Yucaipa Valley Water District

Notice and Agenda of a Board Workshop

Tuesday, May 24, 2016 at 4:00 p.m.

MEETING LOCATION:	District Administration Building 12770 Second Street, Yucaipa
MEMBERS OF THE BOARD:	Director Ken Munoz, Division 1 Director Bruce Granlund, Division 2 Director Jay Bogh, Division 3 Director Lonni Granlund, Division 4 Director Tom Shalhoub, Division 5

I. Call to Order

II. Public Comments At this time, members of the public may address the Board of Directors on matters within its jurisdiction; however, no action or significant discussion may take place on any item not on the meeting agenda.

III. Staff Report

IV. Presentations

A. Overview of the California Drought and Yucaipa Valley Water District's Action Plan Related to the State Water Resources Control Board Water Conservation Restrictions [Workshop Memorandum No. 16-084 - Page 5 of 262]

B. Presentation of the Regional Water Allocation Agreement for Water Imported by the San Gorgonio Pass Water Agency and Suggested Water Policies for Future Service by Yucaipa Valley Water District [Workshop Memorandum No. 16-085 - Page 17 of 262]

C. Presentation of the Regional Urban Water Management Plan - Yucaipa Valley Water District [Workshop Memorandum No. 16-086 - Page 35 of 262]

V. Capital Improvement Projects

A. Status Report on the Construction of a 6.0 Million Gallon Drinking Water Reservoir R-12.4 - Calimesa [Workshop Memorandum No. 16-087 - Page 212 of 262]

B. Status Report on the Construction of Future Recycled Water Pipelines Throughout the Service Area of the Yucaipa Valley Water District [Workshop Memorandum No. 16-088 - Page 215 of 262]

Any person with a disability who requires accommodation in order to participate in this meeting should telephone Erin Anton at (909) 797-5117, at least 48 hours prior to the meeting in order to make a request for a disability-related modification or accommodation.

Materials related to an item on this agenda submitted to the Board of Directors after distribution of the workshop packet are available for public inspection during normal business hours at the District office located at 12770 Second Street, Yucaipa. Meeting material is also be available on the District's website at www.yvwd.dst.ca.us

VI. Administrative Issues

A. Overview of the Operating Budget and Capital Improvement Plan for Fiscal Year 2017 [Workshop Memorandum No. 16-089 - Page 221 of 262]

B. Identification and Declaration of Bad Debt for Calendar Year 2014 [Workshop Memorandum No. 16-090 - Page 233 of 262]

C. Review of Draft Resolution No. 2016-xx Establishing the Appropriation Limit for Fiscal Year 2016-17 [Workshop Memorandum No. 16-091 - Page 234 of 262]

D. Renewal of Insurance Policies for Fiscal Year 2017 [Workshop Memorandum No. 16-092 - Page 252 of 262]

VII. Director Comments

VIII. Closed Session

A. Personnel Matter: Evaluation of General Counsel
(Government Code 54957(b)

IX. Adjournment

Staff Report

Yucaipa Valley Water District

Presentations

Yucaipa Valley Water District

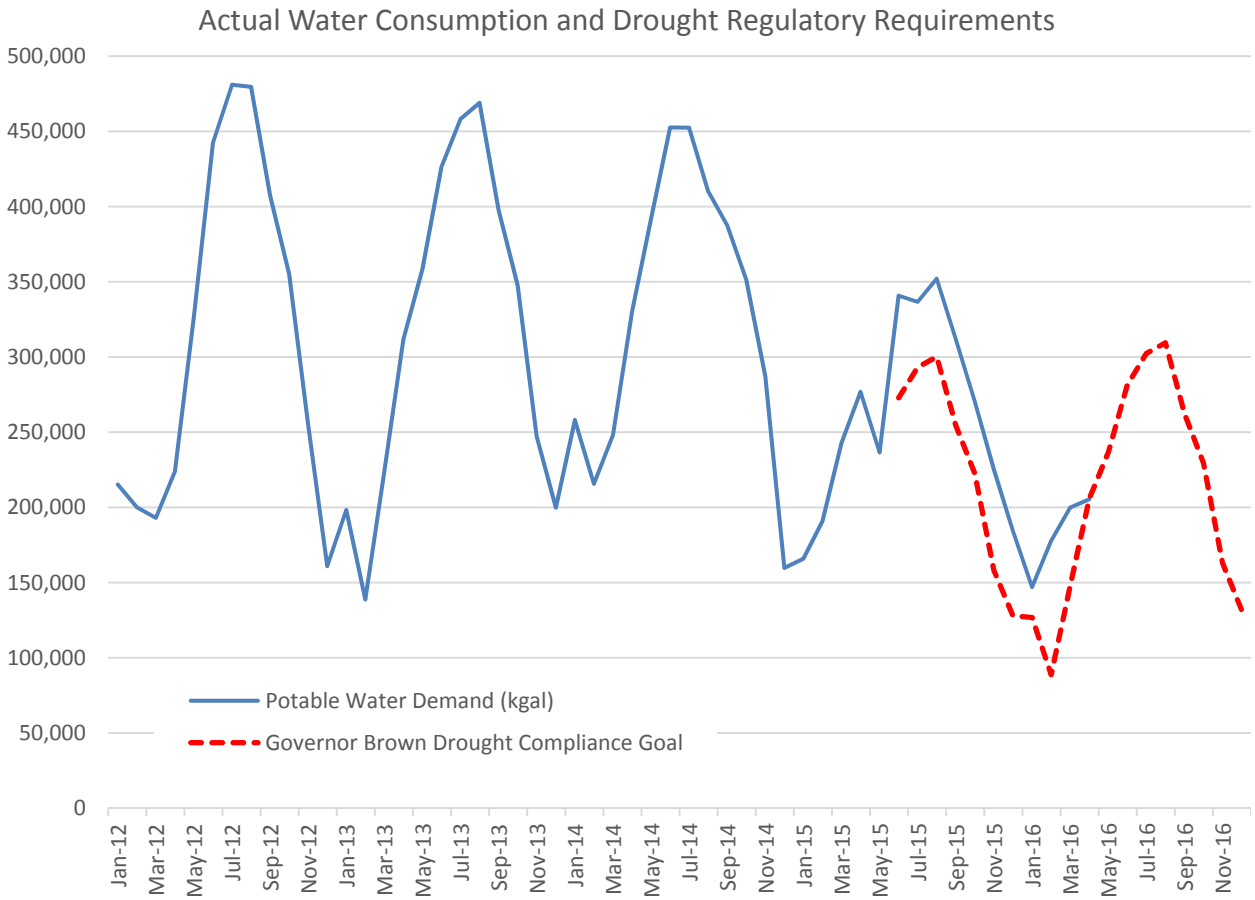
Yucaipa Valley Water District

Workshop Memorandum 16-084

Date: **May 24, 2016**

Subject: **Overview of the California Drought and Yucaipa Valley Water District's Action Plan Related to the State Water Resources Control Board Water Conservation Restrictions**

On May 5, 2015, the State Water Resources Control Board ("SWRCB") adopted emergency regulations to achieve a 25% statewide reduction in potable urban water use. These stringent water use regulations required the Yucaipa Valley Water District to achieve a 36% reduction from the amount of drinking water produced in 2013. In March 2016, the SWRCB modified the emergency water conservation requirements for Yucaipa Valley Water District to a 34% reduction from the amount of drinking water produced in 2013. In order to achieve this level of water conservation, the Yucaipa Valley Water District will need to provide water based on the following water demand curve.



The chart above illustrates the difference between Governor Brown's Drought Compliance Goal in 2014 at a 25% reduction, a 36% reduction in potable water use up to February 2016, and a 34% reduction from March 1, 2016 based on the 2013 baseline period. To be within compliance, the State Water Resources Control Board requires the District will need to sell no more than two-thirds of the drinking water consumed by our community in 2013.

In April 2016, the Yucaipa Valley Water District reported a savings of 34% putting our service area into compliance with the regulations for the first time.

On Wednesday, May 18, 2016, the State Water Resources Control Board adopted a new "stress test" approach to water conservation that will be in effect until January 2017. A copy of the adopted regulations are attached for discussion at the board workshop.

PROPOSED TEXT OF EMERGENCY REGULATION

Article 22.5. Drought Emergency Water Conservation.

Sec. 863. Findings of Drought Emergency.

(a) The State Water Resources Control Board finds as follows:

(1) On January 17, 2014, the Governor issued a proclamation of a state of emergency under the California Emergency Services Act based on drought conditions;

(2) On April 25, 2014, the Governor issued a proclamation of a continued state of emergency under the California Emergency Services Act based on continued drought conditions;

(3) On April 1, 2015, the Governor issued an Executive Order that, in part, directs the State Board to impose restrictions on water suppliers to achieve a statewide 25 percent reduction in potable urban usage through February, 2016; require commercial, industrial, and institutional users to implement water efficiency measures; prohibit irrigation with potable water of ornamental turf in public street medians; and prohibit irrigation with potable water outside newly constructed homes and buildings that is not delivered by drip or microspray systems;

(4) On November 13, 2015, the Governor issued an Executive Order that directs the State Board to, if drought conditions persist through January 2016, extend until October 31, 2016 restrictions to achieve a statewide reduction in potable usage;

(5) On May 9, 2016, the Governor issued an Executive Order that directs the State Board to adjust and extend its emergency water conservation regulations through the end of January 2017 in recognition of the differing water supply conditions for many communities;

(~~5~~6) The drought conditions that formed the basis of the Governor's emergency proclamations continue to exist; and

(~~6~~7) The drought conditions will likely continue for the foreseeable future and additional action by both the State Water Resources Control Board and local water suppliers will likely be necessary to prevent waste and unreasonable use of water and to further promote conservation.

Authority: Section 1058.5, Water Code.
References: Article X, Section 2, California Constitution; Sections 102, 104, 105, and 275, Water Code; *Light v. State Water Resources Control Board* (2014) 226 Cal.App.4th 1463.

Sec. 864. End-User Requirements in Promotion of Water Conservation.

(a) To prevent the waste and unreasonable use of water and to promote water conservation, each of the following actions is prohibited, except where necessary to address an immediate health and safety need or to comply with a term or condition in a permit issued by a state or federal agency:

(1) The application of potable water to outdoor landscapes in a manner that causes runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures;

(2) The use of a hose that dispenses potable water to wash a motor vehicle, except where the hose is fitted with a shut-off nozzle or device attached to it that causes it to cease dispensing water immediately when not in use;

(3) The application of potable water to driveways and sidewalks;

(4) The use of potable water in a fountain or other decorative water feature, except where the water is part of a recirculating system;

(5) The application of potable water to outdoor landscapes during and within 48 hours after measurable rainfall;

~~(6) The serving of drinking water other than upon request in eating or drinking establishments, including but not limited to restaurants, hotels, cafes, cafeterias, bars, or other public places where food or drink are served and/or purchased;~~

(~~7~~6) The irrigation with potable water of ornamental turf on public street medians; and

(~~8~~7) The irrigation with potable water of landscapes outside of newly constructed homes and buildings in a manner inconsistent with regulations or other requirements established by the California Building Standards Commission and the Department of Housing and Community Development.

~~(b) To promote water conservation, operators of hotels and motels shall provide guests with the option of choosing not to have towels and linens laundered daily. The hotel or motel shall prominently display notice of this option in each guestroom using clear and easily understood language.~~

(~~e~~b) Immediately upon this subdivision taking effect, all commercial, industrial and institutional properties that use a water supply, any portion of which is from a source other than a water supplier subject to section 864.5 or 865 of this article, shall target water use reductions commensurate with those required of the nearest urban water supplier under section 864.5 or, if applicable, section 865. ~~shall either:~~

~~(1) Limit outdoor irrigation of ornamental landscapes or turf with potable water to no more than two days per week; or~~

~~(2) Reduce potable water usage supplied by sources other than a water supplier by 25 percent for the months of June 2015 through October 2016 as compared to the amount used from those sources for the same months in 2013~~.

(~~d~~c) The taking of any action prohibited in subdivision (a) or (~~e~~d), or the failure to take any action required in subdivision (b) or (c), is an infraction punishable by a fine of up to five hundred dollars ($500) for each day in which the violation occurs. The fine for the infraction is in addition to, and does not supersede or limit, any other remedies, civil or criminal.

(~~e~~d)(1) To prevent the waste and unreasonable use of water and to promote water conservation, any homeowners' association or community service organization or similar entity is prohibited from:

(A) Taking or threatening to take any action to enforce any provision of the governing documents or architectural or landscaping guidelines or policies of a common interest development where that provision is void or unenforceable under section 4735, subdivision (a) of the Civil Code; or

(B) Imposing or threatening to impose a fine, assessment, or other monetary penalty against any owner of a separate interest for reducing or eliminating the watering of vegetation or lawns during a declared drought emergency, as described in section 4735, subdivision (c) of the Civil Code.

(2) As used in this subdivision:

(A) "Architectural or landscaping guidelines or policies" includes any formal or informal rules other than the governing documents of a common interest development.

