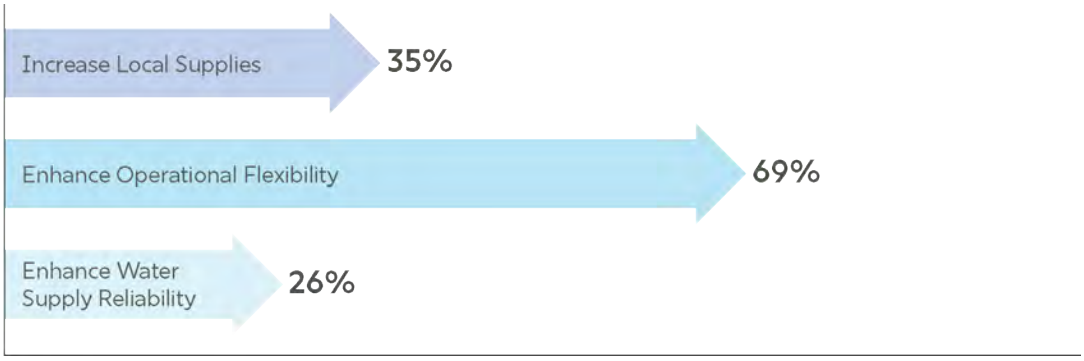
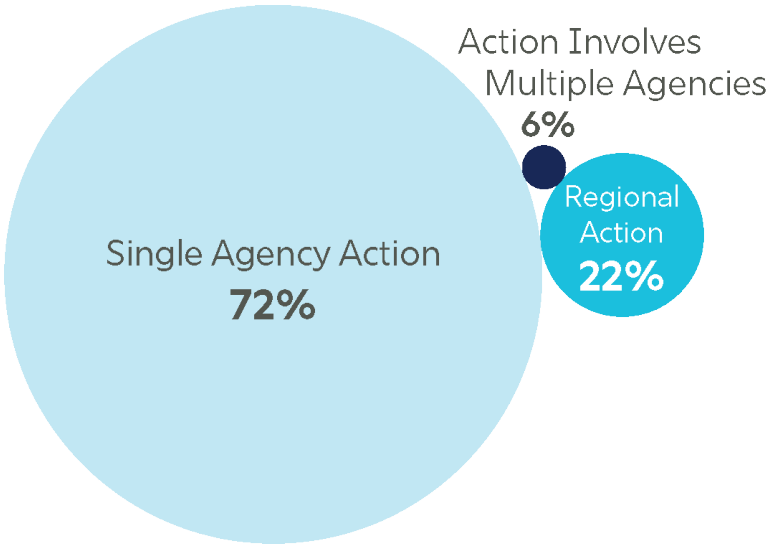


Figure 5-3. Potential Benefits of the DCP Mitigation Actions

Of the 54 identified projects, programs, and strategies, 72 percent are single-agency actions, 6 percent involve multiple agencies, and 22 percent are regional initiatives.

The suite of actions included in the DCP is based upon input provided by the Drought Task Force members. Future projects that meet the goals and objectives of the DCP may be considered in future updates of the DCP.



6 Response Actions

Response Actions refer to the measures taken during a drought to manage the limited water supply and mitigate immediate impacts. These actions are triggered by water shortage stages and can be quickly implemented to provide expeditious benefits.

Three Valleys and its member agencies that are considered urban water suppliers have each developed an UWMP WSCP. The WSCP serves as a framework for preparing for and responding to water shortages within each respective agency's service area boundary. Each agency's WSCP specifies drought response actions corresponding to different water shortage stages. Urban water suppliers adhere to six standard levels, which categorize increasing water shortage conditions—ranging from up to 10 percent to greater than 50 percent shortage compared to normal reliability (see Table 3-1)—and align with the response actions that a water supplier would implement to meet the severity of the impending shortages.

6.1 Development of Agency Drought Response Actions

The drought response actions of each agency reflect their individual water supply portfolios and the related water shortage conditions. As a result, water shortage conditions and corresponding response actions may differ across the region during drought periods. To promote a DCP that is flexible and responsive to each of the agencies within the region, Three Valleys and its retail water agencies will rely on the drought response actions provided in each agency's WSCP should a water shortage occur.

Additionally, throughout July, Three Valleys and GEI held individual meetings with each member agency to review and confirm the response actions detailed in their WSCPs and to explore any additional actions they had incorporated. These meetings also allowed agencies lacking UWMP WSCPs to contribute insights into their response actions.

Through their respective WSCPs and the additional insights and references provided during these meetings, Three Valleys and its member agencies have categorized drought response actions into four main types:

1. Demand Reduction Actions: Strategies aimed at mitigating supply shortages, such as public education campaigns, outdoor water use restrictions, and changes in rate structures.
2. Supply Augmentation Actions: Strategies designed to increase available water supplies, including transfers, exchanges, or purchases of additional supplies.
3. Operational Changes: Short-term operational adjustments to address water shortages, such as enhanced monitoring of customer usage rates or operational changes related to demand reduction and supply augmentation.
4. Additional Mandatory Restrictions: Mandatory restrictions corresponding to various water shortage levels and are generally associated with enforcement actions and penalties, which may include limits on outdoor water use in terms of volume, timing, and location.

These response actions are crucial in managing water resources effectively during drought conditions, and ensuring sustainable water use across the region. Demand reduction and supply augmentation

actions will help to enhance water availability, while operational changes and mandatory restrictions will further support conservation efforts. Each category is further discussed in the following sections.

Table 6-1 presents a comprehensive list of response actions used by each agency.

Table 6-1. Summary of Agency WSCPs Drought Response Actions

		City of Covina	City of Glendora*	City of La Verne	City of Pomona*	GSWC Claremont	GSWC San Dimas	RWD*	SWS	WVWD*	Cal Poly Pomona**	Three Valleys
Demand Reduction Actions	CII - Commercial kitchens required to use pre-rinse spray valves			x	x							x
	CII - Lodging establishment must offer opt out of linen service	x	x		x			x	x	x		x
	CII - Other CII restriction or prohibition	x			x	x	x		x			
	CII - Restaurants may only serve water upon request	x	x	x		x	x	x	x	x		x
	Distribution of water-saving items such as efficient toilets and urinals		x	x								
	Implement or Modify Drought Rate Structure or Surcharge		x		x	x	x	x				
	Increase Frequency of Meter Reading				x							
	Landscape - Limit landscape irrigation to specific days	x	x	x	x	x	x	x	x	x	x	x
	Landscape - Limit landscape irrigation to specific times	x	x	x	x	x	x	x	x	x	x	x
	Landscape - Other landscape restriction or prohibition	x	x		x							
	Landscape - Prohibit all landscape irrigation	x			x			x			x	

		City of Covina	City of Glendora*	City of La Verne	City of Pomona*	GSWC Claremont	GSWC San Dimas	RWD*	SWS	WVWD*	Cal Poly Pomona**	Three Valleys
	Landscape - Prohibit certain types of landscape irrigation		x	x	x	x	x			x	x	
	Landscape - Restrict or prohibit runoff from landscape irrigation	x	x	x	x	x	x	x	x	x		x
	Landscape training for waterwise gardening		x	x	x			x		x		
	Moratorium or Net Zero Demand Increase on New Connections				x			x				
	No irrigation within 48 hours after measurable rainfall		x			x	x				x	
	Other - Prohibit use of potable water for construction and dust control			x		x	x	x	x			
	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	x	x	x	x	x	x	x	x	x	x	x
	Other - Prohibit use of potable water for washing hard surfaces	x	x	x	x	x	x		x	x	x	x
	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	x		x	x			x	x	x		x
	Other - Require automatic shut-off hoses		x			x	x	x	x			x

		City of Covina	City of Glendora*	City of La Verne	City of Pomona*	GSWC Claremont	GSWC San Dimas	RWD*	SWS	WVWD*	Cal Poly Pomona**	Three Valleys
	Other water feature or swimming pool restriction	x		x	x			x		x		x
	Public education and outreach campaigns		x	x	x			x			x	x
	Water Features - Restrict water use for decorative water features, such as fountains	x	x	x	x	x	x	x	x	x		x
	Watering and other outdoor use restrictions		x	x	x							
	Other	x		x	x	x	x	x	x	x	x	x
Supply Augmentation Actions	Transfers	x	x		x	x	x	x		x		x
	Other			x								
Operational Changes		x	x	x	x	x	x	x	x			x
Additional Mandatory Restrictions					x					x		

Notes:

GSWC: Golden State Water District RWD: Rowland Water District WVWD: Walnut Valley Water District SWS: Suburban Water Systems

***** Provided additional response actions during one-on-one agency meetings, along with supplementary references such as the Water Shortage Ordinances.

******Does not have a UWMP WSCP but provided their WSCP prepared in March 2024, outlining demand reduction actions for their shortage stage level

6.2 Demand Reduction Actions

The most common demand reduction actions are shown in Figure 6-1. Three Valleys and its member agencies, listed in Table 6-1, have all specified limitations on landscape irrigation to specific days and specific times, and they require customers to promptly repair leaks, breaks, and malfunctions in a timely manner. The timing of these restrictions varies among agencies.

Additionally, 91 percent of these agencies prohibit the use of potable water for washing hard surfaces, restrict water use for decorative features like fountains, and prohibit runoff from landscape irrigation. Furthermore, 82 percent of agencies require restaurants to serve water only upon request. Sixty-four percent enforce additional measures, such as requiring lodging establishments to offer an opt-out option for linen service, prohibiting certain types of landscape irrigation, and restricting vehicle washing except at facilities using recycled or recirculated water.

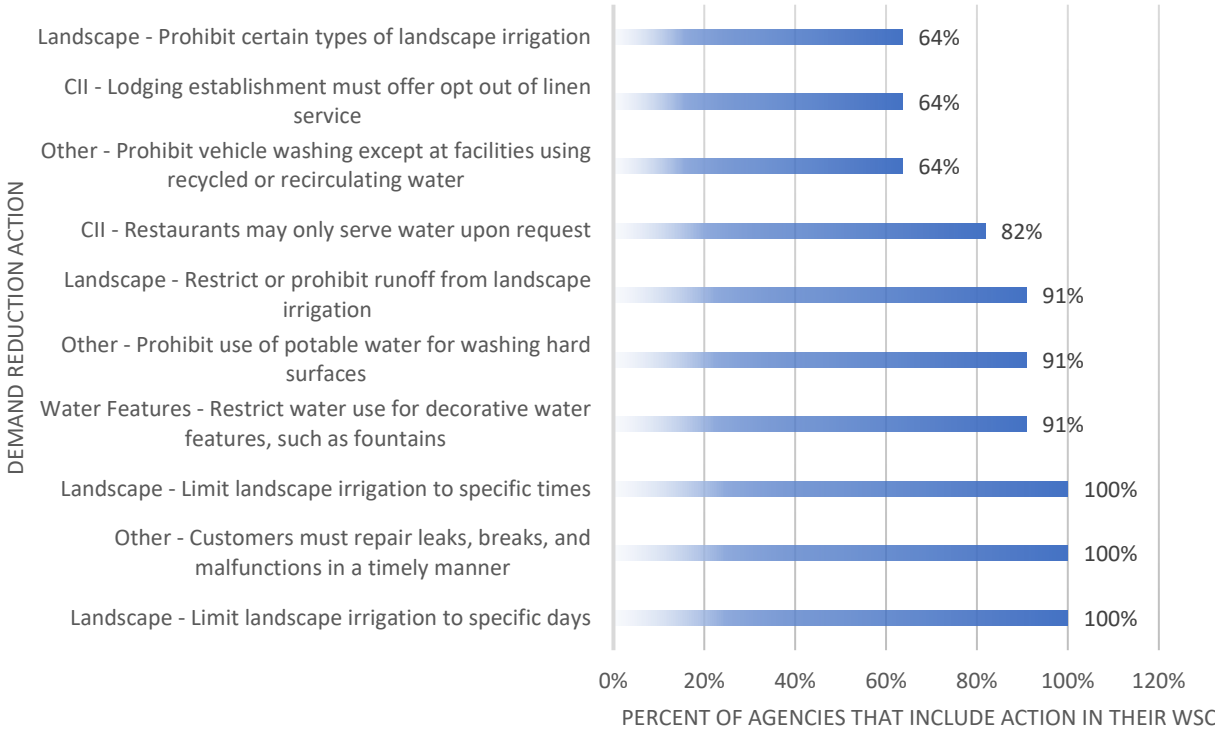


Figure 6-1. Most Commonly Included Demand Reduction Actions in Agency WSCPs

The quantitative estimates of how these demand reduction actions could reduce the shortage gap, based on the agencies water demands prior to 2015 (unconstrained demands), vary by agency and water shortage level; however, for those agencies that provide such estimates in their WSCPs, Table 6-2 illustrates these variations.