(B) "Homeowners' association" means an "association" as defined in section 4080 of the Civil Code.

(C) "Common interest development" has the same meaning as in section 4100 of the Civil Code.

(D) "Community service organization or similar entity" has the same meaning as in section 4110 of the Civil Code.

(E) "Governing documents" has the same meaning as in section 4150 of the Civil Code.

(F) "Separate interest" has the same meaning as in section 4185 of the Civil Code.

(3) If a disciplinary proceeding or other proceeding to enforce a rule in violation of subdivision (~~e~~d)(1) is initiated, each day the proceeding remains pending shall constitute a separate violation of this regulation.

Authority: Section 1058.5, Water Code.
References: Article X, Section 2, California Constitution; Sections 4080, 4100, 4110, 4150, 4185, and 4735, Civil Code; Sections 102, 104, 105, 275, 350, and 10617, Water Code; *Light v. State Water Resources Control Board* (2014) 226 Cal.App.4th 1463.

Sec. 864.5. Self-Certification of Supply Reliability for Three Additional Years of Drought.

(a) To prevent the waste and unreasonable use of water and to meet the requirements of the Governor's May 9, 2016 Executive Order, each urban water supplier shall:

(1) Identify and report on a form provided by the Board, no later than June 15, 2016, the conservation standard that the supplier will be required to meet under this section;

(2) Identify and report on a form provided by the Board, no later than June 15, 2016, the data relied upon by the supplier to determine the conservation standard reported pursuant to this subdivision including, but not limited to identification of each source of supply the supplier intends to rely on and the quantity of water available under that source of supply given the assumptions of this section;

(3) Certify, no later than June 15, 2016, that the conservation standard reported pursuant to this subdivision is based on the information and assumptions identified in this section; and

(4) Beginning June 1, 2016, reduce its total potable water production by the percentage identified as its conservation standard in this section each month, compared to the amount used in the same month in 2013.

(b) Each urban water supplier's conservation standard pursuant to this section shall be the percentage by which the supplier's total potable water supply is insufficient to meet the total potable water demand in the third year after this section takes effect under the following assumptions:

(1) The next three years' precipitation is the same as it was in water years 2013-2015;

(2) The supplier's total potable water demand for each of the next three years will be the supplier's average annual total potable water production for the years 2013 and 2014;

(3) The supplier's total potable water supply shall include only water sources of supply available to the supplier that could be used for potable drinking water purposes;

(4) Each urban water supplier's conservation standard shall be calculated as a percentage and rounded to the nearest whole percentage point.

(c) Beginning June 1, 2016, each urban water supplier shall comply with the conservation standard it identifies and reports pursuant to subdivision (a).

(d) Compliance with the conservation standard reported pursuant to subdivision (a) shall be measured monthly and assessed on a cumulative basis through January 2017.

(e) Each urban water wholesaler shall calculate, to the best of its ability, and no later than June 8, 2016, the volume of water that it expects it would deliver to each urban water supplier in each of the next three years under the assumptions identified in subdivision (b), and post that calculation, and the underlying analysis, to a publicly-accessible webpage.

(f) Submitting any information pursuant to this subdivision that the person who submits the information knows or should have known is materially false is a violation of this regulation, punishable by civil liability of up to five hundred dollars ($500) for each day in which the violation occurs. Every day that the error goes uncorrected constitutes a separate violation. Civil liability for the violation is in addition to, and does not supersede or limit, any other remedies, civil or criminal.

(g) Any urban water supplier that does not comply with this section shall comply with the applicable conservation standard identified in section 865.

Authority: Section 1058.5, Water Code.
References: Article X, Section 2, California Constitution; Sections 102, 104, 105, 275, 350, 1846, 10617 and 10632, Water Code; *Light v. State Water Resources Control Board* (2014) 226 Cal.App.4th 1463.

Sec. 865. Mandatory Actions by Water Suppliers.

(a) As used in this ~~section~~article:

(1) "Distributor of a public water supply" has the same meaning as under section 350 of the Water Code, except it does not refer to such distributors when they are functioning solely in a wholesale capacity, but does apply to distributors when they are functioning in a retail capacity.

(2) "R-GPCD" means residential gallons per capita per day.

(3) "Total potable water production" means all potable water that enters into a water supplier's distribution system, excluding water placed into storage and not withdrawn for use during the reporting period, or water exported outsider the supplier's service area.

(4) "Urban water supplier" means a supplier that meets the definition set forth in Water Code section 10617, except it does not refer to suppliers when they are functioning solely in a wholesale capacity, but does apply to suppliers when they are functioning in a retail capacity.

(5) "Urban water wholesaler" means a wholesaler of water to more than one urban water supplier.

(6) "Water year" means the period from October 1 through the following September 30. Where a water year is designated by year number, the designation is by the calendar year number in which the water year ends.

(b) In furtherance of the promotion of water conservation each urban water supplier shall:

(1) Provide prompt notice to a customer whenever the supplier obtains information that indicates that a leak may exist within the end-user's exclusive control.

(2) Prepare and submit to the State Water Resources Control Board by the 15th of each month a monitoring report on forms provided by the Board. The monitoring report shall include the amount of potable water the urban water supplier produced, including water provided by a wholesaler, in the preceding calendar month and shall compare that amount to the amount produced in the same calendar month in 2013. The monitoring report shall specify the population served by the urban water supplier, the percentage of water produced that is used for the residential sector, descriptive statistics on water conservation compliance and enforcement efforts, the number of days that outdoor irrigation is allowed, and monthly commercial, industrial and institutional sector use. The monitoring report shall also estimate the gallons of water per person per day used by the residential customers it serves.

(c)(1) To prevent the waste and unreasonable use of water and to meet the requirements of the Governor's ~~November 13, 2015~~May 9, 2016 Executive Order, each urban water supplier that does not submit a self-certification in compliance with section 864.5 shall reduce its total potable water production by the percentage identified as its conservation standard in this ~~subdivision~~section. Each urban water supplier's conservation standard considers its service area's relative per capita water usage.

~~(2) Each urban water supplier whose source of supply does not include groundwater or water imported from outside the hydrologic region in which the water supplier is located, and that has a minimum of four years' reserved supply available, may submit to the Executive Director for approval a request that, in lieu of the reduction that would otherwise be required under paragraphs (3) through (10), the urban water supplier shall reduce its total potable water production by 4 percent for each month as compared to the amount used in the same month in 2013. Any such request shall be accompanied by information showing that the supplier's sources of supply do not include groundwater or water imported from outside the hydrologic region and that the supplier has a minimum of four years' reserved supply available.~~

(~~3~~2) Each urban water supplier whose average July-September 2014 R-GPCD was less than 65 shall reduce its total potable water production by 8 percent for each month as compared to the amount used in the same month in 2013.

(~~4~~3) Each urban water supplier whose average July-September 2014 R-GPCD was 65 or more but less than 80 shall reduce its total potable water production by 12 percent for each month as compared to the amount used in the same month in 2013.

(~~5~~4) Each urban water supplier whose average July-September 2014 R-GPCD was 80 or more but less than 95 shall reduce its total potable water production by 16 percent for each month as compared to the amount used in the same month in 2013.

(~~6~~5) Each urban water supplier whose average July-September 2014 R-GPCD was 95 or more but less than 110 shall reduce its total potable water production by 20 percent for each month as compared to the amount used in the same month in 2013.

(~~7~~6) Each urban water supplier whose average July-September 2014 R-GPCD was 110 or more but less than 130 shall reduce its total potable water production by 24 percent for each month as compared to the amount used in the same month in 2013.

(~~8~~7) Each urban water supplier whose average July-September 2014 R-GPCD was 130 or more but less than 170 shall reduce its total potable water production by 28 percent for each month as compared to the amount used in the same month in 2013.

(~~9~~8) Each urban water supplier whose average July-September 2014 R-GPCD was 170 or more but less than 215 shall reduce its total potable water production by 32 percent for each month as compared to the amount used in the same month in 2013.

(~~10~~9) Each urban water supplier whose average July-September 2014 R-GPCD was 215 or more shall reduce its total potable water production by 36 percent for each month as compared to the amount used in the same month in 2013.

(d)(1) Beginning June 1, 2015, each urban water supplier that does not submit a self-certification in compliance with section 864.5 shall comply with the conservation standard specified in subdivision (c), with any modifications to the conservation standard pursuant to subdivision (f) applying beginning March 1, 2016.

(2) Compliance with the requirements of this subdivision shall be measured monthly and assessed on a cumulative basis through ~~October 2016~~January 2017.

(e)(1) Each urban water supplier that provides potable water for commercial agricultural use meeting the definition of Government Code section 51201, subdivision (b), may subtract the amount of water provided for commercial agricultural use from its potable water production total, provided that any urban water supplier that subtracts any water provided for commercial agricultural use from its total potable water production shall:

(A) Impose reductions determined locally appropriate by the urban water supplier, after considering the applicable urban water supplier conservation standard specified in subdivision (c), for commercial agricultural users meeting the definition of Government Code section 51201, subdivision (b) served by the supplier;

(B) Report its total potable water production pursuant to subdivision (b)(2) of this section, the total amount of water supplied for commercial agricultural use, and shall identify the reduction imposed on its commercial agricultural users and each recipient of potable water for commercial agricultural use;

(C) Certify that the agricultural uses it serves meet the definition of Government Code section 51201, subdivision (b); and

(D) Comply with the Agricultural Water Management Plan requirement of paragraph 12 of the April 1, 2015 Executive Order for all commercial agricultural water served by the supplier that is subtracted from its total potable water production.

(2) Submitting any information pursuant to subdivision (e)(1)(B) or (C) of this section that is found to be materially false by the Board is a violation of this regulation, punishable by civil liability of up to five hundred dollars ($500) for each day in which the violation occurs. Every day that the error goes uncorrected constitutes a separate violation. Civil liability for the violation is in addition to, and does not supersede or limit, any other remedies, civil or criminal.

(f) In consideration of the differences in climate affecting different parts of the state, growth experienced by urban areas and significant investments that have been made by some suppliers towards creating new, local, drought-resilient sources of potable water supply, an urban water supplier's conservation standard identified in subdivision (c) shall be reduced by an amount, not to exceed eight (8) percentage points total, as follows:

(1) For an urban water supplier whose service area evapotranspiration (ETo) for the months of July through September exceeds the statewide average evapotranspiration, as determined by the Board, for the same months by five (5) percent or more, the supplier's conservation standard identified in subdivision (c) shall be reduced:

(A) By two (2) percentage points if the supplier's service area evapotranspiration exceeds the statewide average by five (5) percent or more but less than ten (10) percent;

(B) By three (3) percentage points if the supplier's service area evapotranspiration exceeds the statewide average by ten (10) percent or more but less than twenty (20) percent;

(C) By four (4) percentage points if the supplier's service area evapotranspiration exceeds the statewide average by twenty (20) percent or more.

(D) Statewide average evapotranspiration is calculated as the arithmetic mean of all urban water suppliers' service area default evapotranspiration values for the months of July through September. Default service area evapotranspiration will be based on the California Irrigation Management System (CIMIS) ETo Zones Map zone for which the supplier's service area has the greatest area of overlap. In lieu of applying its default service area evapotranspiration, a supplier may use specific data from CIMIS stations within its service area that have at least a five-year period of record, or a three year continuous period of record, to identify a more specifically-applicable evapotranspiration for its service area. If no CIMIS station exists within the supplier's service area, a weather station of comparable accuracy, meeting the preceding period of record requirements, may be used. To qualify for the in-lieu climate adjustment, the supplier shall submit the following data to the Board by March 15, 2016 for each station: station ID; station location; and monthly average evapotranspiration, in inches per month, for July, August, and September for either the five-year period of record or the three-year continuous period of record.

(2) To account for water efficient growth experienced in the state since 2013, urban water suppliers' conservation standards shall be reduced by the product of the percentage change in potable water production since 2013 and the percentage reduction in potable water use required pursuant to subdivision (c), rounded to the nearest whole percentage point. Change in potable water production since 2013 shall be calculated as the sum of the following:

(A) The number of additional permanent residents served since January 1, 2013, multiplied by the average residential water use per person for that supplier's service area during the months of February through October, 2015, in gallons; and

(B) The number of new commercial, industrial and institutional connections since January 1, 2013, multiplied by the average commercial, industrial and institutional water use per connection for that supplier's service area during the months of February through October, 2015, in gallons.

(C) To qualify for the growth credit the supplier shall submit to the Board the following data by March 15, 2016: the number of additional permanent residents served since January 1, 2013 and the number of new commercial, industrial and institutional connections since January 1, 2013.

(3) For an urban water supplier that supplies, contracts for, or otherwise financially invests in, water from a new local, drought-resilient source of supply, the use of which does not reduce the water available to another legal user of water or the environment, the conservation standard identified in subdivision (c) shall be reduced:

(A) By one (1) percentage point if the supplier's qualifying source of supply is one (1) percent or more but less than two (2) percent of the supplier's total potable water production;

(B) By two (2) percentage points if the supplier's qualifying source of supply is two (2) percent or more but less than three (3) percent of the supplier's total potable water production;

(C) By three (3) percentage points if the supplier's qualifying source of supply is three (3) percent or more but less than four (4) percent of the supplier's total potable water production;

(D) By four (4) percentage points if the supplier's qualifying source of supply is four (4) percent or more but less than five (5) percent of the supplier's total potable water production;

(E) By five (5) percentage points if the supplier's qualifying source of supply is five (5) percent or more but less than six (6) percent of the supplier's total potable water production;

(F) By six (6) percentage points if the supplier's qualifying source of supply is six (6) percent or more but less than seven (7) percent of the supplier's total potable water production;

(G) By seven (7) percentage points if the supplier's qualifying source of supply is seven (7) percent or more but less than eight (8) percent of the supplier's total potable water production;

(H) By eight (8) percentage points if the supplier's qualifying source of supply is eight (8) percent or more of the supplier's total potable water production.

(I) To qualify for this reduction the supplier must certify, and provide documentation to the Board upon request demonstrating, the percent of its total potable water production that comes from a local, drought-resilient source of supply developed after 2013, the supplier's investment in that local, drought-resilient source of supply, and that the use of that supply does not reduce the water available to another legal user of water or the environment. To qualify for this reduction an urban water supplier shall submit the required certification to the Board by March 15, 2016.

(J) Certifications that do not meet the requirements of subdivision (f)(3)(I), including certifications for which documentation does not support that the source of supply is a local, drought-resilient source of supply, the use of which does not reduce the water available to another legal user of water or the environment, will be rejected. Submitting a certification or supporting documentation pursuant to subdivision (f)(3)(I) that is found to be materially false by the Board is a violation of this regulation, punishable by civil liability of up to five hundred dollars ($500) for each day in which the violation occurs. Every day that the error goes uncorrected constitutes a separate violation. Civil liability for the violation is in addition to, and does not supersede or limit, any other remedies, civil or criminal.

(4) No urban water supplier's conservation standard pursuant to this section shall drop below eight (8) percent as a consequence of the reductions identified in this subdivision. ~~No reduction pursuant to this subdivision shall be applied to any urban water supplier whose conservation standard is four (4) percent based on subdivision (e)(2).~~

(g)~~(1)~~ To prevent waste and unreasonable use of water and to promote water conservation, each distributor of a public water supply that is not an urban water supplier shall ~~take one or more of the following actions~~:

(1) Provide prompt notice to a customer whenever the supplier obtains information that indicates that a leak may exist within the end-user's exclusive control; and

~~(A) Limit outdoor irrigation of ornamental landscapes or turf with potable water by the persons it serves to no more than two days per week; or~~

~~(B) Reduce by 25 percent its total potable water production relative to the amount produced in 2013.~~

(2) ~~Each distributor of a public water supply that is not an urban water supplier shall submit~~ Submit a report by ~~September~~ December 15, 2016, on a form provided by the Board, that ~~either confirms compliance with subdivision (g)(1)(A) or~~ identifies total potable water production, by month, from December, 2015 through ~~August~~November, 2016, ~~and~~ total potable water production, by month, for the same months in 2013, and any actions taken by the supplier to encourage or require its customers to conserve water.

Authority: Section 1058.5, Water Code.
References: Article X, Section 2, California Constitution; Sections 102, 104, 105, 275, 350, 1846, 10617 and 10632, Water Code; *Light v. State Water Resources Control Board* (2014) 226 Cal.App.4th 1463.

Sec. 866. Additional Conservation Tools.

(a)(1) To prevent the waste and unreasonable use of water and to promote conservation, when a water supplier does not meet its conservation standard required by section 864.5 or section 865 the Executive Director, or the Executive Director's designee, may issue conservation orders requiring additional actions by the supplier to come into compliance with its conservation standard.

(2) A decision or order issued under this article by the Board or an officer or employee of the Board is subject to reconsideration under article 2 (commencing with section 1122) of chapter 4 of part 1 of division 2 of the Water Code.

(b) The Executive Director, or his designee, may issue an informational order requiring water suppliers, or commercial, industrial or institutional properties that receive any portion of their supply from a source other than a water supplier subject to section 864.5 or 865, to submit additional information relating to water production, water use or water conservation. The failure to provide the information requested within 30 days or any additional time extension granted is a violation subject to civil liability of up to $500 per day for each day the violation continues pursuant to Water Code section 1846.

(c) Orders issued under previous versions of this ~~subdivision~~section shall remain in effect and shall be enforceable as if adopted under this version. Changes in the requirements of this article do not operate to void or excuse compliance with orders issued before those requirements were changed.

Authority: Section 1058.5, Water Code.
References: Article X, Section 2, California Constitution; Sections 100, 102, 104, 105, 174, 186, 187, 275, 350, 1051, 1122, 1123, 1825, 1846, 10617 and 10632, Water Code; *Light v. State Water Resources Control Board* (2014) 226 Cal.App.4th 1463.

Yucaipa Valley Water District

Workshop Memorandum 16-085

Date: **May 24, 2016**

Subject: **Presentation of the Regional Water Allocation Agreement for Water Imported by the San Gorgonio Pass Water Agency and Suggested Water Policies for Future Service by Yucaipa Valley Water District**

On November 3, 2010, a presentation was provided to the San Gorgonio Pass Water Agency regarding an allocation concept that would provide rules and a structure for the distribution of imported water by retail water agencies in the region. At this time the Board of Directors of the San Gorgonio Pass Water Agency directed the Agency staff to work out the details of the allocation plan and report back to the Board of Directors. As the development of this public policy was debated with water managers in the region, the Agency staff declined to participate further in the development of the public policy due to their perceived "…inherent unfairness in allocating water". While the process was open for anyone interested in participating, the absence of representatives from the San Gorgonio Pass Water Agency and other water managers choosing not to be a part of the deliberations did not stop a group of retail water agencies interested in creating solutions to the ongoing water issues with the creation of consistent and fair rules to address the allocation issue.

On April 5, 2012, the San Gorgonio Pass Water Agency, water retailers, and elected officials from throughout the region were invited to a presentation at the City of Banning to discuss a proposed allocation plan. The proposed allocation plan distributed the existing 17,300 acre foot Table "A" entitlement of the San Gorgonio Pass Water Agency equally over all parcels paying property taxes within the boundary of a water retailer (the water retailers are capable of converting imported water to drinking water and conveying the drinking water to the property owners paying property taxes to the San Gorgonio Pass Water Agency).

The simple analogy for this allocation methodology is that the allocation plan is like rainfall being equally distributed across the service area of the San Gorgonio Pass Water Agency. In a year of full Table "A" entitlement, the 17,300 acre feet of imported water received by the San Gorgonio Pass Water Agency would cover the surface area of all water retailers to a depth of about 2.9 inches. If a retail water agency does not make use of the imported water, any

remaining (available) imported water is redistributed upon those areas that need the additional supply.

Following this presentation, some elected officials in opposition to the proposed methodology instead advocated spreading the existing 17,300 acre foot Table "A" entitlement of the San Gorgonio Pass Water Agency based on the amount of ad valorem taxes collected by the San Gorgonio Pass Water Agency. This proposed methodology suggests that a home worth $450,000 should receive three times as much imported water from the San Gorgonio Pass Water Agency as a home worth $150,000. While the distribution of imported water based on assessed valuation may be logical to some, this system becomes problematic when a water retailer attempts to predict the future assessed valuation of all communities within the San Gorgonio Pass Water Agency in order to determine the ultimate amount of water distributed to a water retailer. Using this method, the last community to develop will generally have a higher assessed valuation and will therefore receive a larger allocation of the imported water available from the San Gorgonio Pass Water Agency.

Following further discussion about the policy with retail water managers in the area and the San Gorgonio Pass Water Agency, the Yucaipa Valley Water District ultimately adopted the Allocation Agreement on June 20, 2013.

There was no further discussion about the allocation plan by the San Gorgonio Pass Water Agency until a presentation at a San Gorgonio Pass Water Agency meeting on December 14, 2015. At this meeting, the Yucaipa Valley Water District provided a presentation that was focused on specifically illustrating the relationship between the allocation plan and the purchase of additional water supplies for the region. Specifically, the Board of Directors of the San Gorgonio Pass Water Agency were provided the following illustration showing how the allocation plan is needed to complete the nexus for setting supplemental water facility capacity charges by retail water providers.

There continued to be no specific action by the San Gorgonio Pass Water Agency regarding this issue until March 21, 2016, when the SGPWA Board of Directors voted to hire and rely on the opinion(s) of a consultant that will analyze the existing and alternative public policies related to the distribution and allotment of imported water by the San Gorgonio Pass Water Agency to retail water customers. The San Gorgonio Pass Water Agency authorized the use of a consultant to fulfill the following scope of services for an expected cost of $5,000:

> The proposed scope of the consultant would be to study the Agency's current allocation methodology, the plan presented by retail agencies, and other allocation methodologies used by other wholesale water agencies with similar governance and finance structures; to manage one or more workshops; and to write up a final report for the Board.

Unfortunately, at the same board meeting, the San Gorgonio Pass Water Agency Board of Directors voted to not participate with the water retail agencies in joint board meetings with other elected officials in the area.

> **C. Appointment of Participation in Joint Board Meeting:** General Manager Davis stated that General Manager Joe Zoba (YVWD) submitted an email in which he provided additional joint board meeting dates for elected officials to attend; the meeting dates were provided to the Board. General Manager Davis stated that he was unclear if the Board wished to participate in any further joint board meetings. After discussion, Director Ball made a motion, seconded by Director Dickson, to continue attending the joint meetings, and notice each meeting. General Counsel Ferre explained to the Board that should a quorum not attended then the board members that are present will only be able to participate as a member of the public. *President Jeter requested a roll call vote.*

Roll Call:	***Aye***	***Noes***	***Abstain***
Director Stephenson	☐	☒	☐
Director Ball	☒	☐	☐
Director Fenn	☐	☒	☐
Director Melleby	☐	☒	☐
Director Duncan	☐	☒	☐
Director Dickson	☐	☐	☒
President Jeter	☒	☐	☐

Motion failed 2-4-1.

Instead, on April 4, 2016, San Gorgonio Pass Water Agency President John Jeter appointed two members of the Board of Directors of the San Gorgonio Pass Water Agency to participate in facilitated meetings that will require the use of a consultant to act as an interpreter to filter and focus the discussions with elected officials from the retail water agencies (customers of the San Gorgonio Pass Water Agency).

> **D. Appointment of Ad Hoc Committee for Facilitated Process:** President Jeter announced that Directors Dickson and Stephenson are appointed to the ad hoc committee for the facilitated process. Director Ball expressed his reasons as to why and who should be on the committee. Director Fenn expressed his desire to have a third person on the committee and that he would be willing to be a participant. President Jeter stated that Directors Dickson and Stephenson will remain as the appointees to the ad hoc committee for the facilitated process.

To date, the water retailers most interested in developing policies and solutions to the water shortages in the San Gorgonio Pass area have participated in public meetings on March 31, 2016, and April 28, 2016. The next meeting is scheduled for May 26, 2016.

The purpose of this agenda item is to discuss the SGPWA workshop held on May 10th and to review the updated allocation plan for the distribution of imported water in the San Gorgonio Pass area.

Proposed Final Agreement - May 3, 2016

REGIONAL WATER ALLOCATION AGREEMENT FOR WATER IMPORTED BY THE SAN GORGONIO PASS WATER AGENCY

This Agreement, effective _____, 2016, by and between, the San Gorgonio Pass Water Agency, a State Water Contractor (hereinafter referred to as "SGPWA"); the City of Banning, a California municipal corporation; Banning Heights Mutual Water Company, a California mutual water company; Beaumont Cherry Valley Water District, a California irrigation district; Cabazon Water District, a California water district; High Valleys Water District, a California water district; Mission Springs Water District, a California county water district; South Mesa Mutual Water Company, a California mutual water company; and Yucaipa Valley Water District, a California county water district; each individually referred to or collectively referred to in this Agreement as "Party" or "Parties".

The term Water Retailers refers to the following Parties to this Agreement: City of Banning; Banning Heights Mutual Water Company; Beaumont Cherry Valley Water District; Cabazon Water District; High Valleys Water District; Mission Springs Water district; South Mesa Mutual Water Company; and Yucaipa Valley Water District.

RECITALS

A. California's water law and policy, Article X, Section 2 of the California Constitution requires that all uses of the State's water be both reasonable and beneficial. Specifically, Article X, Section 2 states in part, "It is hereby declared that because of the conditions prevailing in this State the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare."

B. On November 16, 1962, the State of California, acting by and through the Department of Water Resources, and the San Gorgonio Pass Water Agency entered into a Water Supply Contract (including all amendments thereto) pursuant to the provisions of the California Water Resources Development Bond Act and the State Central Valley Project Act and other applicable laws.