Table 6-2. Quantitative Estimates of Demand Reduction Volumes by Agency

		Shortage Level 1 (Up to 10%)	Shortage Level 2 (Up to 20%)	Shortage Level 3 (Up to 30%)	Shortage Level 4 (Up to 40%)	Shortage Level 5 (Up to 50%)	Shortage Level 6 (Up to >50%)
Demand Reduction Volume (AF)	City of Covina	527	1,055	1,582	2,110	2,637	>2,637
	City of Glendora	1,323	2,646	3,968	5,291	6,614	>6,614
	City of La Verne*	N/A	N/A	N/A	N/A	N/A	N/A
	City of Pomona	1,814	3,627	5,441	7,254	9,068	>9,068
	GSWC Claremont	1,163	2,327	3,490	4,654	5,817	>5,817
	GSWC San Dimas	984	1,968	2,952	3,936	4,920	>4,920
	Rowland Water District	797	1,595	2,392	3,190	3,987	>3,987
	Suburban Water Systems*	N/A	N/A	N/A	N/A	N/A	N/A
	Walnut Valley Water District	2,041	4,082	6,124	8,165	10,206	>10,206
	Three Valleys	5,240	10,479	15,719	20,959	26,198	>26,198
Total		13,889	27,779	41,668	55,559	69,447	>69,447

*Do not provided estimate of AF reduction in their WSCP.

6.3 Supply Augmentation Actions

About 90 percent of agencies, including Three Valleys and its member agencies classified as urban water suppliers, have outlined specific supply augmentation actions in their WSCPs, such as transfers and other methods. None of the agencies plan to add new sources of water supply in the event existing sources of supply are not sufficient to meet customer demands; instead, these actions focus on increasing supplies from existing sources:

- *City of Covina* – City of Covina will consider increased purchases from Covina Irrigating Company using existing facilities to address customer demands. However, Covina plans to implement demand reduction measures in the event water supplies from existing sources are not sufficient to meet anticipated demands.

- *City of Glendora* – City of Glendora will consider increased production from the Main Basin to address customer demands. However, Glendora plans to implement demand reduction measures in the event water supplies from existing sources are not sufficient to meet these demands.
- City of Pomona – City of Pomona will consider increased production from the Six Basins and the Chino Basin to address customer demands. However, Pomona plans to implement demand reduction measures in the event water supplies from existing sources are not sufficient to meet anticipated demands.
- *GSWC Claremont* – GSWC Claremont will consider increased production from the Six Basins and the Chino Basin to address customer demands. However, GSWC Claremont plans to implement demand reduction measures in the event water supplies from existing sources are not sufficient to meet anticipated demands.
- *GSWC San Dimas* – GSWC San Dimas will consider increased production from the Main Basin to address customer demands. However, GSWC San Dimas plans to implement demand reduction measures in the event water supplies from existing sources are not sufficient to meet anticipated demands.
- *Rowland Water District (RWD)* – RWD will consider increased production from the Main Basin, Central Basin, and Puente Basin to address customer demands. However, RWD plans to implement demand reduction measures in the event water supplies from existing sources are not sufficient to meet anticipated demands.
- *Walnut Valley Water District (WVWD)* – WVWD will consider increased purchased water from the Main Basin, through California Domestic Water Company, to address customer demands. However, WVWD plans to implement demand reduction measures in the event water supplies from existing sources are not sufficient to meet anticipated demands.
- *City of La Verne* – City of La Verne's water system is equipped to handle both single and multiple dry years. In case of increased water demand, La Verne can manage short-term shutdowns of up to 3 days and likely up to 7 days through enhanced conservation efforts and customer communication. The city has established connections with adjacent water agencies for additional supply and maintains access to MWD import water through a city-owned emergency supply pump station. La Verne also keeps a contact list of nearby water bottlers as potential alternative water sources.
- *Suburban Water Systems (SWS)* – SWS did not identify any supply augmentation actions.
- *Three Valleys* – Three Valleys does not anticipate augmenting water supplies. However, Three Valleys' member agencies will consider increased production from the Main Basin, Chino Basin, and/or Six Basins (through potential transfer of water rights) using existing facilities to address customer demands.

6.4 Operational Changes

Many of the demand reduction actions specified in the agencies WSCPs qualify as operational changes. With the exception of SWS, all of Three Valleys' member agencies, classified as urban water

suppliers, identified stand-alone operational changes outside of the demand reduction actions that may be further used to reduce the gap between demand and available supplies.

Three Valleys, City of Covina, City of Glendora, City of Pomona, GSWC Claremont, GSWC San Dimas, RWD, and WVWD have all identified several operational changes, including:

- Improved monitoring, analysis, and tracking of customer water usage to enforce demand reduction measures.
- Optimization of production from existing available water supply sources.
- Potential use of emergency supply sources, including emergency interconnections.
- Potential blending of water supply resources.
- Improved monitoring, maintenance, and repairs to reduce water distribution system losses.

Additionally, the City of La Verne plans to implement improved monitoring and tracking of water usage rates for customers.

6.5 Additional Mandatory Restrictions

As part of their WSCP, the City of La Verne and SWS have all identified a series of restrictions to be implemented at various water shortage levels. The remaining retail member agencies have indicated there are currently no additional mandatory restrictions planned.

The City of La Verne's additional restrictions primarily focus on:

- Prohibited Uses of Water
- Water Consumption Reduction
- Water Conservation
- Construction Water Usage
- Cooling System Restrictions
- Landscape Watering Hours
- Strict Landscape Watering Regulations
- New Swimming Pool Permits
- Outdoor Irrigation Prohibitions
- New Water Service Connections

For SWS, the additional restrictions include:

- Expanding Public Information Campaigns
- Offering Water Use Surveys
- Providing Rebates on Plumbing Fixtures and Devices
- Providing Rebates for Landscape Irrigation Efficiency

6.6 Agency Drought Response Actions Summary

The most common drought response actions included in the WSCPs for the region are shown below in Figure 6-2. This data excludes drought response actions categorized under the 'other' category, as it includes a wide variety of measures.

The most prevalent drought response actions across all agency WSCPs involve limiting landscape irrigation to specific times and days, and requiring customers to promptly repair leaks, breaks, and malfunctions in a timely manner. Prohibiting the use of potable water for washing hard surfaces, restricting water use for decorative features like fountains, and prohibiting runoff from landscape irrigation are also significant, appearing in 91 percent of agency WSCPs. Additionally, common measures featured in 82 percent of agency WSCPs are operational changes and requiring restaurants to serve water only upon request. Seventy-three percent also consider implementing water transfers.

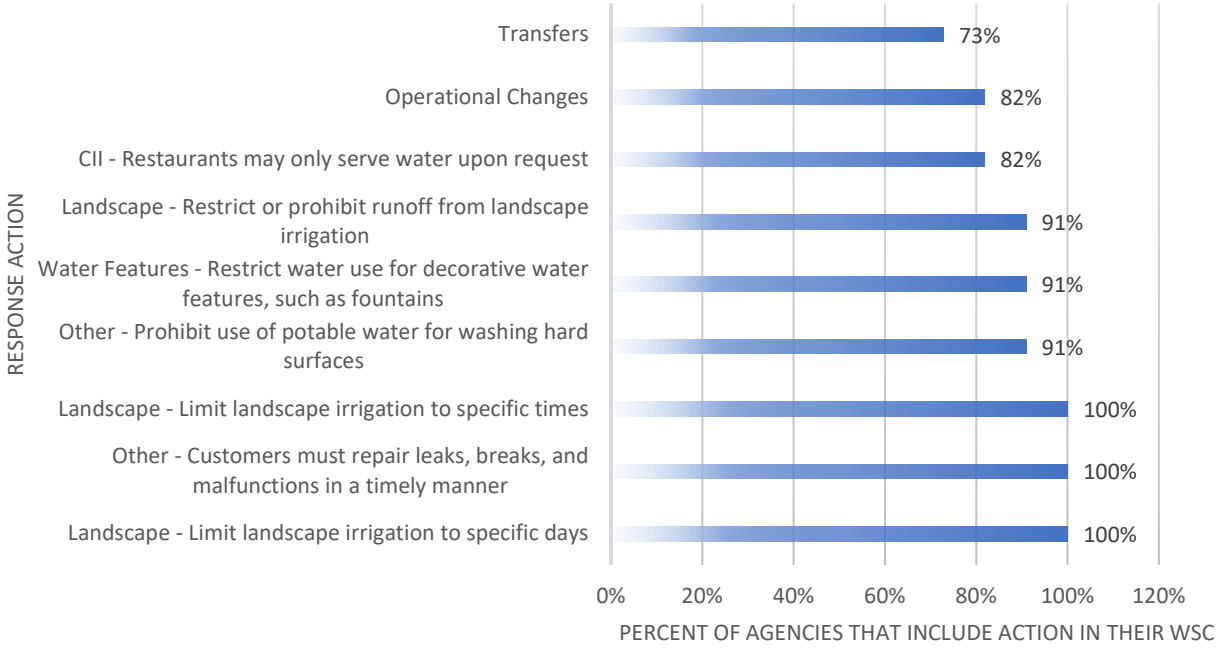


Figure 6-2. Most Commonly Included Drought Response Actions in Agency WSCPs

The drought response actions included in the fewest WSCPs for the region are shown below in Figure 6-3. The following drought response actions are only implemented by 9 percent of agencies:

- Increasing frequency of meter reading
- Other (Supply Augmentation Action)

The following drought response actions are only implemented by 18 percent of agencies:

- Distribution of water-saving items such as efficient toilets and urinals
- Moratorium or Net Zero Demand Increase on New Connections
- Additional Mandatory Restrictions

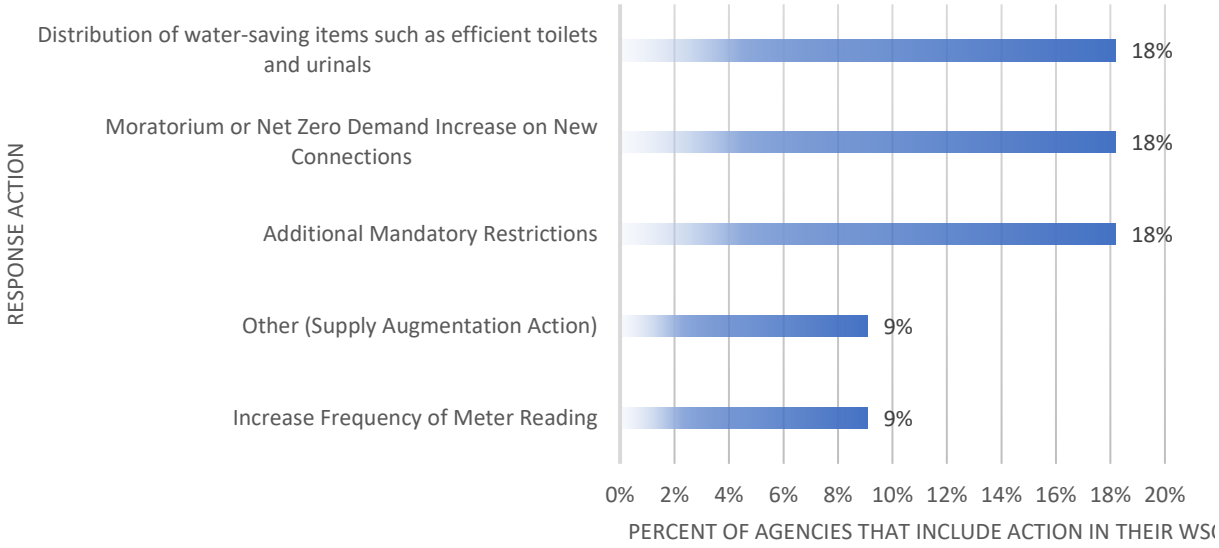


Figure 6-3. Least Commonly Included Drought Response Actions in Agency WSCPs

As previously stated, Three Valleys and its member agencies that are considered urban water suppliers will rely on the drought response actions provided in each agency's WSCP to promote a DCP that is flexible and responsive to each of the agencies. Similar to the mitigation actions, Three Valleys is not involved in the prioritization of agency response actions. Prioritization of response actions is generally performed by each respective agency's Board of Directors. Additionally, implementation and enforcement of the response actions is also the responsibility of each of Three Valleys' member agencies. Three Valleys' role is to understand when an agency is entering different shortage stages, and how they can support and assist with supply augmentation with the goal of unified drought response and messaging. This is facilitated through:

- A review of each agency's Annual Assessment which incorporates planned response actions for the next fiscal year and timing of the accompanying response actions.
- The planned member agency meetings included as part of Three Valleys' Drought Monitoring Framework which will provide the opportunity to discuss response actions being planned by each of the agencies along with potential implementation challenges.
- Communication of shortage stages.