C. The Water Supply Contract between the Department of Water Resources and the San Gorgonio Pass Water Agency has been amended eighteen times, with the latest amendment dated December 26, 2007. The Water Supply Contract provides a Maximum Annual Table "A" Allocation of 17,300 acre feet per water year of imported water from the State Water Project to the San Gorgonio Pass Water Agency.

D. The statute creating the San Gorgonio Pass Water Agency is codified at Chapter 101, Section 15(g) of the Appendix to the California Water Code, which specifically provides that the San Gorgonio Pass Water Agency is to "...sell water under the control of the agency to cities, and to other public corporations and public agencies within the agency…for use within said agency without any preference…".

E. The Urban Water Management Planning Act (California Water Code, Section 10610 et. seq.) requires California's urban water suppliers to ensure adequate water supplies are available to meet existing and future water demands. Every urban water supplier that either provides over 3,000 acre-feet of water annually or serves more than 3,000 or more connections is required to assess the reliability of its water sources over a 20-year planning horizon considering normal, dry, and multiple dry years. Currently, only the following four Water Retailers are required to prepare an Urban Water Management Plan: Beaumont Cherry Valley Water District, City of Banning, Mission Springs Water District and Yucaipa Valley Water District.

F. While not all Water Retailers are required to prepare an Urban Water Management Plan, all agencies recognize the importance of implementing a reliable and sustainable long-term water resource management strategy.

G. On February 18, 2014, the Board of Directors of the San Gorgonio Pass Water Agency adopted Resolution No. 2014-02, *A Resolution of the San Gorgonio Pass Water Agency Establishing a Policy for Meeting Future Water Demands*. Section 3(a) of this Resolution states, "the [San Gorgonio Pass Water] Agency is prepared to take the necessary actions to provide its service area with adequate supplies of water to meet expanding and increasing needs in the years ahead. As additional water resources are required to meet increasing needs, the [San Gorgonio Pass Water] Agency will be prepared to take the necessary actions to deliver such supplies.

H. On July 27, 2015, the Board of Directors of the San Gorgonio Pass Water Agency adopted Resolution No. 2015-05, *Resolution of the Board of Directors of the San Gorgonio Pass Water Agency to Adopt Facility Capacity Fees for Facilities and Water*. The recitals of said Resolution state, "…the Board of Directors finds and determines that the present existing water importation, production, transportation, delivery facilities and water supplies are inadequate to meet anticipated demand".

I. The Parties recognize that this Agreement allocating imported water from the San Gorgonio Pass Water Agency will: (1) provide guidance and certainty as to the amount of imported water expected to be provided to each of the Water Retailers thereby enabling better water resource planning; (2) support the ability for each Water Retailer to establish community specific policies and goals based on uniform and consistent rules pertaining to the delivery and use of imported water; (3) promote improved water management since an annual water resource allocation methodology will enable each Water Retailer to implement and directly benefit from specific policies related to sustainability, dual plumbing, conjunctive use, and the setting of Water Retailer specific Facility Capacity Charges for the purchase of water rights and water supplies; and (4) improve coordination and management of existing and future imported water supplies between the Water Retailers and the San Gorgonio Pass Water Agency.

AGREEMENT

Now, therefore, based on the foregoing recitals the Parties agree as follows:

1. **Allocation of Water from the State Water Project.** The following provision of the San Gorgonio Pass Water Agency Law, codified at Chapter 101, Section 15.5 of the Appendix to the California Water Code, is hereby incorporated into this Agreement to ensure the

allocation of imported water is consistent with the intent of the Legislature. "It is the intent of the Legislature that, in allocating water received from the State Water Project pursuant to this act, the highest priority shall be given to eliminating groundwater overdraft conditions within any agency or district receiving the water."

2. Boundaries of the Parties. The service area of the San Gorgonio Pass Water Agency is comprised of a portion or the service area of each Water Retailer that is a Party to this Agreement.

2.1. The Sphere of Influence of each Water Retailer within the service area of the San Gorgonio Pass Water Agency shall be the basis of the water resource allocation methodology set forth in this Agreement. The Sphere of Influence boundary is utilized since this boundary line represents the reasonable planning boundary of each Water Retailer's legal boundary and designates the Water Retailer's ultimate service area.

2.2. The Parties acknowledge that the Local Agency Formation Commission of Riverside County will periodically review the Sphere of Influence of each Water Retailer and adjust these boundaries based on factors such as current and future land use, current and future need and capacity for service, municipal service reviews, and any relevant communities of interest. Any such change in the Sphere of Influence shall also change the Baseline Source of Supply Allocation set forth in this Agreement.

2.3. The Sphere of Influence Boundary Area for each Water Retailer within the service area of the San Gorgonio Pass Water Agency is as follows:

Table 1 - Sphere of Influence Boundary Summary

Column 1 Water Retailer	Column 2 Sphere of Influence Boundary Area (Acres)	Column 3 Percentage of Area for Each Water Retailer
Mission Springs Water District	656	0.9%
Banning Heights Mutual Water Company	876	1.2%
South Mesa Mutual Water Company	974	1.3%
High Valleys Water District	5,287	7.3%
Cabazon Water District	7,990	11.0%
Yucaipa Valley Water District	17,388	24.0%
City of Banning	19,644	27.1%
Beaumont Cherry Valley Water District	19,693	27.2%
Morongo Band of Mission Indians	34,611	Not Applicable
Unincorporated Riverside County	34,043	Not Applicable
Unincorporated San Bernardino County	1,910	Not Applicable
SGPWA Service Area	**142,416**	**100.0%**
Total Area of Water Retailers	71,852	

Source: San Gorgonio Pass Water Agency Supplemental Water Supply Planning Study, Albert A. Webb Associates, October 2009, plus the territory of Mission Springs Water District within the San Gorgonio Pass Water Agency.

3. **State Water Project Reliability.** The availability of water from the State Water Project is based on a long-term average reliability. The California Department of Water Resources routinely prepares a *State Water Project Delivery Reliability Report* to describe current and future deliveries from the State Water Project.

3.1. The Water Retailers acknowledge that there will be annual fluctuations in the availability of water deliveries to the San Gorgonio Pass Water Agency from the State Water Project and that these fluctuations will affect the amount of water available to the Water Retailers.

3.2. The San Gorgonio Pass Water Agency agrees not to reduce the current Maximum Table "A" Allocation of 17,300 acre feet without prior written consent from a majority of the Water Retailers that are receiving imported water supplies.

4. **Baseline Source of Supply and Baseline Source of Supply Allocation.** The San Gorgonio Pass Water Agency has entered into a contract with the California Department of Water Resources for a Maximum Table "A" Allocation of 17,300 acre feet per water year from the State Water Project for use within the service area of the San Gorgonio Pass Water Agency. This contract also includes access to other water resources specifically assigned to the San Gorgonio Pass Water Agency, in the existing contact/amendments plus future amendments, which include but are not limited to, water supplies such as the Turn-Back Water Pool Program and the Article 21 Program. All of the existing and future contractual water supplies not paid for by specific Water Retailers shall be referred to in this Agreement as the Baseline Source of Supply Allocation.

4.1. The Parties agree that the Sphere of Influence of each Water Retailer in the service area of the San Gorgonio Pass Water Agency shall be used to calculate the Baseline Source of Supply Allocation.

Table 2 - Baseline Water Resource Allocation

Column 1 Water Retailer	Column 2 Percentage of Area for Each Water Retailer (Table 1)	Column 3 Baseline Source of Supply Allocation (Acre Feet)
Mission Springs Water District	0.9%	157
Banning Heights Mutual Water Company	1.2%	209
South Mesa Mutual Water Company	1.3%	232
High Valleys Water District	7.3%	1,261
Cabazon Water District	11.0%	1,906
Yucaipa Valley Water District	24.0%	4,149
City of Banning	27.1%	4,687
Beaumont Cherry Valley Water District	27.2%	4,699

Morongo Band of Mission Indians	Not Applicable	Not Applicable
Unincorporated Riverside County	Not Applicable	Not Applicable
Unincorporated San Bernardino County	Not Applicable	Not Applicable
Maximum SGPWA Table "A" Allocation		**17,300**

4.2. The Baseline Source of Supply Allocation for each Water Retailer represents the initial quantity of imported water that each Water Retailer may receive from the San Gorgonio Pass Water Agency. This quantity of water excludes the allocation of excess Baseline Source of Supply and Supplemental Source of Supply as described below. For planning purposes for each Water Retailer, using the Baseline Source of Supply Allocation is intended to insure that the Maximum Table "A" Allocation of 17,300 acre feet provided by the San Gorgonio Pass Water Agency from the Department of Water Resources is not oversubscribed or over-allocated in the region.

4.3. The Parties acknowledge that any adjustment of the Sphere of Influence boundary of any Water Retailer after the effective date of this Agreement will result in an adjustment to the Baseline Water Resource Allocation.

4.3.1. Written notice of any proposed administrative action by the Local Agency Formation Commission that may change the Sphere of Influence boundary of any Water Retailer shall be provided to the Parties 90 days prior to any action by the Local Agency Formation Commission.

4.3.2. Section 4.3.1 shall also apply to a merger or consolidation of a Water Retailer. Any such merger or consolidation shall also result in an automatic adjustment of the Baseline Source of Supply Allocation.

4.4. The acquisition, purchase, exchange or transfer of any water supplies and/or water rights by the San Gorgonio Pass Water Agency shall be added to the Baseline Source of Supply and distributed to the Water Retailers pursuant to the percentages in Table 2 resulting in an increase of the Baseline Source of Supply Allocation. The quantity, quality and reliability of the water supplies acquired by the San Gorgonio Pass Water Agency shall be combined with the existing Maximum Table "A" Allocation of 17,300 acre feet in a manner that benefits or impacts all Parties in a proportional manner without any prejudice or preference. This Section excludes water purchased by Water Retailers as described in Section 5.

4.5. The water provided to the San Gorgonio Pass Water Agency pursuant to this Agreement as the Baseline Source of Supply shall be used by Water Retailers within their respective Sphere of Influence and shall not be assigned, exchanged, transferred, sold, or traded, directly or indirectly, to create or support a secondary water market, speculation, or similar activity with any party/non-party, public agency, private entity, developer, tribe, company investor, agricultural interest or speculator. This prohibition also applies to transfers of water in storage through, by and between the Beaumont Basin Watermaster or any similar entity.

4.6. No water in the Baseline Source of Supply Allocation shall be provided to any existing or new retail water agency or entity who is not a Party to this Agreement

without prior written approval of Water Retailers of a majority vote of a weighted average of the Baseline Source of Supply Allocation (Table 2, Column 3) of those Water Retailers that are a Party to this Agreement.

4.6.1. The San Gorgonio Pass Water Agency agrees that a retail water agency, or other entity, not a Party to this Agreement, shall be required to purchase a sufficient quantity of water rights and complete pipeline improvements to the existing conveyance and delivery system(s) such that no Party to this Agreement is damaged, impacted, or subordinated with additional expenses, water conveyance, water supply, water quality, or other any other matter under the authority, ability and discretion of the San Gorgonio Pass Water Agency.

4.6.2. The Parties may, by written agreement approved by a majority vote of the Water Retailers that are a Party to this Agreement, based on a weighted average of the Baseline Source of Supply Allocation (Table 2, Column 3), may temporarily transfer or exchange a portion of available imported water supplies to a non-party to this agreement.

4.7. Any improvement to the capital assets or facilities owned, operated or controlled by the San Gorgonio Pass Water Agency or the California Department of Water Resources that provides additional imported water resources or improves reliability will be reflected in the Baseline Source of Supply and the Baseline Source of Supply Allocation and distributed to the Water Retailers accordingly.

5. Supplemental Source of Supply and Supplemental Source of Supply Allocation. The Baseline Source of Supply Allocation quantity of imported water allotted to each Water Retailer pursuant to this Agreement will be increased with the purchase of any additional water rights as follows:

5.1. Purchase of Supplemental Source of Supply. Each Water Retailer may elect, in its sole and absolute discretion, to purchase imported water rights as an additional water supply to be provided above and beyond the Baseline Source of Supply Allocation. The coordinated purchase of additional water rights by one or more Water Retailers shall be accounted separately from the Baseline Source of Supply Allocation as a Supplemental Source of Supply for the specific Water Retailer(s). The purchase of a Supplemental Source of Supply may have a unique reliability that is different from the reliability of the Baseline Source of Supply and will be allotted to the Water Retailer(s) involved in the purchase of the water rights in a manner consistent with the specific reliability of the purchased water rights. Supplemental water rights purchased by any Water Retailer(s) shall remain the property of the Water Retailer in the event this Agreement is terminated pursuant to Section 9.1.

5.1.1. The purchase of Supplemental Source of Supply by a Water Retailer(s) shall be added to the amount of imported water identified as the Baseline Water Resource Allocation for the specific Water Retailer(s) purchasing the water rights. The Supplemental Source of Supply shall be added to the quantity of water used for planning purposes and identified as a separate and additional quantity of imported water than the Baseline Source of Supply Allocation provided pursuant to this Agreement.

5.1.2. The quantity, quality and reliability of any purchased supplemental water rights shall be identified independently and separately from the Baseline Source of Supply such that any degradation of water quality, reliability or other parameter shall not impact any Party to this Agreement. The Supplemental Water Rights shall be considered equivalent to the quantity and quality of imported water delivered as part of the Department of Water Resources and San Gorgonio Pass Water Agency Maximum Table "A" Allocation of 17,300 acre feet if the supply originates from the same location and conveyed using the same Department of Water Resources facilities. In this case, the quantity, quality and reliability shall be considered equal to the Baseline Source of Supply. If the Supplemental Source of Supply is not considered equal to the Baseline Source of Supply at any location prior to or within the Department of Water Resources facilities, then the Water Retailer(s) securing the water rights shall directly incur the quantified cost/expense and/or quantified benefit of the Supplemental Source of Supply.

5.1.3. A Water Retailer shall not be restricted at any time from applying funds paid to the San Gorgonio Pass Water Agency as part of the imported water rate component(s), as determined by the Board of Directors of the San Gorgonio Pass Water Agency, for the purchase of Supplemental Source of Supply.

5.1.4. The Supplemental Source of Supply may be sold, traded, exchanged or transferred between the Parties or non-parties at the sole discretion of the Water Retailer(s) acquiring the water rights.

6. **Annual Water Resource Apportionment.** An Annual Water Resource Apportionment is used to calculate the total amount of available water allocated by the San Gorgonio Pass Water Agency to each Water Retailer based on the Baseline Source of Supply Allocation plus any acquired Supplemental Source of Supply Allocation each year.

6.1. The Parties acknowledge that the annual amount of imported water available from all sources of supply (Baseline Source of Supply and Supplemental Source of Supply) are variable and based on factors such as seasonality, climatic changes, precipitation, snowpack, regulations, and drought. The regulatory, climatic and environmental changes will cause variability in the amount of water available to each Water Retailer on an annual basis regardless of the allocation of water assigned pursuant to this Agreement.

6.2. The amount of water available from the State Water Project is adjusted throughout each water year based on written notices issued by the California Department of Water Resources. Any notice issued by the California Department of Water Resources changing the Maximum Table "A" Allocation amount from the Department of Water Resources shall be effective on the date of issuance of the notice from the Department of Water Resources.

6.3. Distribution of the Baseline Source of Supply. The Baseline Source of Supply is typically based upon the availability of imported water from the State Water Project as determined by the Department of Water Resources.

6.3.1. That portion of the Baseline Source of Supply assigned to a Party electing not to execute the Agreement shall be considered a water resource not put to beneficial use and is therefore excess to the Baseline Source of Supply subject to be reapportioned as described in Section 6.3.5.

6.3.2. The re-allocation of the Baseline Source of Supply Apportionment shall be determined by calculating the sum in acre feet of the total Baseline Source of Supply, including but not limited to, all contractual water sources provided by the San Gorgonio Pass Water Agency from the Department of Water Resources plus water from any other State Water Contractor(s) provided to the San Gorgonio Pass Water Agency, excluding those water rights secured under contract by the Water Retailer(s). The Baseline Source of Supply Apportionment for each Water Retailer shall then be determined by multiplying the "Percentage of Area for Each Water Retailer" (Table 2, Column 2) by the quantity of Baseline Source of Supply as calculated above in acre feet. The Baseline Source of Supply Apportionment will adjusted throughout the year based on notices issued by the California Department of Water Resources allocating Table "A" water to the San Gorgonio Pass Water Agency.

6.3.3. In the event that the Department of Water Resources reduces the amount of Baseline Source of Supply provided to the San Gorgonio Pass Water Agency during the water year and one or more Water Retailers received an excess apportionment of the Baseline Source of Supply, then the Water Retailers and the San Gorgonio Pass Water Agency shall initiate drinking water transfers to resolve the disparity within the same year.

6.3.4. In the event one or more Water Retailers are unable to put any portion of their Baseline Source of Supply Apportionment to beneficial use, then the amount of any excess Baseline Source of Supply shall be reapportioned to any Water Retailer willing to purchase that excess Baseline Source of Supply from the San Gorgonio Pass Water Agency. The reapportionment of the excess Baseline Source of Supply from the first round of appointments shall continue by multiplying the "Percentage of Area for Each Water Retailer" (Table 2, Column 2) from each Water Retailer willing to purchase the excess Baseline Source of Supply by the quantity of excess Baseline Source of Supply remaining. The reapportionment process shall continue until there is no remaining Baseline Source of Supply.

6.3.5. In the event that there is excess Baseline Source of Supply remaining after the reapportionment process described above, then the San Gorgonio Pass Water Agency, at the sole discretion of the Board of Directors, shall decide the best way to utilize the excess supply for the benefit of the region.

6.4. Distribution of the Supplemental Source of Supply. The Annual Water Resource Apportionment for water available from the Supplemental Source of Supply Allocation is based upon the availability of imported water from the State Water Project as determined by the Department of Water Resources and/or based upon the availability of specific water rights purchased by the Water Retailer(s). The

Supplemental Source of Supply Apportionment is in addition to the Baseline Source of Supply Apportionment described above.

6.4.1. The Supplemental Source of Supply Apportionment shall be determined by calculating the sum in acre feet of all Supplemental Source of Supply(ies) from those water rights secured under contract by the Water Retailer(s). The Supplemental Source of Supply(ies) Apportionment for each Water Retailer shall be determined by the proportional amount of ownership of each water right secured by the Water Retailer(s). The Supplemental Source of Supply Apportionment may be adjusted throughout the water year based on notices issued by the California Department of Water Resources.

7. **Conjunctive Use of Baseline Source of Supply(ies) and Supplemental Source of Supply(ies).** Any Party to this Agreement may implement and use water allocated to that Party in a Conjunctive Use Project outside of the San Gorgonio Pass Water Agency as long as the water, minus project losses, is returned for use by that Party within the service area of the San Gorgonio Pass Water Agency.

8. **Excess Conveyance Capacity in State Water Project Facilities.** During times of water shortages, there will be excess pipeline, storage and conveyance capacity in the State Water Project. The Parties agree to cooperate to maximize the use and availability of excess State Water Project conveyance facility capacity in order to augment the water supplies within the service area of the San Gorgonio Pass Water Agency based on the same cost rate schedule utilized for routine deliveries of imported water charged to the San Gorgonio Pass Water Agency by the Department of Water Resources.

General Provisions

9. **General Provisions.** The following General Provisions have been incorporated herein:

9.1. Termination. This Agreement shall terminate immediately upon a 66% weighted vote using the Baseline Source of Supply Allocation (Table 2, Column 3) of those Water Retailers that are a Party to this Agreement.

9.2. Notices. All notices and demands which any Party is required to give to the others pursuant to this Agreement shall be given in writing by certified mail, return receipt requested with postage paid, by personal delivery, by facsimile or by private overnight courier service to the business address of the other Party.

9.3. Entire Agreement. This Agreement, together with all Exhibits and documents referred to herein, constitutes the entire Agreement among the Parties with respect to the subject matter hereof, and supersede all prior understandings or agreements.

9.4. Amendments. This Agreement may be modified or amended in writing by agreement of those Parties executing this Agreement that form a consensus in excess of a 66% weighted vote using the Baseline Source of Supply Allocation (Table 2, Column 3) of those Water Retailers that are a Party to this Agreement.

9.5. No Assignments. This Agreement and the rights, duties and benefits given in it, may not be assigned.

9.6. Partial Invalidity. If any provision of this Agreement is held by a court of competent jurisdiction to be invalid or unenforceable, the remainder of the Agreement shall continue in full force and effect and shall in no way be impaired or invalidated, and the Parties agree to substitute for the invalid or unenforceable provision a valid and enforceable provision that most closely approximates the intent and economic effect of the invalid or unenforceable provision.

9.7. Governing Law. This Agreement shall be governed by the laws of the State of California.

9.8. No Attorneys' Fees. Each Party shall bear its own attorneys' fees and expenses in the preparation and review and performance of this Agreement. In the event that any Party hereto institutes an action or proceeding for a declaration of the rights of the Parties under this Agreement, for injunctive relief, for an alleged breach or default of, or any other action arising out of, or related to, this Agreement, each Party shall bear their own attorney fees and litigation costs and expenses.

9.9. Successors and Assigns. This Agreement shall inure to the benefit of and be binding on the Parties to this Agreement and their respective successors and assigns.

9.10. Covenants, Conditions or Remedies. The waiver by one Party of the performance of any covenant, condition or promise, or of the time for performing any act, under this Agreement shall not invalidate this Agreement nor shall it be considered a waiver by such party of any other covenant, condition or promise, or of the time for performing any other act required, under this Agreement. The remedies set forth in this Agreement are cumulative and not exclusive to any other legal or equitable remedy available to a party. The exercise of any remedy provided in this Agreement shall not be a waiver of any consistent remedy provided by law, and the provisions of this Agreement for any remedy shall not exclude any other consistent remedies unless they are expressly excluded.

9.11. Exhibits. All exhibits to which reference is made in this Agreement are deemed incorporated in this Agreement whether or not actually attached. The following exhibits are attached to this Agreement:

- Exhibit "A" - San Gorgonio Pass Water Agency Aerial Boundary Map.
- Exhibit "B" - San Gorgonio Pass Water Agency Map of Major Water Retailers.

9.12. Counterparts. This Agreement may be executed in counterparts, each of which shall be deemed an original, but all of which, taken together, shall constitute one and the same instrument.

9.13. Legal Advice. Each Party has received independent legal advice from its attorneys with respect to the advisability of executing this Agreement and the meaning of the provisions. The provisions of this Agreement shall be construed as to the fair

meaning and not for or against any party based upon preparation of the document, or any attribution of such party as the sole source of the language in question.

Signature pages (Page 12 to Page 20) have been intentionally deleted from this memorandum.

Exhibit "A"

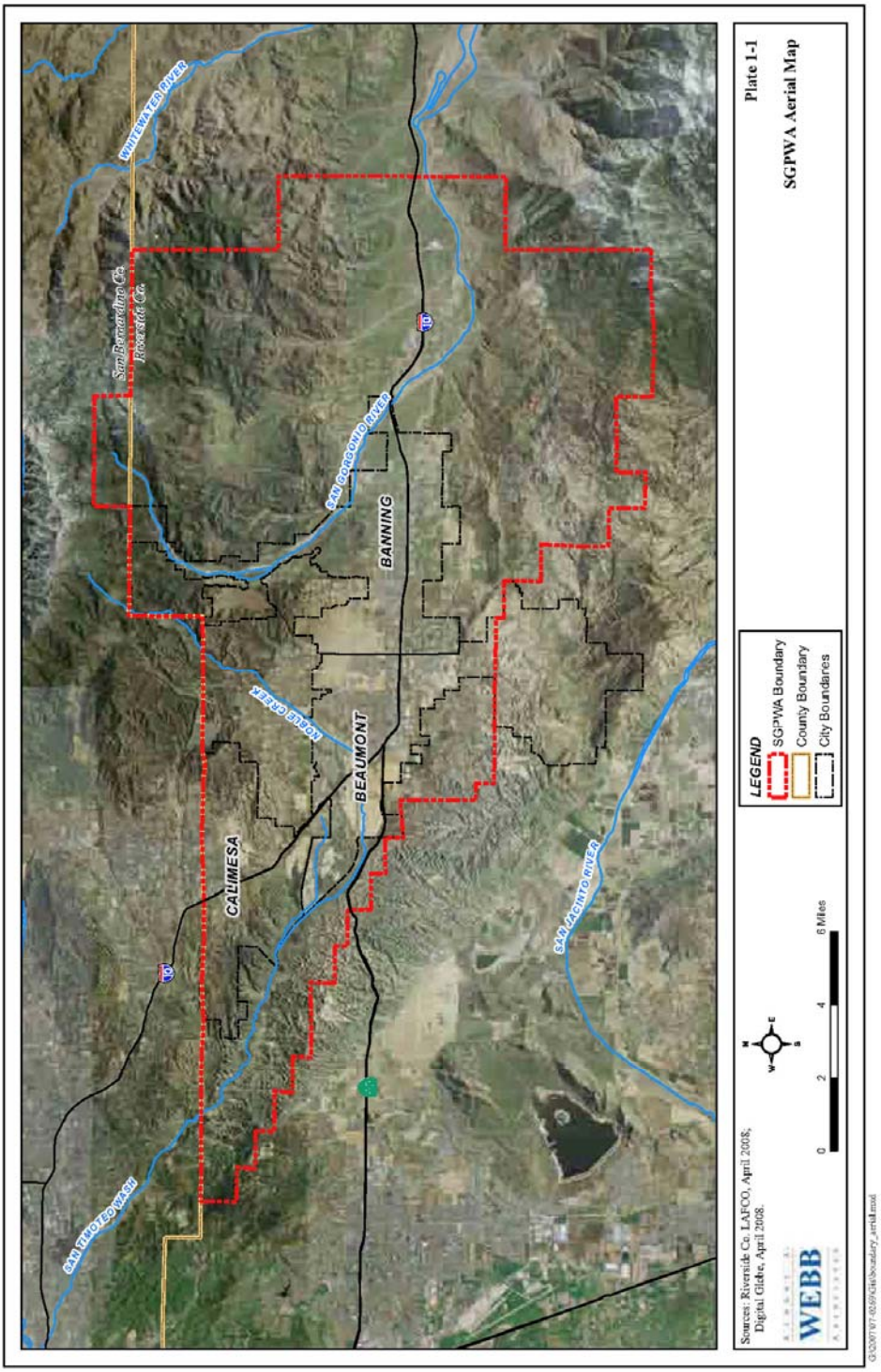

WHITEWATER RIVER
San Bernardino Co.
Riverside Co.
SAN GORGONIO RIVER
BANNING
NOBLE CREEK
BEAUMONT
CALIMESA
SAN JACINTO RIVER
SAN TIMOTEO WASH
10
LEGEND
SGPWA Boundary
County Boundary
City Boundaries
Plate 1-1
SGPWA Aerial Map
Sources: Riverside Co. LAFCO, April 2008;
Digital Globe, April 2008.
0
2
4
6 Miles
WEBB