6.7 Potential Enhancement of Drought Response Actions

The DCP will incorporate the potential drought response actions identified by each agency as part of their WSCP. However, the development of the DCP provided an opportunity to discuss their potential implementation and how Three Valleys and its member agencies can more effectively respond to drought at a regional level.

At a high level, Three Valleys, its member agencies, and other interested organizations can enhance their drought response actions by focusing on three main categories:

1. Physical changes: This category includes the installation or use of new equipment and infrastructure aimed at expanding water conservation efforts and enhancing interagency collaboration. Potential actions could include low-flow fixtures, smart irrigation systems, and developing interconnections with neighboring agencies for shared water resources.
2. Behavioral changes: This category focuses on voluntary actions taken by end-users that contribute to overall water conservation. This may include reducing landscape irrigation times and participating in community education programs that advocate water-saving practices.
3. Mandated changes: This category involves enforced actions to reduce water use. Possible measures could include mandated landscape watering days and restrictions on the use of potable water for non-essential purposes, both enforced by fines.

During Workshop 5 held in December 2024, these categories were presented, and the following question was discussed among the Drought Task Force:

- *Of these types of actions, which have been most effective during previous droughts, and which have been the most difficult to implement, and why?*

The poll results indicate that a combination of physical, behavioral, and mandated actions is considered the most effective strategies for managing droughts. Among the responses, behavioral changes were frequently highlighted as the most effective response, particularly when driven by education, outreach, and community engagement. Many participants emphasized that these changes are most successful when paired with mandated actions, such as water use restrictions and unified messaging. Physical actions, such as the use of smart meters, tiered rates, and changes to irrigation systems, were also indicated as tools for managing water consumption. Participants noted that smart meters, for example, help customers track their usage and adjust their behaviors accordingly, especially in conjunction with mandatory reductions. Some respondents also expressed that a combination of these actions yields the most effective results.

However, the discussion also revealed that behavioral actions are generally the most difficult to implement, with many respondents noting that people are often resistant to change. Several mentioned that individuals simply find it challenging to adopt new habits, particularly when it comes to changing water usage patterns or adjusting long-standing practices such as landscape irrigation. When it comes to physical changes, respondents highlighted challenges related to funding availability. Yet, despite efforts to offer such changes, many people have not taken full advantage of the opportunities available. Mandated actions also face significant resistance, particularly when it comes to gaining public buy-in. Respondents noted that mandates can be difficult to enforce or receive acceptance if the community does not fully understand the importance or reasons behind them. Finding agreement among the stakeholders about what can be implemented is also a challenge, especially when it comes to determining what mandates are both feasible and effective. In summary, the main challenges of the three action types stem from public resistance, lack of understanding, and resource constraints.

Table 6-3 below shows a compiled summary of the key points raised under each action type by the member agencies.

Table 6-3. Summary of Effective and Challenging Actions from Workshop 5

Action Type	Most Effective Actions	Most Difficult to Implement
Behavioral	Behavioral changes through education, community outreach, and open communication.	Some people are not easily swayed or are set in their ways.
	Engagement is focused on changed behavior and shaping future decisions.	Behavioral change is tough for many.
	Behavioral changes have been most effective through education and outreach.	People tend to stick with what they know; learning and accepting new trends can be tough.
	Behavioral changes based on mandates, along with physical actions, contribute to effective drought management.	Getting the public involved in conserving is challenging.
Physical	Smart meter usage helps customers understand their water usage and tailor it accordingly.	Physical changes are difficult because of funding availability.
	Physical actions show the best way to take action on droughts over the years.	Many people have not taken advantage of available physical changes.
	Conservation, tiered rates, and landscaping irrigation changes are effective.	
Mandated	Mandated reductions in water use and unified messaging are key for ensuring compliance.	Mandated actions are difficult to get public buy-in.
	Mandated actions help the city put restrictions on paper for the public to adhere to.	Educating the public on the reasons behind mandates is challenging.
	Mandated actions are crucial for formalizing behavior changes.	Finding agreement among stakeholders on what can be done has been difficult.

6.8 Recommendations

The key takeaways highlighted in Section 6.7 are generally consistent with the drought response actions identified in individual agency WSCPs. This DCP has been developed to promote the flexibility needed for Three Valleys and its member agencies to implement response actions based on local conditions and, along with the takeaways summarized in Table 6-3, could provide a framework for:

- Guiding the development of new response actions during subsequent updates of agency WSCPs
- Coordinating regional response actions in collaboration with the Drought Task Force

7 Operational and Administrative Framework

The operational and administrative framework identifies the roles, responsibilities, and related procedures necessary to implement the primary elements of the DCP:

1. Conduct drought monitoring – as described in Chapter 3
2. Coordinate response actions in connection with each agency's WSCP – as described in Chapter 6
3. Coordinate mitigation actions in connection with each agencies local planning and Three Valleys regional planning – as described in Chapter 5

Updating the DCP is also part of the operational and administrative framework.

This chapter provides a summary of the responsibilities associated with the primary elements of the DCP and the roles that will carry forward with these responsibilities. Additionally, it includes a discussion of the DCP update process, which includes monitoring, evaluating, and updating the plan.

7.1 Roles and Responsibilities

Three Valleys, its member agencies, and the Drought Task Force all retain responsibilities associated with the key elements of this plan.

Three Valleys: Three Valleys is responsible for estimating regional demand and supply projections, identifying infrastructure constraints that may impact supply delivery, comparing supply and demand estimates considering any infrastructure constraints and determining which Three Valleys shortage response stage and actions are recommended, carrying out strategic communication of response actions (as needed), participating in and assembling the Drought Task Force, coordinating mitigation actions as part of ongoing planning efforts, and updating the DCP. These responsibilities are generally carried out through the following roles:

a) Three Valleys General Manager
b) Three Valleys Chief Water Resources Officer
c) Three Valleys Senior Engineer
d) Three Valleys Chief Administrative Officer
e) Three Valleys Water Resources Analyst/Communication Assistant

Table 7-1 provides the level of responsibility for each of these roles relative to the primary tasks described above.

Table 7-1. Level of Responsibility for the Key Roles at Three Valleys Relative to the Primary DCP Responsibilities

	Three Valleys General Manager	Three Valleys Chief Water Resources Officer	Three Valleys Senior Engineer	Three Valleys Chief Administrative Officer	Three Valleys Water Resources Analyst/ Communication Assistant
Demand projections	I	A	R	I	R
Supply projections	I	A	R	I	R
Identify infrastructure constraints	I	A	R	I	I
Strategic communication of response actions	A	C	I	R	R
Assembly of the Drought Task Force	I	A	I	C	R
Coordinate mitigation actions as part of ongoing planning efforts	A	R	C	I	I
Update the DCP	C	A	I	I	R

R	Responsible	Assigned to complete the task
A	Accountable	Has final decision-making authority and accountability for completion
C	Consulted	An advisor or subject matter expert who is consulted before a decision or action
I	Informed	Updated on decisions or actions

Three Valleys Member Agencies: Three Valleys member agencies are responsible for providing demand and supply projections to Three Valleys for their respective service areas, participation in the Drought Task Force, initiating strategic communication of response actions, and implementing mitigation actions as part of ongoing planning efforts.

Drought Task Force: The Drought Task Force is responsible for collectively evaluating regional conditions, identifying, and planning for response actions, seeking approval for said response actions through appropriate Board approval (as needed), and communicating with customers once response actions have been initiated.

7.2 Drought Response Task Force Process

The Drought Task Force is comprised of 27 organizations and currently there is a roster of 73 members spanning various stakeholder segments within the region. As part of the Drought Monitoring Framework, regional coordination is facilitated through regular monthly meetings between Three Valleys and its member agencies. These meetings are used to review and analyze water availability data and Annual Assessments, as well as to make decisions regarding the declaration of water supply shortages, the implementation of water restrictions, and the pursuit of additional supplies. As outlined in the DMF, during the implementation phase of this DCP, Three Valleys will

increase the frequency of meetings with any member agency or agencies that are in Stage 5 or above, holding these meetings at least twice monthly.

Additionally, the Drought Task Force may be convened based on a declaration from the state, Metropolitan, or if any member agency raises concerns about their supplies or infrastructure. Three Valleys can conduct an annual check-in meeting with the Drought Task Force during one of the regular Member Agency Meetings.

Once the Drought Task Force is convened, the group will meet to:

1. Evaluate regional conditions and identify which agencies/organizations are experiencing water shortage conditions
2. Discuss the need for a coordinated response and identify potential response actions

Drought Task Force members may experience shortages and impacts of drought at varying times and degrees of severity due to nuances in supply and demand portfolios. It is important to enable and support each agency as they enact shortage levels and response actions that are relevant and actionable in their service area. As a result, agencies are provided the flexibility to decide the degree to which they wish to participate, whether response actions are warranted consistent with their individual WSCPs, and communication protocols.

Once the Drought Task Force has met and identified potential response actions, Three Valleys and its member agencies will individually plan for implementation of said response actions, which includes Board approval and strategic communication to customers as to what will be required and how to achieve the intended results.

7.3 Drought Contingency Plan Update

The DCP is a living document that is intended to be evaluated on an ongoing basis and subsequently updated as needed. Three Valleys will regularly review the DCP and make adjustments accordingly. This includes a post-drought evaluation to assess the effectiveness of the DCP after its implementation. This evaluation could include an analysis of the climatic and environmental aspects of the drought; its economic and social consequences; the extent to which pre-drought planning was useful in mitigating the impacts, in facilitating relief or assistance to stricken areas, and in post-recovery; and any other weaknesses or problems caused by or not covered by the DCP. Three Valleys will also update the DCP consistent with the five-year UWMP report cycle to incorporate any significant changes to WSCPs, demand and supply projections, and additional mitigation actions.

7.4 Operational and Administrative Framework Summary

Table 7-2 summarizes the roles, responsibilities, and procedures associated with the operation and administration of the DCP.

Table 7-2. Operational and Administrative Framework Summary

DCP Element	Roles	Responsibilities	Procedures
Conduct Drought Monitoring	Three Valleys Member Agencies	Evaluate water supply reliability as part of the Annual Assessment	Compare supplies and demands. Determine which shortage response stage is recommended. Provide demand estimates to Three Valleys annually.
	Three Valleys	Develop annual supply and demand projections	Estimate unconstrained demands and available supplies for the coming year.
	Three Valleys	Identify infrastructure constraints	Identify any known MWD or Three Valleys infrastructure issues that may pertain to near-term water supply reliability.
	Three Valleys	Convene member agencies to conduct Wholesale Annual Assessment	Compare supplies and demands and discuss any infrastructure constraints that may impact supply delivery. Determine which Three Valleys shortage response stage is recommended.
	Three Valleys	Initiate Drought Task Force	Initiate the Drought Task Force based on a declaration from the state, Metropolitan, or if any member agency raises concerns about their supplies or infrastructure.
Coordinate Response Actions	Three Valleys Three Valleys Member Agencies	Identify response actions	Based on the water shortage response stage identified during the Annual Assessment, determine which response actions are recommended.
	Drought Task Force	Evaluate regional conditions	Identify which agencies are experiencing water shortage conditions once the Drought Task Force has been initiated. Discuss the need for a regional response.
	Three Valleys Three Valleys Member Agencies	Plan for response actions	Develop scope, schedule, and budget for implementation of response actions.
	Three Valleys Three Valleys Member Agencies	Approval and implementation of response actions	By Three Valleys Board and member agency Boards as needed.
	Three Valleys Three Valleys Member Agencies Drought Task Force	Communicate response actions	Communicate with customers as to what will be required and how to achieve the required results.
Coordinate Mitigation Actions	Three Valleys Three Valleys Member Agencies	Ongoing evaluation and prioritization of mitigation actions	Continuation of regional planning efforts.

DCP Element	Roles	Responsibilities	Procedures
	Three Valleys Three Valleys Member Agencies	Identify opportunities for funding and potential cost-sharing	Pursue funding opportunities, initiate agreements for cost-sharing.
	Three Valleys Three Valleys Member Agencies	Coordination of mitigation actions	As needed, initiate design, environmental documentation, permitting, and construction.
Update DCP	Three Valleys	DCP evaluation	Conduct a post-drought evaluation.
	Three Valleys Three Valleys Member Agencies	DCP update(s)	Comprehensive review of DCP and updates to the framework as needed.

8 References

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9 Appendices

9.1 Appendix A

Adoption Resolution

9.2 Appendix B

Detailed Projected Changes in Rainfall, Outdoor Demand, San Gabriel River Flow Under All Scenarios

Table B1: Projected Changes in Rainfall Under Drier with Extreme Warming Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	100.8%	99.9%	100.6%	101.6%	97.4%	98.9%	100.1%	102.5%	100.1%	97.0%	97.8%	99.7%
Normal	YR2030	101.6%	99.7%	101.1%	103.1%	94.8%	97.9%	100.3%	105.0%	100.3%	94.1%	95.6%	99.4%
Normal	YR2035	97.9%	101.2%	98.2%	97.1%	90.2%	96.3%	99.9%	102.2%	103.8%	90.8%	88.1%	107.8%
Normal	YR2040	94.2%	102.7%	95.3%	91.0%	85.5%	94.7%	99.5%	99.3%	107.2%	87.5%	80.6%	116.2%
Normal	YR2045	90.5%	104.2%	92.4%	84.9%	80.9%	93.2%	99.2%	96.5%	110.7%	84.2%	73.1%	124.5%
Dry_1Yr	YR2025	101.1%	99.1%	101.8%	103.8%	98.3%	100.0%	100.0%	101.3%	100.0%	97.4%	96.7%	98.9%
Dry_1Yr	YR2030	102.2%	98.2%	103.6%	107.6%	96.6%	100.0%	100.0%	102.7%	100.0%	94.8%	93.3%	97.9%
Dry_1Yr	YR2035	100.2%	102.5%	100.2%	104.4%	95.5%	98.9%	100.0%	90.7%	100.0%	92.4%	84.0%	97.5%
Dry_1Yr	YR2040	98.1%	106.8%	96.8%	101.2%	94.4%	97.8%	100.0%	78.6%	100.0%	90.0%	74.7%	97.1%
Dry_1Yr	YR2045	96.1%	111.1%	93.4%	97.9%	93.3%	96.6%	100.0%	66.6%	100.0%	87.6%	65.3%	96.7%
Dry_5Yr	YR2025	101.1%	100.0%	100.6%	102.3%	97.0%	99.9%	99.4%	104.7%	100.3%	98.6%	98.1%	101.3%
Dry_5Yr	YR2030	102.2%	100.0%	101.1%	104.5%	94.1%	99.7%	98.9%	109.4%	100.6%	97.2%	96.3%	102.7%
Dry_5Yr	YR2035	97.2%	98.6%	97.8%	98.7%	91.2%	99.0%	98.3%	105.5%	105.2%	94.7%	89.7%	129.2%
Dry_5Yr	YR2040	92.2%	97.3%	94.5%	92.8%	88.4%	98.2%	97.8%	101.6%	109.9%	92.2%	83.1%	155.6%
Dry_5Yr	YR2045	87.3%	95.9%	91.3%	86.9%	85.5%	97.4%	97.3%	97.6%	114.6%	89.6%	76.6%	182.1%
Wet_1Yr	YR2025	102.3%	99.3%	102.2%	99.9%	96.9%	97.2%	99.7%	100.0%	100.0%	100.0%	95.7%	100.0%
Wet_1Yr	YR2030	104.5%	98.5%	104.4%	99.7%	93.8%	94.4%	99.4%	100.0%	100.0%	100.0%	91.4%	100.0%
Wet_1Yr	YR2035	98.5%	99.4%	98.0%	92.5%	85.9%	85.1%	99.8%	100.0%	100.0%	100.0%	82.2%	100.0%
Wet_1Yr	YR2040	92.4%	100.3%	91.6%	85.4%	78.1%	75.7%	100.2%	100.0%	100.0%	100.0%	73.0%	100.0%
Wet_1Yr	YR2045	86.3%	101.2%	85.3%	78.2%	70.3%	66.3%	100.6%	100.0%	100.0%	100.0%	63.9%	100.0%
Wet_5Yr	YR2025	101.2%	99.4%	99.9%	101.3%	98.5%	97.2%	100.6%	100.1%	99.4%	98.8%	97.2%	98.9%
Wet_5Yr	YR2030	102.4%	98.9%	99.7%	102.7%	96.9%	94.4%	101.1%	100.3%	98.9%	97.6%	94.4%	97.9%
Wet_5Yr	YR2035	100.4%	100.4%	98.3%	96.3%	94.0%	89.9%	100.9%	100.2%	102.2%	96.3%	85.8%	100.8%
Wet_5Yr	YR2040	98.4%	101.9%	96.9%	89.8%	91.0%	85.4%	100.6%	100.0%	105.5%	94.9%	77.1%	103.7%
Wet_5Yr	YR2045	96.4%	103.5%	95.6%	83.4%	88.0%	80.8%	100.4%	99.9%	108.9%	93.6%	68.4%	106.6%

Table B2: Projected Changes in Rainfall Under Median Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	100.8%	99.9%	100.6%	101.6%	97.4%	98.9%	100.1%	102.5%	100.1%	97.0%	97.8%	99.7%
Normal	YR2030	101.6%	99.7%	101.1%	103.1%	94.8%	97.9%	100.3%	105.0%	100.3%	94.1%	95.6%	99.4%
Normal	YR2035	102.4%	100.0%	100.6%	99.8%	92.9%	96.6%	101.6%	104.7%	102.1%	92.4%	92.8%	98.5%
Normal	YR2040	103.1%	100.2%	100.1%	96.5%	90.9%	95.3%	103.0%	104.3%	104.0%	90.7%	90.0%	97.6%
Normal	YR2045	103.8%	100.5%	99.7%	93.1%	88.9%	93.9%	104.4%	104.0%	105.9%	88.9%	87.2%	96.8%
Dry_1Yr	YR2025	101.1%	99.1%	101.8%	103.8%	98.3%	100.0%	100.0%	101.3%	100.0%	97.4%	96.7%	98.9%
Dry_1Yr	YR2030	102.2%	98.2%	103.6%	107.6%	96.6%	100.0%	100.0%	102.7%	100.0%	94.8%	93.3%	97.9%
Dry_1Yr	YR2035	103.5%	97.6%	103.4%	105.2%	97.1%	96.4%	100.0%	100.3%	100.0%	93.7%	89.2%	96.6%
Dry_1Yr	YR2040	104.8%	96.9%	103.2%	102.8%	97.7%	92.7%	100.0%	98.0%	100.0%	92.6%	85.2%	95.3%
Dry_1Yr	YR2045	106.1%	96.3%	103.0%	100.3%	98.2%	89.1%	100.0%	95.7%	100.0%	91.5%	81.1%	93.9%
Dry_5Yr	YR2025	101.1%	100.0%	100.6%	102.3%	97.0%	99.9%	99.4%	104.7%	100.3%	98.6%	98.1%	101.3%
Dry_5Yr	YR2030	102.2%	100.0%	101.1%	104.5%	94.1%	99.7%	98.9%	109.4%	100.6%	97.2%	96.3%	102.7%
Dry_5Yr	YR2035	103.8%	100.1%	100.7%	100.0%	92.5%	98.2%	100.4%	110.2%	102.8%	96.2%	92.4%	100.5%
Dry_5Yr	YR2040	105.5%	100.2%	100.4%	95.5%	90.9%	96.7%	101.9%	110.9%	105.0%	95.1%	88.6%	98.2%
Dry_5Yr	YR2045	107.1%	100.4%	100.0%	90.9%	89.4%	95.2%	103.5%	111.7%	107.2%	94.0%	84.8%	96.0%
Wet_1Yr	YR2025	102.3%	99.3%	102.2%	99.9%	96.9%	97.2%	99.7%	100.0%	100.0%	100.0%	95.7%	100.0%
Wet_1Yr	YR2030	104.5%	98.5%	104.4%	99.7%	93.8%	94.4%	99.4%	100.0%	100.0%	100.0%	91.4%	100.0%
Wet_1Yr	YR2035	104.3%	98.0%	103.0%	98.6%	89.7%	95.6%	101.8%	100.0%	100.0%	100.0%	87.5%	100.0%
Wet_1Yr	YR2040	104.1%	97.5%	101.7%	97.4%	85.6%	96.7%	104.2%	100.0%	100.0%	100.0%	83.7%	100.0%
Wet_1Yr	YR2045	103.9%	97.0%	100.3%	96.3%	81.6%	97.9%	106.6%	100.0%	100.0%	100.0%	79.9%	100.0%
Wet_5Yr	YR2025	101.2%	99.4%	99.9%	101.3%	98.5%	97.2%	100.6%	100.1%	99.4%	98.8%	97.2%	98.9%
Wet_5Yr	YR2030	102.4%	98.9%	99.7%	102.7%	96.9%	94.4%	101.1%	100.3%	98.9%	97.6%	94.4%	97.9%
Wet_5Yr	YR2035	103.0%	98.6%	99.6%	99.9%	95.6%	95.0%	102.7%	100.7%	100.6%	96.4%	91.6%	97.6%
Wet_5Yr	YR2040	103.6%	98.3%	99.5%	97.1%	94.2%	95.6%	104.3%	101.0%	102.4%	95.2%	88.8%	97.4%
Wet_5Yr	YR2045	104.2%	98.1%	99.3%	94.3%	92.9%	96.2%	105.9%	101.4%	104.2%	94.0%	85.9%	97.1%