Exhibit "B"

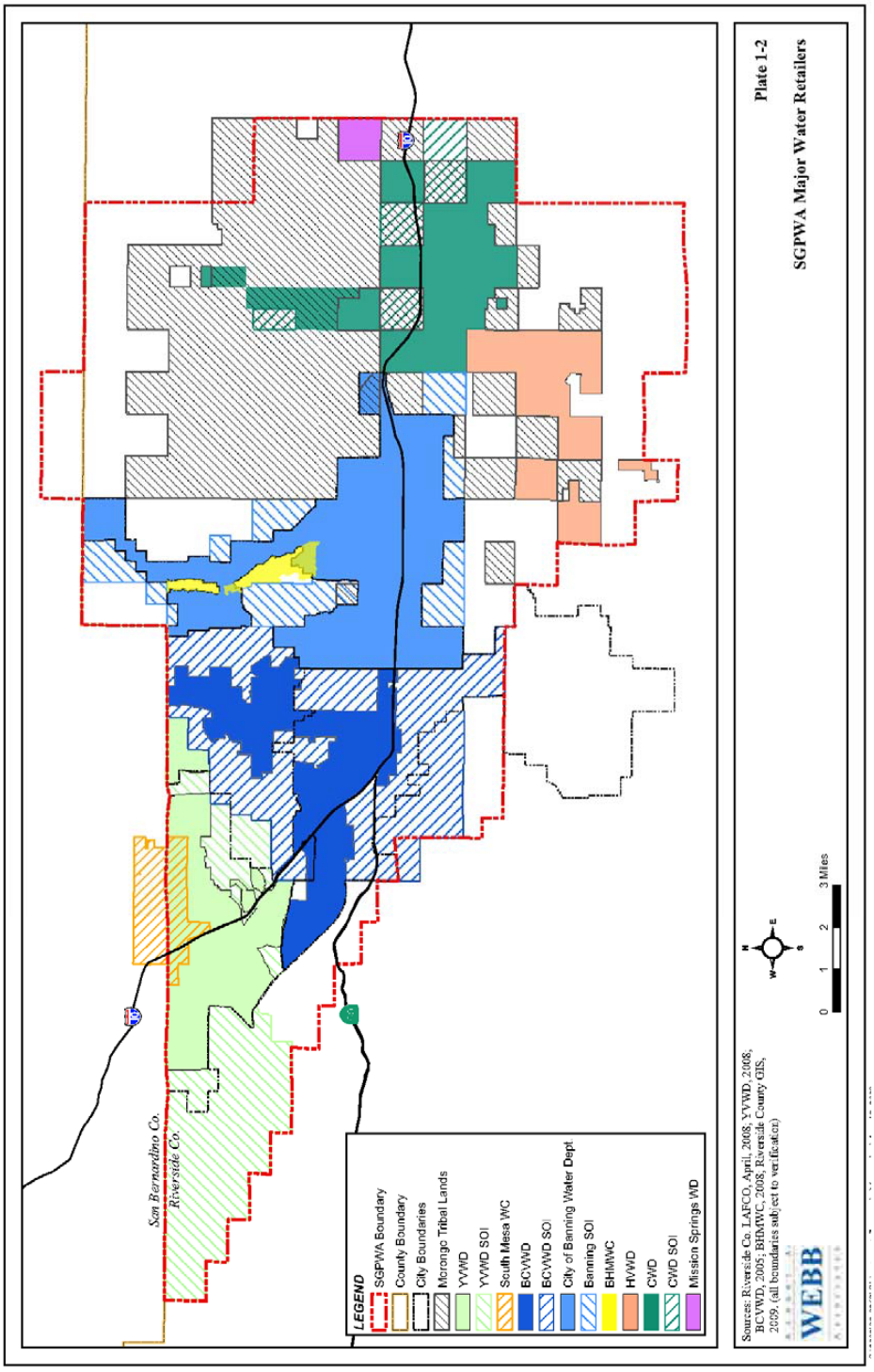


Plate 1-2
SGPWA Major Water Retailers
LEGEND
SGPWA Boundary
County Boundary
City Boundaries
Morongo Tribal Lands
YVWD
YVWD SOI
South Mesa WC
BCVWD
BCVWD SOI
City of Banning Water Dept.
Banning SOI
BHMWC
HVWD
CWD
CWD SOI
Mission Springs WD
San Bernardino Co.
Riverside Co.
Sources: Riverside Co. LAFCO, April, 2008; YVWD, 2008; BCVWD, 2005; BHMWC, 2008; Riverside County GIS, 2009. (all boundaries subject to verification)
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WEBB

Yucaipa Valley Water District

Workshop Memorandum 16-086

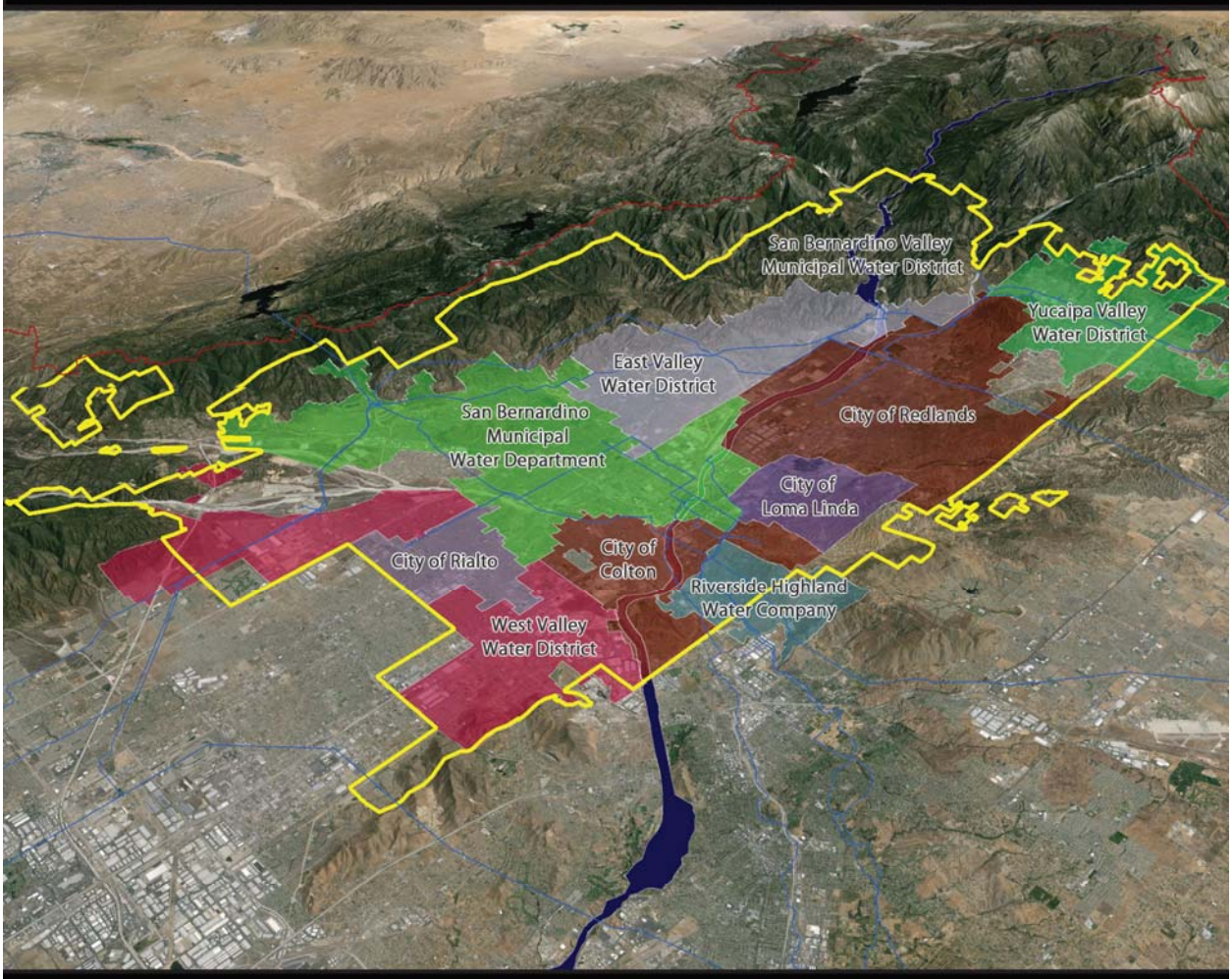
Date: **May 24, 2016**

Subject: **Presentation of the Regional Urban Water Management Plan - Yucaipa Valley Water District**

The 2015 Urban Water Management Plan for the Yucaipa Valley Water District has been released for public review and comment. The document is available online at www.yvwd.dst.ca.us.

During this workshop item, the District staff will provide an overview of the District's plan, which is included as Chapter 12 in the regional plan of the San Bernardino Valley Municipal Water District.

2015 San Bernardino Valley Regional
Urban Water Management Plan



• June 2016•

WSC
WATER SYSTEMS CONSULTING, INC.

2015 San Bernardino Valley Regional Urban Water Management Plan

Prepared for:

San Bernardino Valley Municipal Water District
East Valley Water District
City of Loma Linda
City of Redlands
City of San Bernardino Municipal Water Department
West Valley Water District
Yucaipa Valley Water District
City of Colton
City of Rialto
Riverside Highland Water Company

June 2016

DRAFT

Prepared by:

WSC
WATER SYSTEMS CONSULTING, INC.

Table of Contents

Figures

Tables

Appendices

A	Urban Water Management Act of 1983
B	Water Conservation Act
C	Notice of Preparation Letters, Notices of Public Hearing and Outreach Materials
D	Adoption Resolutions
E	DWR Population Tool Outputs
F	Climate Change Vulnerability Checklist
G	Water Shortage Contingency Plan Ordinance / Resolutions
H	Orange County Judgment
I	Western San Bernardino Judgment
J	Lytle Creek Judgment
K	Rialto Basin Decree
L	IRWMP Vulnerability to Catastrophic Interruption
M	AWWA Water Audits
N	CUWCC Coverage Report
O	DWR Standard SB X7-7 Tables
P	DWR UWMP Tables
Q	DWR Checklist for UWMP Requirements

Acronyms and Abbreviations

°C	degrees Celsius
°F	degrees Fahrenheit
AB	Assembly Bill
Accord	Seven Oaks Accord
AF	acre foot
AFY	acre feet per year
AHHG	Area of Historic High Groundwater
AMR	Automatic Meter Reader
APA	Administrative Procedures Act
AWWA	American Water Works Association
BBW	Beaumont Basin Watermaster
BDCP	Bay Delta Conservation Plan
Bear Valley Mutual	Bear Valley Mutual Water Company
Big Bear Municipal	Big Bear Municipal Water District
BMP	Best Management Practice
BTAC	Basin Technical Advisory Committee
CAL Green Code	2013 California Green Building Standards Code

CALWARN	California Water/Wastewater Agency Response Network
CAT	Climate Action Team
CCF	hundred cubic feet
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFS	cubic feet per second
CII	Commercial, Industrial, and Institutional
CIMIS	California Irrigation Management Irrigation System
Colton	City of Colton
Conservation District	San Bernardino Valley Water Conservation District
CUWCC	California Urban Water Conservation Council
CSUSB	California State University San Bernardino
CVP	Central Valley Project
DCR	DWR SWP Delivery Capacity Report
DDW	SWRCB Division of Drinking Water
Delta	Sacramento-San Joaquin River Delta
DFW	California Department of Fish and Wildlife
DIP	Ductile Iron Pipe
DMM	Demand Management Measure
DWR	California Department of Water Resources
EIR	Environmental Impact Report
EPA	United States Environmental Protection Agency
ERNIE	Emergency Response Network of the Inland Empire
ESA	Endangered Species Act
ET	Evapotranspiration
ETo	Reference Evapotranspiration
EVWD	East Valley Water District
FWC	Fontana Water Company
GAC	granulated activated carbon
GIS	Geographic Information System
GPCD	gallons per capita per day
GPM	gallons per minute
HCP	Upper Santa Ana River Habitat Conservation Plan
HECW	High Efficiency Clothes Washer
HET	High Efficiency Toilet
IERCD	Inland Empire Resources Conservation District
IRWMP	Integrated Regional Water Management Plan
IX	ion exchange
JPA	Joint Powers Authority
KAF	thousand acre feet
KAFY	thousand acre feet per year