Table B3: Projected Changes in Rainfall Under Wetter with Moderate Warming Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	100.8%	99.9%	100.6%	101.6%	97.4%	98.9%	100.1%	102.5%	100.1%	97.0%	97.8%	99.7%
Normal	YR2030	101.6%	99.7%	101.1%	103.1%	94.8%	97.9%	100.3%	105.0%	100.3%	94.1%	95.6%	99.4%
Normal	YR2035	102.0%	107.6%	108.9%	96.9%	93.4%	95.8%	100.9%	101.9%	119.6%	88.8%	95.3%	97.6%
Normal	YR2040	102.4%	115.6%	116.7%	90.7%	92.0%	93.7%	101.5%	98.9%	139.0%	83.5%	95.0%	95.9%
Normal	YR2045	102.7%	123.5%	124.4%	84.5%	90.6%	91.6%	102.1%	95.8%	158.4%	78.2%	94.7%	94.1%
Dry_1Yr	YR2025	101.1%	99.1%	101.8%	103.8%	98.3%	100.0%	100.0%	101.3%	100.0%	97.4%	96.7%	98.9%
Dry_1Yr	YR2030	102.2%	98.2%	103.6%	107.6%	96.6%	100.0%	100.0%	102.7%	100.0%	94.8%	93.3%	97.9%
Dry_1Yr	YR2035	106.5%	104.0%	110.5%	104.0%	92.8%	97.5%	100.0%	92.2%	100.0%	94.3%	93.6%	93.6%
Dry_1Yr	YR2040	110.9%	109.7%	117.3%	100.3%	89.0%	95.0%	100.0%	81.7%	100.0%	93.7%	93.9%	89.2%
Dry_1Yr	YR2045	115.3%	115.4%	124.1%	96.7%	85.2%	92.5%	100.0%	71.2%	100.0%	93.1%	94.2%	84.9%
Dry_5Yr	YR2025	101.1%	100.0%	100.6%	102.3%	97.0%	99.9%	99.4%	104.7%	100.3%	98.6%	98.1%	101.3%
Dry_5Yr	YR2030	102.2%	100.0%	101.1%	104.5%	94.1%	99.7%	98.9%	109.4%	100.6%	97.2%	96.3%	102.7%
Dry_5Yr	YR2035	105.2%	106.0%	109.1%	96.6%	94.0%	98.5%	100.2%	105.5%	122.3%	92.4%	95.8%	95.8%
Dry_5Yr	YR2040	108.3%	112.0%	117.2%	88.6%	93.8%	97.2%	101.7%	101.6%	143.9%	87.6%	95.4%	88.9%
Dry_5Yr	YR2045	111.4%	118.0%	125.2%	80.6%	93.7%	95.9%	103.1%	97.6%	165.6%	82.8%	95.0%	82.0%
Wet_1Yr	YR2025	102.3%	99.3%	102.2%	99.9%	96.9%	97.2%	99.7%	100.0%	100.0%	100.0%	95.7%	100.0%
Wet_1Yr	YR2030	104.5%	98.5%	104.4%	99.7%	93.8%	94.4%	99.4%	100.0%	100.0%	100.0%	91.4%	100.0%
Wet_1Yr	YR2035	104.0%	101.9%	118.8%	94.4%	91.1%	96.2%	102.0%	100.0%	100.0%	100.0%	93.6%	100.0%
Wet_1Yr	YR2040	103.4%	105.3%	133.3%	89.1%	88.5%	97.9%	104.5%	100.0%	100.0%	100.0%	95.9%	100.0%
Wet_1Yr	YR2045	102.9%	108.6%	147.8%	83.8%	85.9%	99.6%	107.0%	100.0%	100.0%	100.0%	98.2%	100.0%
Wet_5Yr	YR2025	101.2%	99.4%	99.9%	101.3%	98.5%	97.2%	100.6%	100.1%	99.4%	98.8%	97.2%	98.9%
Wet_5Yr	YR2030	102.4%	98.9%	99.7%	102.7%	96.9%	94.4%	101.1%	100.3%	98.9%	97.6%	94.4%	97.9%
Wet_5Yr	YR2035	104.8%	106.2%	107.8%	97.8%	95.2%	93.5%	101.6%	100.2%	120.6%	95.3%	94.9%	98.2%
Wet_5Yr	YR2040	107.1%	113.5%	115.8%	92.9%	93.4%	92.5%	102.1%	100.0%	142.3%	93.1%	95.3%	98.4%
Wet_5Yr	YR2045	109.5%	120.8%	123.9%	88.0%	91.7%	91.5%	102.6%	99.9%	164.1%	90.8%	95.8%	98.7%

Table B4: Projected Changes in San Gabriel River Flow Under Drier with Extreme Warming Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	100.3%	99.9%	99.3%	98.8%	98.5%	99.4%	99.9%	100.1%	100.0%	99.6%	98.6%	99.3%
Normal	YR2030	100.6%	99.7%	98.5%	97.6%	96.9%	98.9%	99.7%	100.3%	100.0%	99.1%	97.2%	98.5%
Normal	YR2035	98.7%	96.3%	94.6%	92.8%	93.7%	97.3%	98.8%	99.5%	101.2%	100.4%	94.2%	99.7%
Normal	YR2040	96.9%	92.9%	90.7%	88.0%	90.5%	95.7%	97.9%	98.8%	102.5%	101.7%	91.1%	100.9%
Normal	YR2045	95.0%	89.5%	86.9%	83.3%	87.2%	94.2%	97.1%	98.0%	103.8%	103.0%	88.0%	102.0%
Dry_1Yr	YR2025	99.3%	98.6%	97.6%	99.4%	99.6%	99.9%	100.0%	100.0%	99.9%	99.3%	99.3%	100.0%
Dry_1Yr	YR2030	98.5%	97.2%	95.2%	98.9%	99.1%	99.7%	100.0%	100.0%	99.7%	98.5%	98.5%	100.0%
Dry_1Yr	YR2035	90.7%	89.4%	87.6%	93.7%	96.4%	98.2%	99.1%	99.6%	100.3%	97.2%	96.7%	100.6%
Dry_1Yr	YR2040	83.0%	81.5%	80.1%	88.5%	93.8%	96.7%	98.3%	99.2%	101.0%	95.9%	94.9%	101.2%
Dry_1Yr	YR2045	75.2%	73.6%	72.5%	83.4%	91.1%	95.2%	97.4%	98.9%	101.6%	94.6%	93.1%	101.9%
Dry_5Yr	YR2025	99.9%	98.6%	98.1%	98.0%	98.0%	99.6%	99.9%	100.0%	100.0%	99.4%	98.6%	98.6%
Dry_5Yr	YR2030	99.7%	97.2%	96.3%	95.9%	95.9%	99.1%	99.7%	100.0%	100.0%	98.9%	97.2%	97.2%
Dry_5Yr	YR2035	96.7%	93.2%	93.2%	92.2%	93.6%	98.1%	99.1%	99.5%	100.0%	97.9%	94.3%	97.7%
Dry_5Yr	YR2040	93.7%	89.2%	90.2%	88.5%	91.2%	97.1%	98.5%	99.0%	100.0%	97.0%	91.4%	98.1%
Dry_5Yr	YR2045	90.6%	85.2%	87.2%	84.7%	88.9%	96.1%	97.8%	98.5%	100.0%	96.1%	88.4%	98.5%
Wet_1Yr	YR2025	99.1%	100.3%	99.1%	99.1%	98.1%	98.3%	99.6%	102.2%	100.4%	98.3%	97.6%	100.0%
Wet_1Yr	YR2030	98.2%	100.6%	98.2%	98.2%	96.3%	96.6%	99.1%	104.4%	100.9%	96.6%	95.2%	100.0%
Wet_1Yr	YR2035	94.9%	96.3%	100.6%	96.9%	92.3%	94.7%	98.2%	99.2%	100.8%	111.2%	90.0%	97.3%
Wet_1Yr	YR2040	91.7%	91.9%	102.9%	95.6%	88.3%	92.8%	97.3%	94.1%	100.8%	125.9%	84.8%	94.5%
Wet_1Yr	YR2045	88.4%	87.6%	105.3%	94.3%	84.4%	90.9%	96.4%	88.9%	100.8%	140.5%	79.7%	91.7%
Wet_5Yr	YR2025	100.6%	100.1%	98.8%	98.1%	98.3%	99.4%	99.9%	100.0%	101.1%	100.0%	99.4%	99.3%
Wet_5Yr	YR2030	101.1%	100.3%	97.6%	96.3%	96.6%	98.9%	99.7%	100.0%	102.2%	100.0%	98.9%	98.5%
Wet_5Yr	YR2035	102.1%	96.7%	95.7%	92.4%	92.8%	97.5%	99.0%	99.5%	107.7%	102.4%	99.5%	104.5%
Wet_5Yr	YR2040	103.1%	93.1%	93.9%	88.6%	89.0%	96.2%	98.2%	99.0%	113.3%	104.7%	100.1%	110.4%
Wet_5Yr	YR2045	104.0%	89.5%	92.0%	84.8%	85.2%	95.0%	97.4%	98.5%	118.8%	107.1%	100.8%	116.4%

Table B5: Projected Changes in San Gabriel River Flow Under Median Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	100.3%	99.9%	99.3%	98.8%	98.5%	99.4%	99.9%	100.1%	100.0%	99.6%	98.6%	99.3%
Normal	YR2030	100.6%	99.7%	98.5%	97.6%	96.9%	98.9%	99.7%	100.3%	100.0%	99.1%	97.2%	98.5%
Normal	YR2035	100.6%	99.8%	97.9%	95.7%	95.6%	98.4%	99.5%	100.0%	101.0%	99.0%	96.3%	97.1%
Normal	YR2040	100.6%	100.0%	97.2%	93.9%	94.2%	98.1%	99.2%	99.8%	102.0%	98.9%	95.4%	95.7%
Normal	YR2045	100.6%	100.1%	96.6%	92.0%	92.9%	97.7%	99.0%	99.5%	103.0%	98.7%	94.4%	94.2%
Dry_1Yr	YR2025	99.3%	98.6%	97.6%	99.4%	99.6%	99.9%	100.0%	100.0%	99.9%	99.3%	99.3%	100.0%
Dry_1Yr	YR2030	98.5%	97.2%	95.2%	98.9%	99.1%	99.7%	100.0%	100.0%	99.7%	98.5%	98.5%	100.0%
Dry_1Yr	YR2035	96.1%	95.1%	92.0%	96.9%	98.4%	99.3%	99.8%	99.9%	100.6%	98.1%	97.6%	99.9%
Dry_1Yr	YR2040	93.6%	93.0%	88.8%	95.0%	97.6%	99.0%	99.5%	99.8%	101.5%	97.7%	96.7%	99.8%
Dry_1Yr	YR2045	91.1%	90.8%	85.5%	93.0%	96.8%	98.6%	99.2%	99.6%	102.4%	97.4%	95.8%	99.6%
Dry_5Yr	YR2025	99.9%	98.6%	98.1%	98.0%	98.0%	99.6%	99.9%	100.0%	100.0%	99.4%	98.6%	98.6%
Dry_5Yr	YR2030	99.7%	97.2%	96.3%	95.9%	95.9%	99.1%	99.7%	100.0%	100.0%	98.9%	97.2%	97.2%
Dry_5Yr	YR2035	99.0%	96.5%	95.3%	94.0%	94.7%	98.6%	99.5%	99.9%	100.0%	98.4%	96.5%	95.8%
Dry_5Yr	YR2040	98.2%	95.6%	94.3%	92.0%	93.4%	98.1%	99.2%	99.8%	100.0%	98.1%	95.6%	94.3%
Dry_5Yr	YR2045	97.4%	94.8%	93.4%	90.1%	92.2%	97.6%	99.0%	99.6%	100.0%	97.7%	94.8%	92.8%
Wet_1Yr	YR2025	99.1%	100.3%	99.1%	99.1%	98.1%	98.3%	99.6%	102.2%	100.4%	98.3%	97.6%	100.0%
Wet_1Yr	YR2030	98.2%	100.6%	98.2%	98.2%	96.3%	96.6%	99.1%	104.4%	100.9%	96.6%	95.2%	100.0%
Wet_1Yr	YR2035	98.3%	100.8%	99.3%	96.8%	93.8%	95.8%	98.7%	102.0%	101.2%	95.2%	94.4%	96.6%
Wet_1Yr	YR2040	98.5%	101.1%	100.3%	95.3%	91.3%	95.0%	98.4%	99.6%	101.6%	93.9%	93.5%	93.2%
Wet_1Yr	YR2045	98.6%	101.3%	101.3%	93.9%	88.9%	94.1%	98.0%	97.3%	101.9%	92.5%	92.7%	89.9%
Wet_5Yr	YR2025	100.6%	100.1%	98.8%	98.1%	98.3%	99.4%	99.9%	100.0%	101.1%	100.0%	99.4%	99.3%
Wet_5Yr	YR2030	101.1%	100.3%	97.6%	96.3%	96.6%	98.9%	99.7%	100.0%	102.2%	100.0%	98.9%	98.5%
Wet_5Yr	YR2035	101.2%	100.9%	97.6%	94.5%	95.1%	98.4%	99.6%	100.0%	106.3%	100.2%	98.3%	97.1%
Wet_5Yr	YR2040	101.4%	101.5%	97.6%	92.7%	93.6%	98.1%	99.5%	100.0%	110.4%	100.5%	97.8%	95.7%
Wet_5Yr	YR2045	101.5%	102.1%	97.6%	90.9%	92.1%	97.7%	99.3%	100.0%	114.6%	100.8%	97.3%	94.2%

Table B6: Projected Changes in San Gabriel River Flow Under Wetter with Moderate Warming Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	100.3%	99.9%	99.3%	98.8%	98.5%	99.4%	99.9%	100.1%	100.0%	99.6%	98.6%	99.3%
Normal	YR2030	100.6%	99.7%	98.5%	97.6%	96.9%	98.9%	99.7%	100.3%	100.0%	99.1%	97.2%	98.5%
Normal	YR2035	102.5%	110.7%	108.5%	100.1%	97.2%	99.2%	100.0%	100.0%	109.1%	101.4%	97.0%	96.6%
Normal	YR2040	104.5%	121.6%	118.5%	102.6%	97.5%	99.6%	100.2%	99.8%	118.3%	103.7%	96.7%	94.6%
Normal	YR2045	106.5%	132.6%	128.5%	105.1%	97.7%	100.0%	100.5%	99.5%	127.4%	106.0%	96.5%	92.7%
Dry_1Yr	YR2025	99.3%	98.6%	97.6%	99.4%	99.6%	99.9%	100.0%	100.0%	99.9%	99.3%	99.3%	100.0%
Dry_1Yr	YR2030	98.5%	97.2%	95.2%	98.9%	99.1%	99.7%	100.0%	100.0%	99.7%	98.5%	98.5%	100.0%
Dry_1Yr	YR2035	93.1%	107.8%	107.5%	108.3%	101.8%	101.3%	100.9%	100.4%	119.5%	103.2%	101.2%	101.8%
Dry_1Yr	YR2040	87.6%	118.4%	119.8%	117.9%	104.5%	103.0%	101.8%	100.8%	139.2%	107.9%	104.0%	103.5%
Dry_1Yr	YR2045	82.2%	128.9%	132.2%	127.4%	107.2%	104.6%	102.6%	101.1%	159.0%	112.5%	106.7%	105.2%
Dry_5Yr	YR2025	99.9%	98.6%	98.1%	98.0%	98.0%	99.6%	99.9%	100.0%	100.0%	99.4%	98.6%	98.6%
Dry_5Yr	YR2030	99.7%	97.2%	96.3%	95.9%	95.9%	99.1%	99.7%	100.0%	100.0%	98.9%	97.2%	97.2%
Dry_5Yr	YR2035	99.0%	102.6%	103.6%	97.1%	96.3%	99.6%	100.2%	100.0%	100.9%	97.9%	96.9%	94.6%
Dry_5Yr	YR2040	98.2%	107.9%	111.0%	98.4%	96.7%	100.1%	100.7%	100.0%	101.8%	97.0%	96.5%	91.9%
Dry_5Yr	YR2045	97.4%	113.3%	118.4%	99.6%	97.1%	100.7%	101.2%	100.0%	102.6%	96.1%	96.0%	89.2%
Wet_1Yr	YR2025	99.1%	100.3%	99.1%	99.1%	98.1%	98.3%	99.6%	102.2%	100.4%	98.3%	97.6%	100.0%
Wet_1Yr	YR2030	98.2%	100.6%	98.2%	98.2%	96.3%	96.6%	99.1%	104.4%	100.9%	96.6%	95.2%	100.0%
Wet_1Yr	YR2035	101.1%	109.9%	102.6%	97.2%	92.3%	94.0%	97.6%	99.2%	114.5%	91.4%	92.1%	93.9%
Wet_1Yr	YR2040	104.0%	119.3%	107.1%	96.1%	88.3%	91.4%	96.1%	94.1%	128.3%	86.3%	89.0%	87.7%
Wet_1Yr	YR2045	106.8%	128.7%	111.5%	95.1%	84.4%	88.9%	94.5%	88.9%	142.0%	81.1%	86.0%	81.6%
Wet_5Yr	YR2025	100.6%	100.1%	98.8%	98.1%	98.3%	99.4%	99.9%	100.0%	101.1%	100.0%	99.4%	99.3%
Wet_5Yr	YR2030	101.1%	100.3%	97.6%	96.3%	96.6%	98.9%	99.7%	100.0%	102.2%	100.0%	98.9%	98.5%
Wet_5Yr	YR2035	101.5%	112.8%	105.1%	98.7%	95.6%	98.6%	99.6%	99.9%	120.7%	99.6%	98.7%	94.2%
Wet_5Yr	YR2040	101.8%	125.4%	112.7%	101.2%	94.7%	98.3%	99.5%	99.8%	139.3%	99.2%	98.6%	90.0%
Wet_5Yr	YR2045	102.2%	137.9%	120.2%	103.6%	93.7%	98.1%	99.3%	99.6%	157.9%	98.9%	98.4%	85.7%

Table B7: Projected Changes in Outdoor Demand Under Drier with Extreme Warming Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	101.0%	100.6%	100.4%	100.6%	100.7%	100.6%	100.4%	100.4%	100.6%	100.7%	101.0%	101.1%
Normal	YR2030	101.9%	101.1%	100.9%	101.1%	101.4%	101.1%	100.9%	100.9%	101.1%	101.4%	101.9%	102.2%
Normal	YR2035	103.9%	103.1%	102.2%	102.9%	103.4%	102.8%	101.2%	101.3%	101.6%	102.5%	104.4%	104.4%
Normal	YR2040	106.0%	105.0%	103.5%	104.8%	105.5%	104.5%	101.6%	101.8%	102.1%	103.6%	106.9%	106.7%
Normal	YR2045	108.0%	106.9%	104.9%	106.6%	107.5%	106.2%	101.9%	102.3%	102.6%	104.6%	109.4%	108.9%
Dry_1Yr	YR2025	100.8%	100.7%	100.4%	100.4%	101.0%	100.7%	100.6%	100.4%	100.4%	100.6%	100.7%	100.8%
Dry_1Yr	YR2030	101.6%	101.4%	100.9%	100.9%	101.9%	101.4%	101.1%	100.9%	100.9%	101.1%	101.4%	101.6%
Dry_1Yr	YR2035	103.3%	102.2%	102.3%	102.2%	103.7%	102.7%	101.5%	102.1%	102.8%	104.3%	105.0%	103.7%
Dry_1Yr	YR2040	105.0%	103.1%	103.8%	103.5%	105.5%	104.0%	101.8%	103.3%	104.8%	107.4%	108.6%	105.7%
Dry_1Yr	YR2045	106.7%	103.9%	105.2%	104.9%	107.3%	105.4%	102.2%	104.5%	106.7%	110.6%	112.2%	107.8%
Dry_5Yr	YR2025	101.0%	100.6%	100.4%	100.4%	100.8%	100.6%	100.4%	100.6%	100.6%	100.7%	101.1%	101.1%
Dry_5Yr	YR2030	101.9%	101.1%	100.9%	100.9%	101.6%	101.1%	100.9%	101.1%	101.1%	101.4%	102.2%	102.2%
Dry_5Yr	YR2035	103.9%	103.2%	102.3%	102.4%	103.7%	102.7%	101.1%	101.7%	101.6%	102.3%	104.1%	104.1%
Dry_5Yr	YR2040	106.0%	105.2%	103.8%	104.0%	105.7%	104.3%	101.3%	102.3%	102.1%	103.3%	105.9%	105.9%
Dry_5Yr	YR2045	108.0%	107.3%	105.2%	105.6%	107.8%	105.9%	101.6%	102.9%	102.6%	104.3%	107.8%	107.8%
Wet_1Yr	YR2025	101.5%	100.6%	100.3%	100.6%	100.7%	100.7%	100.4%	100.6%	100.4%	100.6%	100.7%	100.8%
Wet_1Yr	YR2030	102.9%	101.1%	100.6%	101.1%	101.4%	101.4%	100.9%	101.1%	100.9%	101.1%	101.4%	101.6%
Wet_1Yr	YR2035	105.5%	103.8%	102.8%	104.8%	104.5%	104.2%	101.5%	101.6%	101.5%	102.6%	103.2%	102.6%
Wet_1Yr	YR2040	108.0%	106.5%	105.0%	108.4%	107.7%	106.9%	102.1%	102.1%	102.1%	104.0%	105.0%	103.6%
Wet_1Yr	YR2045	110.6%	109.1%	107.2%	112.0%	110.8%	109.7%	102.7%	102.6%	102.7%	105.5%	106.8%	104.5%
Wet_5Yr	YR2025	101.1%	100.6%	100.4%	100.6%	100.8%	100.7%	100.6%	100.6%	100.6%	100.7%	101.0%	101.1%
Wet_5Yr	YR2030	102.2%	101.1%	100.9%	101.1%	101.6%	101.4%	101.1%	101.1%	101.1%	101.4%	101.9%	102.2%
Wet_5Yr	YR2035	104.3%	103.1%	102.1%	102.9%	103.4%	103.2%	101.5%	101.6%	101.6%	102.7%	104.0%	104.5%
Wet_5Yr	YR2040	106.4%	105.0%	103.3%	104.8%	105.2%	105.0%	101.8%	102.1%	102.1%	104.0%	106.2%	106.9%
Wet_5Yr	YR2045	108.5%	106.9%	104.5%	106.6%	107.0%	106.8%	102.2%	102.6%	102.6%	105.4%	108.3%	109.3%

Table B8: Projected Changes in Outdoor Demand Under Median Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	101.0%	100.6%	100.4%	100.6%	100.7%	100.6%	100.4%	100.4%	100.6%	100.7%	101.0%	101.1%
Normal	YR2030	101.9%	101.1%	100.9%	101.1%	101.4%	101.1%	100.9%	100.9%	101.1%	101.4%	101.9%	102.2%
Normal	YR2035	102.7%	101.8%	101.6%	101.8%	102.2%	101.7%	101.2%	101.3%	101.5%	102.0%	102.9%	103.3%
Normal	YR2040	103.6%	102.6%	102.3%	102.6%	103.1%	102.3%	101.6%	101.8%	101.8%	102.6%	103.8%	104.5%
Normal	YR2045	104.4%	103.3%	103.0%	103.3%	103.9%	102.9%	101.9%	102.3%	102.2%	103.2%	104.8%	105.7%
Dry_1Yr	YR2025	100.8%	100.7%	100.4%	100.4%	101.0%	100.7%	100.6%	100.4%	100.4%	100.6%	100.7%	100.8%
Dry_1Yr	YR2030	101.6%	101.4%	100.9%	100.9%	101.9%	101.4%	101.1%	100.9%	100.9%	101.1%	101.4%	101.6%
Dry_1Yr	YR2035	102.2%	101.7%	101.5%	101.6%	102.7%	101.9%	101.4%	101.5%	101.6%	102.0%	102.3%	102.7%
Dry_1Yr	YR2040	102.8%	102.1%	102.1%	102.3%	103.6%	102.3%	101.6%	102.1%	102.3%	102.8%	103.3%	103.8%
Dry_1Yr	YR2045	103.4%	102.5%	102.7%	103.0%	104.4%	102.8%	101.8%	102.7%	103.0%	103.7%	104.3%	104.9%
Dry_5Yr	YR2025	101.0%	100.6%	100.4%	100.4%	100.8%	100.6%	100.4%	100.6%	100.6%	100.7%	101.1%	101.1%
Dry_5Yr	YR2030	101.9%	101.1%	100.9%	100.9%	101.6%	101.1%	100.9%	101.1%	101.1%	101.4%	102.2%	102.2%
Dry_5Yr	YR2035	102.5%	101.7%	101.5%	101.6%	102.2%	101.7%	101.3%	101.6%	101.5%	102.0%	103.0%	103.3%
Dry_5Yr	YR2040	103.1%	102.3%	102.1%	102.3%	102.8%	102.3%	101.8%	102.1%	101.8%	102.6%	103.8%	104.5%
Dry_5Yr	YR2045	103.7%	102.9%	102.7%	103.0%	103.4%	102.9%	102.3%	102.6%	102.2%	103.2%	104.6%	105.7%
Wet_1Yr	YR2025	101.5%	100.6%	100.3%	100.6%	100.7%	100.7%	100.4%	100.6%	100.4%	100.6%	100.7%	100.8%
Wet_1Yr	YR2030	102.9%	101.1%	100.6%	101.1%	101.4%	101.4%	100.9%	101.1%	100.9%	101.1%	101.4%	101.6%
Wet_1Yr	YR2035	104.1%	102.2%	101.3%	102.0%	102.5%	102.1%	101.2%	101.5%	101.3%	101.8%	102.1%	102.4%
Wet_1Yr	YR2040	105.2%	103.3%	102.0%	102.8%	103.6%	102.8%	101.6%	101.8%	101.8%	102.6%	102.8%	103.1%
Wet_1Yr	YR2045	106.4%	104.4%	102.8%	103.7%	104.6%	103.6%	101.9%	102.2%	102.3%	103.3%	103.6%	103.8%
Wet_5Yr	YR2025	101.1%	100.6%	100.4%	100.6%	100.8%	100.7%	100.6%	100.6%	100.6%	100.7%	101.0%	101.1%
Wet_5Yr	YR2030	102.2%	101.1%	100.9%	101.1%	101.6%	101.4%	101.1%	101.1%	101.1%	101.4%	101.9%	102.2%
Wet_5Yr	YR2035	103.1%	101.8%	101.5%	101.8%	102.4%	102.0%	101.5%	101.5%	101.5%	102.0%	102.6%	103.2%
Wet_5Yr	YR2040	104.1%	102.6%	102.1%	102.6%	103.1%	102.6%	101.8%	101.8%	101.8%	102.6%	103.3%	104.3%
Wet_5Yr	YR2045	105.0%	103.3%	102.7%	103.3%	103.8%	103.2%	102.2%	102.2%	102.2%	103.2%	104.0%	105.4%