LAFCO	Local Agency Formation Commission
Loma Linda	City of Loma Linda
MAF	million acre-feet
MCL	Maximum Contaminant Level
Metropolitan	The Metropolitan Water District of Southern California
MF	Multi-family
MG	million gallons
MGD	million gallons per day
MOU	Memorandum of Understanding
MSL	Mean Sea Level
MTBE	Methyl Tertiary Butyl Ether
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
OCWD	Orange County Water District
OWOW	SAWPA One Water One Watershed IRWMP
PCE	perchloroethylene
Plan	Regional Urban Water Management Plan for San Bernardino Valley
PVC	polyvinyl chloride
QWEZ	Qualified Water Efficient Landscaper
Redlands	City of Redlands
RHWC	Riverside Highland Water Company
RIX	Rapid Infiltration and Extraction
RPA	Reasonable and Prudent Alternative
RUWMP	Regional Urban Water Management Plan
RWQCB	Regional Water Quality Control Board
SAF	San Andreas Fault
SANBAG	San Bernardino Association of Governments
SAR	Santa Ana River
SARI	Santa Ana Regional Interceptor
SARWQCB	Santa Ana Regional Water Quality Control Board
SAWPA	Santa Ana Watershed Project Authority
SBBA	San Bernardino Basin Area
SBMWD	City of San Bernardino Municipal Water Department
SBX7-7	Senate Bill 7 of Special Extended Session 7
SCAG	Southern California Association of Governments
SF	Single Family
SGPWA	San Gorgonio Pass Water Agency
SOC	Synthetic Organic Chemicals
SOI	Sphere of Influence
State Water	State Water Project Water

SWP	State Water Project
SWRCB	State Water Resources Control Board
TDS	total dissolved solids
TCE	trichloroethylene
ULFT	Ultra-Low Flush Toilet
USARW	Upper Santa Ana River Watershed
USAWRA	Upper Santa Ana Water Resources Association
UV	ultraviolet
UWMP	Urban Water Management Plan
UWMP Act	Urban Water Management Planning Act
Valley District	San Bernardino Valley Municipal Water District
VOC	volatile organic compound
WBIC	Weather Based Irrigation Controller
Western	Western Municipal Water District of Riverside County
WSCP	water shortage contingency plan
WVWD	West Valley Water District
WFF	Water Filtration Facility
WRCC	Western Regional Climate Center
WRWFF	Wochholz Regional Water Recycling Facility
WSS	Water Sense Specification
WTP	water treatment plant
WWTP	waste water treatment plant
YVRWFF	Yucaipa Valley Regional Water Filtration Facility
YVWD	Yucaipa Valley Water District

Executive Summary

This Urban Water Management Plan (Plan) is a tool that provides a summary of anticipated supplies and demands for the years 2015 to 2040. This document was prepared for the following agencies within the San Bernardino Valley Municipal Water District service area:

- San Bernardino Valley Municipal Water District (wholesale water agency)
- East Valley Water District
- City of Loma Linda
- City of Redlands
- City of San Bernardino Municipal Water Department
- West Valley Water District
- Yucaipa Valley Water District
- City of Colton
- City of Rialto
- Riverside Highland Water Company

Figure ES-1 illustrates the geographic location of the agencies participating in this Regional Urban Water Management Plan (RUWMP). This Plan was prepared consistent with the Urban Water Management Plan Act (Act), the Water Conservation Act of 2009 (SB X7-7) and the Department of Water Resources (DWR) Guidebook for Urban Water Suppliers.

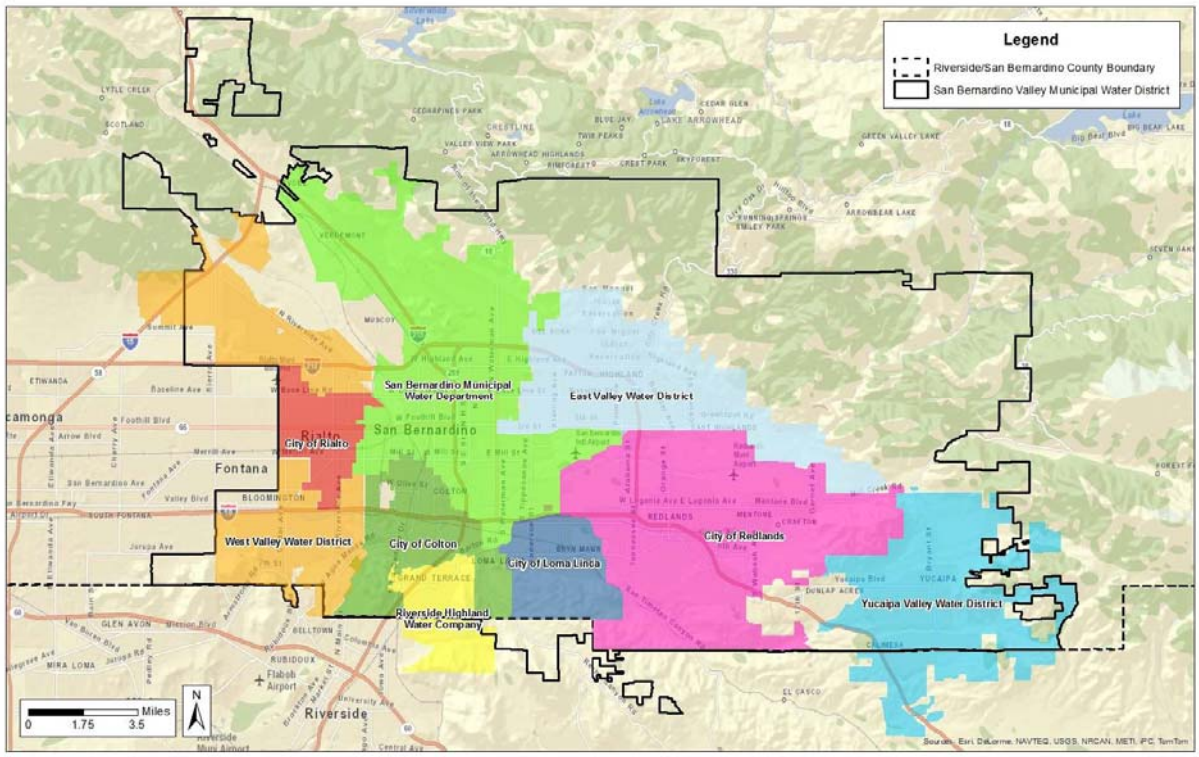


Figure ES-1-1. San Bernardino Valley Municipal Water District Service Area

Urban Water Management Plan Requirements

The Urban Water Management Plan Act requires evaluation of the following:

- Whether supplies will be sufficient to meet demands during the following hydrologic year types
  - Normal/average year
  - Single dry year
  - Multiple dry year sequence;
- Existing baseline water use in terms of gallons per capita per day (GPCD) (applies only to retail water suppliers);
- Targets for future water use consistent with the Water Conservation Act of 2009 (SB X7-7) which seeks a 20 percent reduction in per capita water use by 2020;
- Demand Management Measures (DMMs) implemented or planned for implementation as well as the methods proposed for achieving future water use targets;
- Water shortage contingency planning; and
- Notification and coordination with other water agencies, land use entities, and the community.

Meeting Demands in Normal, Single-Dry, and Multiple Dry Year Periods

Water Supplies

The participating agencies meet most of their demands with local groundwater and surface water. Imported water from the State Water Project (SWP) is also an important element of the supply portfolio. Recycled water makes up a relatively small part of existing supplies, but a number of programs are being planned that would increase the use of recycled water. The supplies used in 2015 by the agencies participating in the RUWPM are summarized in the figure below.

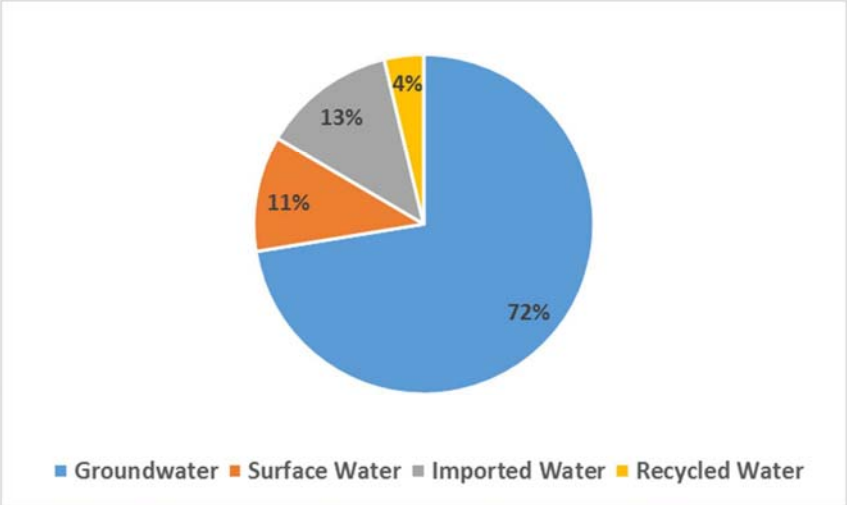


Figure ES-1-2. 2015 Supply Sources Utilized by Agencies Participating in RUWMP

An overview of water supplies is provided in Chapter 2, and the water sources available to each agency are presented in the individual agency chapters.

Water Demands

Each retail agency has prepared an estimate of its water demands through 2040. These demands are summarized in the figure below. The total demands are lower than the forecast in the 2010 RUWMP. The recent drought and mandatory water conservation measures have reduced demands considerably from the estimates that were presented in the 2010 RUWMP.

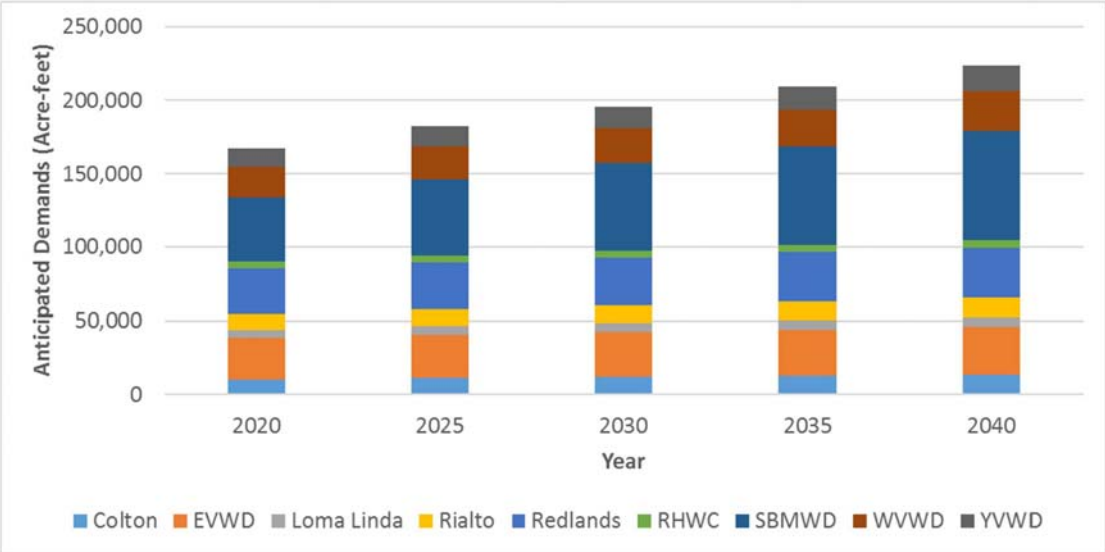


Figure ES-1-3. Anticipated Total Demands for Agencies Participating in RUWMP

Supplies versus Demands

The UWMP Act requires urban water suppliers to compare projected water use with the expected water supply for a 20-year period. Chapter 4 presents a regional comparison of supplies and demands. In addition, each retail agency's individual chapter includes a comparison of the agency's anticipated supplies and demands through 2040. The agencies participating in this RUWMP have identified adequate supplies to meet anticipated demands through 2040.

Compliance with the Water Conservation Act of 2009 (SBX7-7)

The Water Conservation Act of 2009 (SB X7-7) provides the regulatory framework to support a statewide reduction in urban per capita water use. Each retail water supplier must demonstrate compliance with SB X7-7 by determining its baseline water consumption and then establishing a future water use target in gallons per capita per day (GPCD).