Table B9: Projected Changes in Outdoor Demand Under Wetter with Moderate Warming Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	101.0%	100.6%	100.4%	100.6%	100.7%	100.6%	100.4%	100.4%	100.6%	100.7%	101.0%	101.1%
Normal	YR2030	101.9%	101.1%	100.9%	101.1%	101.4%	101.1%	100.9%	100.9%	101.1%	101.4%	101.9%	102.2%
Normal	YR2035	103.0%	100.9%	100.5%	100.6%	101.3%	101.5%	101.1%	101.0%	101.0%	101.1%	101.9%	102.9%
Normal	YR2040	104.0%	100.6%	100.1%	100.1%	101.1%	101.8%	101.3%	101.1%	100.9%	100.9%	101.9%	103.6%
Normal	YR2045	105.1%	100.4%	99.7%	99.7%	101.0%	102.2%	101.6%	101.2%	100.7%	100.7%	101.9%	104.3%
Dry_1Yr	YR2025	100.8%	100.7%	100.4%	100.4%	101.0%	100.7%	100.6%	100.4%	100.4%	100.6%	100.7%	100.8%
Dry_1Yr	YR2030	101.6%	101.4%	100.9%	100.9%	101.9%	101.4%	101.1%	100.9%	100.9%	101.1%	101.4%	101.6%
Dry_1Yr	YR2035	101.8%	100.7%	100.2%	100.2%	101.8%	102.0%	101.6%	101.7%	102.6%	102.9%	103.2%	102.8%
Dry_1Yr	YR2040	101.9%	99.9%	99.6%	99.6%	101.7%	102.6%	102.1%	102.6%	104.3%	104.8%	105.0%	104.0%
Dry_1Yr	YR2045	102.0%	99.2%	99.0%	99.0%	101.5%	103.2%	102.6%	103.4%	106.0%	106.6%	106.8%	105.2%
Dry_5Yr	YR2025	101.0%	100.6%	100.4%	100.4%	100.8%	100.6%	100.4%	100.6%	100.6%	100.7%	101.1%	101.1%
Dry_5Yr	YR2030	101.9%	101.1%	100.9%	100.9%	101.6%	101.1%	100.9%	101.1%	101.1%	101.4%	102.2%	102.2%
Dry_5Yr	YR2035	102.9%	100.7%	100.5%	100.6%	101.3%	101.5%	101.0%	101.2%	101.0%	101.0%	101.8%	102.9%
Dry_5Yr	YR2040	103.8%	100.4%	100.1%	100.3%	100.9%	101.8%	101.1%	101.4%	100.9%	100.7%	101.5%	103.6%
Dry_5Yr	YR2045	104.8%	100.0%	99.7%	100.1%	100.6%	102.2%	101.2%	101.5%	100.7%	100.3%	101.1%	104.3%
Wet_1Yr	YR2025	101.5%	100.6%	100.3%	100.6%	100.7%	100.7%	100.4%	100.6%	100.4%	100.6%	100.7%	100.8%
Wet_1Yr	YR2030	102.9%	101.1%	100.6%	101.1%	101.4%	101.4%	100.9%	101.1%	100.9%	101.1%	101.4%	101.6%
Wet_1Yr	YR2035	103.8%	100.6%	100.2%	100.5%	101.9%	101.7%	101.2%	101.1%	101.1%	101.1%	101.5%	102.1%
Wet_1Yr	YR2040	104.8%	100.1%	99.8%	99.9%	102.3%	102.1%	101.6%	101.1%	101.3%	101.1%	101.6%	102.6%
Wet_1Yr	YR2045	105.7%	99.7%	99.5%	99.3%	102.8%	102.5%	101.9%	101.1%	101.6%	101.1%	101.7%	103.1%
Wet_5Yr	YR2025	101.1%	100.6%	100.4%	100.6%	100.8%	100.7%	100.6%	100.6%	100.6%	100.7%	101.0%	101.1%
Wet_5Yr	YR2030	102.2%	101.1%	100.9%	101.1%	101.6%	101.4%	101.1%	101.1%	101.1%	101.4%	101.9%	102.2%
Wet_5Yr	YR2035	102.9%	100.7%	100.3%	100.7%	101.6%	101.6%	101.2%	101.0%	101.0%	100.8%	101.2%	102.6%
Wet_5Yr	YR2040	103.6%	100.4%	99.9%	100.4%	101.6%	101.9%	101.4%	100.9%	100.9%	100.2%	100.5%	103.1%
Wet_5Yr	YR2045	104.3%	100.0%	99.4%	100.0%	101.6%	102.1%	101.5%	100.7%	100.7%	99.6%	99.8%	103.6%

9.3 Appendix C

Table C-1: Identification of Potential Mitigation Actions and Their Key Identifiers

Project Number	Agency	Type of Mitigation Action	Project/Program Name	Location	Stage	Regional Partners	Timing/ Schedule	Estimated Capital Costs ($)	Potential Benefits									Review		
									Increase Local Supply			Operational Flexibility			Water Supply Reliability					
									New Extraction Wells	Enhanced Well Efficiency	Groundwater Treatment Projects	System Interties	Upgrade Aging Infrastructure	Conservation and Efficiency	Projects that increase overall supply	Projects that reduce drought dependency	Projects that reduce overall dependency	Regional Water Supply Reliability and Resiliency	Regional Benefits	Timing/ Schedule
1	Cal Poly Pomona	Groundwater Treatment Projects	VOC Treatment at Well 2	34°03'05"N 117°48'32"W	Conceptual		≤ 1 yr	$1,300,000			X				X			Meets 2 of the regional benefits	Single agency action	Short-term action
2	Cal Poly Pomona	Groundwater Treatment Projects	Install Additional RO Train at ROWTP	34°03'27"N 117°49'04"W	Conceptual		2-4 yrs	$750,000			X				X			Meets 2 of the regional benefits	Single agency action	Mid-term action
3	Cal Poly Pomona	Enhanced Well Efficiency	Repurpose Farm Well #4 water	34°02'33"N 117°48'48"W	Conceptual		1-2 yrs	≤ $2M		X					X			Meets 2 of the regional benefits	Single agency action	Short-term action
4	Cal Poly Pomona	New Extraction Wells	Future wells as injection (recycled water) and extraction		Conceptual	Three Valleys	1-2 yrs	$2-5M	X						X			Meets 2 of the regional benefits	Regional action	Short-term action
5	Rowland Water District & Walnut Valley Water District (through Puente Basin Water Agency)	New Extraction Wells	Six Basins Groundwater Project		Construction	RWD, WVWD	Late 2024	≥ $10M	X						X		X	Meets 2 of the regional benefits	Action involves multiple adjacent agencies	Short-term action
6	Rowland Water District & Walnut Valley Water District (through Puente Basin Water Agency)	System Interties	Covina Irrigating Company Interconnection		Conceptual	RWD, WVWD	2-4 yrs	$4,122,000				X			X		X	Meets 2 of the regional benefits	Action involves multiple adjacent agencies	Mid-term action
7	Walnut Valley Water District w/ Pomona (through Spadra Basin GSA)	New Extraction Wells	Spadra Basin Optimization Scenario 3		Conceptual	WVWD, Pomona	≥ 4 yrs	$160,527,246	X						X		X	Meets 2 of the regional benefits	Action involves multiple adjacent agencies	Long-term action
8	City of Covina Water Department	Upgrade Aging Infrastructure	Grand Avenue Water Main Replacement Project		Unknown		2027	$8,500,000					X					Meets 1 of the regional benefits	Single agency action	Mid-term action

Project Number	Agency	Type of Mitigation Action	Project/Program Name	Location	Stage	Regional Partners	Timing/ Schedule	Estimated Capital Costs ($)	Potential Benefits									Review		
									Increase Local Supply			Operational Flexibility			Water Supply Reliability					
									New Extraction Wells	Enhanced Well Efficiency	Groundwater Treatment Projects	System Interties	Upgrade Aging Infrastructure	Conservation and Efficiency	Projects that increase overall supply	Projects that reduce drought dependency	Projects that reduce overall dependency	Regional Water Supply Reliability and Resiliency	Regional Benefits	Timing/ Schedule
9	City of Covina Water Department	Upgrade Aging Infrastructure	Pipeline Replacement		Unknown		≥ 4 yrs	$2-5M					X		X	X		Meets 2 of the regional benefits	Single agency action	Long-term action
10	City of Covina Water Department	Upgrade Aging Infrastructure	Hurst Tract Water Main Replacement Project	From Cypress Avenue to Covina Boulevard and Grand Avenue to Brightview Drive	Unknown		FY25	$1,500,000					X					Meets 1 of the regional benefits	Single agency action	Short-term action
11	City of Covina Water Department	Upgrade Aging Infrastructure	Edna Place Pipe Improvements Project	Grand Avenue to Barranca Avenue	Unknown		FY28	$6,000,000					X					Meets 1 of the regional benefits	Single agency action	Mid-term action
12	City of Covina Water Department	Upgrade Aging Infrastructure	Navilla and Forestdale Main Replacement Project	From Puente Street to Rowland Avenue and From Grand to Barranca Avenue	Unknown		FY26	$5,000,000					X					Meets 1 of the regional benefits	Single agency action	Short-term action
13	City of Covina Water Department	Upgrade Aging Infrastructure	Azusa Avenue Main Installation Project	From Badillo Street to Edna Place	Unknown		FY27	$2,500,000					X					Meets 1 of the regional benefits	Single agency action	Mid-term action
14	City of Covina Water Department	Upgrade Aging Infrastructure	Fourth Avenue Water Main Replacement Project & Cypress Avenue Water Main Replacement Project	From Badillo Street to San Bernardino Road From Citrus Avenue to Barranca Avenue	Unknown		FY25	$2-5M					X					Meets 1 of the regional benefits	Single agency action	Short-term action

Project Number	Agency	Type of Mitigation Action	Project/Program Name	Location	Stage	Regional Partners	Timing/ Schedule	Estimated Capital Costs ($)	Potential Benefits									Review		
									Increase Local Supply			Operational Flexibility			Water Supply Reliability					
									New Extraction Wells	Enhanced Well Efficiency	Groundwater Treatment Projects	System Interties	Upgrade Aging Infrastructure	Conservation and Efficiency	Projects that increase overall supply	Projects that reduce drought dependency	Projects that reduce overall dependency	Regional Water Supply Reliability and Resiliency	Regional Benefits	Timing/ Schedule
15	City of Covina Water Department	Upgrade Aging Infrastructure	Cypress Reservoir Water Booster Improvement Project	1051 E. Cypress Street	Unknown		FY24	$850,000					X					Meets 1 of the regional benefits	Single agency action	Short-term action
16	City of Covina Water Department	Upgrade Aging Infrastructure	Rancho La Merced Water Improvement Project (Design Only)	Rancho La Merced	Unknown		FY24	$100,000					X					Meets 1 of the regional benefits	Single agency action	Short-term action
17	City of Covina Water Department	Conservation and Efficiency	Water Master Plan & Rate Update City-Wide	City-Wide	Unknown		FY24	$250,000						X				Meets 1 of the regional benefits	Single agency action	Short-term action
18	City of Covina Water Department	Upgrade Aging Infrastructure	San Joaquin Road and Rambling Road Main Replacement	From Covina Hills to Navilla Place	Unknown		FY27	$4,000,000					X					Meets 1 of the regional benefits	Single agency action	Mid-term action
19	City of Glendora	Enhanced Well Efficiency	Well #7 (Vosburg) Replacement	201 South Virginia Ave. Azua, CA	Feasibility		≥ 4 yrs	$2,000,000		X								Meets 1 of the regional benefits	Single agency action	Long-term action
20	City of Glendora	Upgrade Aging Infrastructure	North Glendora Tank Replacement	Glendora, CA	Feasibility		1-2 yrs	$1,180,000					X					Meets 1 of the regional benefits	Single agency action	Short-term action
21	City of Glendora	New Extraction Wells	Well #14 Replacement	Glendora, CA	Feasibility		≥ 4 yrs	$600,000	X						X	X		Meets 2 of the regional benefits	Single agency action	Long-term action
22	City of Glendora	Conservation and Efficiency	Turf Removal for Large Commercial and Municipal Properties	Glendora, CA	Design		≤ 1 yr	$550,000.00						X	X	X		Meets 2 of the regional benefits	Single agency action	Short-term action

Project Number	Agency	Type of Mitigation Action	Project/Program Name	Location	Stage	Regional Partners	Timing/ Schedule	Estimated Capital Costs ($)	Potential Benefits									Review		
									Increase Local Supply			Operational Flexibility			Water Supply Reliability					
									New Extraction Wells	Enhanced Well Efficiency	Groundwater Treatment Projects	System Interties	Upgrade Aging Infrastructure	Conservation and Efficiency	Projects that increase overall supply	Projects that reduce drought dependency	Projects that reduce overall dependency	Regional Water Supply Reliability and Resiliency	Regional Benefits	Timing/ Schedule
23	City of Glendora	Enhanced Well Efficiency	Redrilling Wells 10 and 11 for Exploration	Well-10 Location: GPS-340839.06N / 1175102.54W - Elev. 918' Cable Tool-1912 to 525' Well-11 Location: GPS-340829.20N / 1175113.46W - Elev.882' Cable Tool-1913 to 496'	Unknown		≥ 4 yrs	$2-5M		X								Meets 1 of the regional benefits	Single agency action	Long-term action
24	City of Glendora	System Interties	Pipeline Intertie Replacements		Unknown		2-4 yrs	≤ $2M				X						Meets 1 of the regional benefits	Single agency action	Mid-term action
25	City of Glendora	Enhanced Well Efficiency	Well 2 Replacement		Unknown		1-2 yrs	$2-5M		X								Meets 1 of the regional benefits	Single agency action	Short-term action
26	City of La Verne	System Interties	Connections to Weymouth WTP		Conceptual		2-4 yrs	≤ $2M				X						Meets 1 of the regional benefits	Single agency action	Mid-term action
27	City of La Verne	Groundwater Treatment Projects	Well Treatment 6th and White, Lincoln and Mills - Ion-Ex Plant	6th and white water facility	Conceptual		≥ 4 yrs	$2-5M			X				X	X		Meets 2 of the regional benefits	Single agency action	Long-term action
28	City of La Verne	Enhanced Well Efficiency	La Verne Heights Well #1 Replacement - Ion-Ex	LVH #1	Conceptual		≥ 4 yrs	$2-5M		X								Meets 1 of the regional benefits	Single agency action	Long-term action

Project Number	Agency	Type of Mitigation Action	Project/Program Name	Location	Stage	Regional Partners	Timing/ Schedule	Estimated Capital Costs ($)	Potential Benefits									Review		
									Increase Local Supply			Operational Flexibility			Water Supply Reliability					
									New Extraction Wells	Enhanced Well Efficiency	Groundwater Treatment Projects	System Interties	Upgrade Aging Infrastructure	Conservation and Efficiency	Projects that increase overall supply	Projects that reduce drought dependency	Projects that reduce overall dependency	Regional Water Supply Reliability and Resiliency	Regional Benefits	Timing/ Schedule
29	City of La Verne	System Interties	Conjunctive Use Concepts (Six Basins, Pomona Basin, Live Oak Basin)		Conceptual		≥ 4 yrs	≥ $10M				X						Meets 1 of the regional benefits	Single agency action	Long-term action
30	City of La Verne	Conservation and Efficiency	AMI	City wide	Design		2-4 yrs	$2-5M						X				Meets 1 of the regional benefits	Single agency action	Mid-term action
31	City of Pomona	New Extraction Wells, Enhanced Well Efficiency, Upgrade Aging Infrastructure, Groundwater Treatment Projects	Pomona Combined Project (Groundwater Quality Improvement, Anion Exchange Plant, & Reservoir 5)		Unknown		≥ 4 yrs	≥ $10M	X	X	X		X		X	X		Meets all regional benefits	Single agency action	Long-term action
32	City of Pomona	Upgrade Aging Infrastructure	Reservoir 6		Unknown		2029	≤ $2M					X					Meets 1 of the regional benefits	Single agency action	Long-term action
33	City of Industry	System Interties	Surface Water Storage Project		Unknown		≥ 4 yrs	≥ $10M				X						Meets 1 of the regional benefits	Single agency action	Long-term action
34	City of Industry	System Interties	Water Distribution System Reliability Project	Lat: 33.957826 Long: -117.858392	Design		Late 2025	$1,200,000				X						Meets 1 of the regional benefits	Single agency action	Short-term action
35	Three Valleys	Groundwater Treatment Projects	Filter Drain Valves		Conceptual		2025	$200,000			X							Meets 1 of the regional benefits	Regional action	Short-term action
36	Three Valleys	System Interties	Padua Pump Station		Conceptual		≥ 4 yrs	$5-10M				X						Meets 1 of the regional benefits	Regional action	Long-term action

Project Number	Agency	Type of Mitigation Action	Project/Program Name	Location	Stage	Regional Partners	Timing/ Schedule	Estimated Capital Costs ($)	Potential Benefits									Review		
									Increase Local Supply			Operational Flexibility			Water Supply Reliability					
									New Extraction Wells	Enhanced Well Efficiency	Groundwater Treatment Projects	System Interties	Upgrade Aging Infrastructure	Conservation and Efficiency	Projects that increase overall supply	Projects that reduce drought dependency	Projects that reduce overall dependency	Regional Water Supply Reliability and Resiliency	Regional Benefits	Timing/ Schedule
37	Three Valleys	Upgrade Aging Infrastructure, Conservation and Efficiency	Sludge Pond Mixing Upgrade		Conceptual		2027	$800,000					X	X				Meets 1 of the regional benefits	Regional action	Mid-term action
38	Three Valleys	Enhanced Well Efficiency	Grand Avenue Well Improvement		Conceptual		2029	$250,000		X								Meets 1 of the regional benefits	Regional action	Long-term action
39	Three Valleys	Enhanced Well Efficiency	Well 2 Improvement		Conceptual		2027	$200,000		X								Meets 1 of the regional benefits	Regional action	Mid-term action
40	Three Valleys	Conservation and Efficiency	PM-21 [Miramar] Bypass Magmeter		Conceptual		2026	$2,300,000						X				Meets 1 of the regional benefits	Regional action	Short-term action
41	Three Valleys	System Interties	Miramar Pumpback		Conceptual		2028	$2,000,000				X			X			Meets 2 of the regional benefits	Regional action	Short-term action
42	Three Valleys	Upgrade Aging Infrastructure	Hydroelectric Facilities Efficiency Upgrades		Conceptual		2030	$3,000,000					X					Meets 1 of the regional benefits	Regional action	Long-term action
43	Three Valleys	System Interties, Enhanced Well Efficiency	Groundwater Reliability Improvement Program		Feasibility	RWD, WVWD, Glendora	≥ 4 yrs	≥ $10M		X		X			X			Meets all regional benefits	Regional action	Long-term action
44	Three Valleys	Conservation and Efficiency	Renewable Energy Project[1]		Conceptual		2027	$250,000										Meets 1 of the regional benefits	Regional action	Mid-term action
45	Three Valleys	Upgrade Aging Infrastructure	Miramar System Condition Assessment		Conceptual		1-2 yrs	$2-5M					X					Meets 1 of the regional benefits	Regional action	Short-term action

Project Number	Agency	Type of Mitigation Action	Project/Program Name	Location	Stage	Regional Partners	Timing/ Schedule	Estimated Capital Costs ($)	Potential Benefits									Review		
									Increase Local Supply			Operational Flexibility			Water Supply Reliability					
									New Extraction Wells	Enhanced Well Efficiency	Groundwater Treatment Projects	System Interties	Upgrade Aging Infrastructure	Conservation and Efficiency	Projects that increase overall supply	Projects that reduce drought dependency	Projects that reduce overall dependency	Regional Water Supply Reliability and Resiliency	Regional Benefits	Timing/ Schedule
46	Suburban Water System	Groundwater Treatment Projects	201 PFOA/PFAS treatment	9825 Mission Mill Road Whittier, CA 90601	Design		2-4 yrs	$30,000,000			X							Meets 1 of the regional benefits	Single agency action	Mid-term action
47	Suburban Water System	Groundwater Treatment Projects	Plant 410 Treatment Plant		Unknown		2-4 yrs	$3,200,000			X							Meets 1 of the regional benefits	Single agency action	Mid-term action
48	Suburban Water System	Upgrade Aging Infrastructure	Plant 128 Pump Station and Reservoir Replacement		Unknown		≤ 1 yr	$5,500,000					X					Meets 1 of the regional benefits	Single agency action	Short-term action
49	Valencia Heights Water Company	Upgrade Aging Infrastructure	Grand Ave waterline replacement		Design		2-4 yrs	$400,000					X					Meets 1 of the regional benefits	Single agency action	Mid-term action
50	Valencia Heights Water Company	Upgrade Aging Infrastructure	Reservoir rehab and retrofitting #4a		Design		2-4 yrs	$400,000					X					Meets 1 of the regional benefits	Single agency action	Mid-term action
51	Valencia Heights Water Company	Upgrade Aging Infrastructure	Reservoir rehab and retrofitting #6b		Design		1-2 yrs	$500,000					X					Meets 1 of the regional benefits	Single agency action	Short-term action
52	Valencia Heights Water Company	Upgrade Aging Infrastructure	Reservoir rehab and retrofitting #6a		Design		1-2 yrs	$500,000					X					Meets 1 of the regional benefits	Single agency action	Short-term action
53	Valencia Heights Water Company	Upgrade Aging Infrastructure	Reservoir rehab and retrofitting #4b		Design		≥ 4 yrs	$500,000.00					X					Meets 1 of the regional benefits	Single agency action	Long-term action
54	Valencia Heights Water Company	Upgrade Aging Infrastructure	Golden Bough waterline replacement		Design		≥ 4 yrs	$550,000					X					Meets 1 of the regional benefits	Single agency action	Long-term action

[1] Project #44 is included to account for all proposed mitigation actions. However, upon further review with Three Valleys, it was determined that Project #44 does not qualify as a drought mitigation action.