Each agency calculated its baseline water use and its water use target in 2010. However, DWR provided a new interactive tool for estimating service area population for the 2015 UWMP cycle. Therefore, this report includes updated calculations of baseline water use and the 2020 water use target for each retail agency. These values are summarized in the figure below.

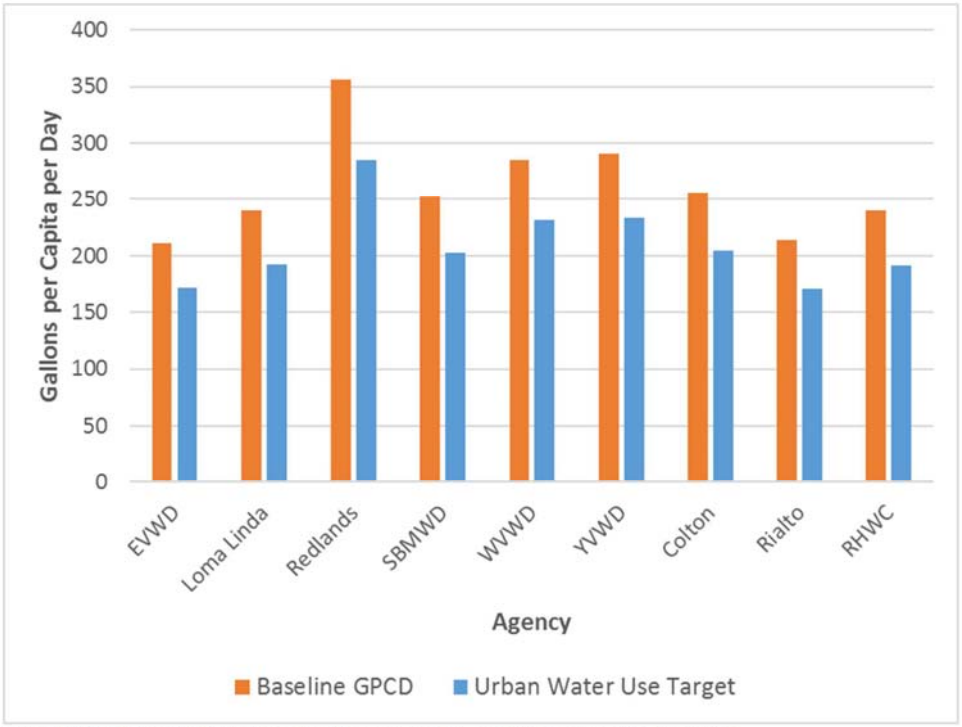


Figure ES-1-4. Baseline Water Use and Compliance Targets for Participating Agencies

Demand Management Measures

Demand Management Measures (DMMs) are used by each water supply agency to manage and reduce water consumption. The DWR Guidebook identifies categories of DMMs for which retail and wholesale agencies should report their progress. The individual chapters for each agency (Chapters 6 through 15) include a discussion of each agency's DMMs, and how they plan to maintain water use below the compliance targets established by SB X7-7.

Water Shortage Contingency Planning

Water supplies may be interrupted or reduced significantly through drought, natural disaster such as earthquake, a regional power outage, or a toxic spill that prevents delivery due to poor water quality. All of the participating agencies adopted the Upper Santa Ana River Watershed Integrated Regional Water Management Plan, which includes strategies and projects to overcome water shortages during emergencies. In addition, all the agencies participate in the Emergency Response Network of the Inland Empire (ERNIE) which is a water/wastewater mutual aid network within San Bernardino and Riverside counties.

Each of the retail water agencies (as detailed in the chapters for each retail agency) has identified voluntary and mandatory conservation measures that will go into effect during different stages of water shortage.

Notification and Coordination Requirements

The UWMP Act encourages input to an UWMP. Specifically, the UWMP Act requires:

- That each urban water supplier notify any city or county within which the supplier provides water, with at least 60 days' notice of the public hearing on its UWMP.
- Prior to adopting a plan, an urban water supplier shall hold a public hearing. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier at least once 14 days prior to the hearing and again 7 days prior to the hearing.
- Prior to adopting a plan, a retail water supplier shall conduct at least one public hearing to allow community input regarding the urban retail water supplier's implementation plan for complying with SB X7-7, to consider the economic impacts of the urban retail water supplier's implementation plan for complying with SB X7-7, and to adopt a method for determining its urban water use target.
- Within 30 days of adoption, an urban water supplier shall file a copy of the plan with DWR, the California State Library, and any city or county within which the supplier provides water. No later than 30 days after filing a copy of a plan with DWR, an urban water supplier shall make the plan available for review during normal business hours.

The agencies participating in this RUWMP sent letters to cities and counties, as well as other water agencies, notifying them of RUWMP preparation and soliciting input to the Plan. Notification letters were sent in February and March 2016. Each agency published hearing notices consistent with UWMP Act requirements. Hearings were conducted by each agency regarding the selection of water use targets, the implementation plan for complying with SB X7-7, and the potential economic impacts of complying with SB X7-7.

Following adoption, the Plan will be available during normal business hours at the administrative offices of each agency:

San Bernardino Valley Municipal Water District	380 E. Vanderbilt Way San Bernardino, CA
East Valley Water District	31111 Greenspot Road Highland, CA
City of Loma Linda	Department of Public Works 2551 Barton Road Loma Linda, CA
City of Redlands	Municipal Utilities Department and Engineering Department 35 Cajon Street Redlands, CA
City of San Bernardino Municipal Water Department	Water Department 300 N. D Street San Bernardino, CA
West Valley Water District	855 W. Baseline Road Rialto, CA
Yucaipa Valley Water District	12770 Second Street Yucaipa, CA
City of Colton	Public Works and Utility Services Department 160 S. 10th Street Colton, CA
City of Rialto	335 West Rialto Avenue Rialto CA
Riverside Highland Water Company	12374 Michigan Street Grand Terrace CA

Following adoption, the RUWMP will be submitted to DWR, the California State Library, and all the cities and counties within the service areas of the participating agencies.

1 Introduction

1.1 Overview

This document presents the 2015 Regional Urban Water Management Plan (Plan) for the San Bernardino Valley area, represented by the San Bernardino Valley Municipal Water District (Valley District) service area, and nine participating retail water purveyors: City of Colton, East Valley Water District, City of Loma Linda, City of Redlands, City of Rialto, Riverside Highland Water Company, City of San Bernardino Municipal Water Department, West Valley Water District, and Yucaipa Valley Water District.

This chapter describes the general purpose of the Plan, discusses Plan implementation, and provides general information about Valley District, the retail purveyors, and service area characteristics.

1.2 Purpose

The California Water Code requires urban water suppliers within the state to prepare and adopt Urban Water Management Plans (UWMPs) for submission to the California Department of Water Resources (DWR). The UWMPs, which are required to be filed every five years, must satisfy the requirements of the Urban Water Management Planning Act (UWMP Act) of 1983, including amendments that have been made to the UWMP Act and other applicable regulations. The UWMP Act requires urban water suppliers servicing 3,000 or more connections, or supplying more than 3,000 acre-feet (AF) of water annually, to prepare an UWMP. For wholesale water agencies without retail connections, the requirement is triggered by the annual delivery of 3,000 AF or more.

An UWMP is a planning tool that generally guides the actions of urban water suppliers. It provides managers and the public with a broad perspective on a number of water supply issues. It is not a substitute for project-specific planning documents, nor was it intended to be when mandated by the State Legislature. For example, the Legislature mandated that a plan include a section which "describes the opportunities for exchanges or water transfers on a short-term or long-term basis." (California Urban Water Planning Act, Article 2, Section 10630[d].) The identification of such opportunities, and the inclusion of those opportunities in a general water service reliability analysis, neither commit a water management agency to pursue a particular water exchange/transfer opportunity, nor precludes a water management agency from exploring exchange/transfer opportunities not identified in the plan. The preparation or adoption of an UWMP is not subject to review under the California Environmental Quality Act (CEQA) (Water Code section 10652). Before an urban water supplier is able to implement any potential future sources of water supply identified in a plan, detailed project plans are prepared and approved, financial and operational plans are developed, and all required environmental analysis is completed.

This Plan is intended to function as a planning tool to guide broad-perspective decision making by the management of water suppliers. It is important that this Plan be viewed as a long-term, general planning document, rather than as an exact blueprint for supply and demand management. Water management in California is not a matter of certainty, and planning projections may change in response to a number of factors. From this perspective, it is appropriate to look at the Plan as a general planning framework, not a specific action plan. It is an effort to generally answer a series of planning questions including:

- What are the potential sources of supply and what is the reasonable probable yield from them?
- What is the probable demand, given a reasonable set of assumptions about growth and implementation of good water management practices?
- How well do supply and demand figures match up, assuming that the various probable supplies will be pursued by the implementing agency?

Using these "framework" questions and resulting answers, the implementing agency will pursue feasible and cost-effective options and opportunities to meet demands. Valley District and the retail water purveyors will explore enhancing water supplies from traditional sources such as the State Water Project (SWP), as well as other options, including groundwater extraction, water recycling, storm water capture, and water banking/conjunctive use. Specific planning efforts will be undertaken in regard to each option, involving detailed evaluations of how each option would fit into the overall supply/demand framework, how each option would impact the environment, and how each option would affect customers. The objective of these more detailed evaluations would be to find the optimum portfolio of conservation and supply programs that ensure that the needs of the customers are met.

The UWMP Act requires preparation of a plan that:

- Accomplishes water supply planning over a minimum 20-year period in five year increments. (Valley District and the purveyors are going beyond the requirements of the Act by developing a plan which spans 25 years.)
- Identifies and quantifies adequate water supplies, including recycled water, for existing and future demands, in normal, single-dry, and multiple-dry years. (Valley District and the purveyors are going beyond the requirements of the Act by evaluating a single wet year scenario in addition to the required scenarios.)
- Documents conservation programs to encourage efficient use of urban water supplies.

Senate Bill X7-7 (SB X7-7), also known as the Water Conservation Act of 2009, which was incorporated into the UWMP Act in 2009, requires that all water suppliers increase water use efficiency with the overall goal to decrease per-capita water consumption within the state by 20 percent by the year 2020. SB X7-7 required DWR to develop certain criteria, methods, and standard reporting forms through a public process that could be used by water suppliers to establish their baseline water use and determine their water conservation targets. SBX 7-7 and

guidance prepared by DWR specify methodologies for determining the baseline water demand, 2015 interim urban water use target, and the 2020 urban water use targets. The baseline and targets were required to be reported in the 2010 UWMP for each urban retail water supplier, but the baselines and targets have been re-calculated in this Plan to reflect updated service area population data. This Plan is required to assess compliance with the 2015 interim urban water use target and monitor progress toward compliance with the 2020 urban water use target.

Valley District and the retail water purveyors wish to deliver a sufficient, reliable, and high quality water supply for their customers, even during dry periods. Based on conservative water supply and demand assumptions over the next 25 years, in combination with conservation of non-essential demand during certain dry years, the Plan successfully achieves this goal.

1.3 Organization of the Plan

This Plan is organized to act as the 2015 UWMP for Valley District as a wholesale supplier. This Plan also acts as the 2015 UWMP for the nine retail purveyors participating in the plan. Together, these parts comprise the 2015 Regional Urban Water Management Plan (RUWMP).

Chapters 1 through 5 of the Plan focus on the regional analysis for the Valley District service area, serving as a "common base" on which the individual purveyor analyses rely. Regional data presented in Chapters 2 and 3 informs the individual retail purveyor analysis. Analysis of individual water agencies is provided in Chapters 6 through 15.

Each individual purveyor chapter provides service area information with 25-year projections, a description of water sources and reliability of supply, transfer and exchange opportunities, water use by customer type and timeframe (past, present, and projected), as well an evaluation of demand management measures.

Throughout this report, water volume is represented in units of acre-feet (AF). Data have been compiled on a calendar year basis.

A checklist to ensure compliance of this Plan with the Act requirements is provided for each agency in Appendix Q.

1.4 Implementation of the Plan

This Plan has been prepared for Valley District, a wholesale water supplier, and for the following retail purveyors:

- East Valley Water District
- City of Loma Linda
- City of Redlands
- City of San Bernardino Municipal Water Department
- West Valley Water District

- Yucaipa Valley Water District
- City of Colton
- City of Rialto
- Riverside Highland Water Company

These ten urban water suppliers have coordinated the preparation of this Plan. The purpose of jointly preparing the Plan was to facilitate a consistent evaluation of water sources common to the various agencies, to take advantage of group knowledge and experience, and to reduce preparation costs. However, each agency has reviewed, will adopt, and will implement the portions of this Plan relevant to their agency. Errors or omissions by any one participant in this Plan should not invalidate the information put forward by the other agencies who participated in Plan preparation.

1.4.1 Joint Preparation of the Plan

Water purveyors are permitted by DWR to work together to develop a cooperative regional plan. This approach has been adopted by the Valley District and the nine purveyors which are jointly sponsoring the current Plan. Agency coordination for this Plan is summarized in Table 1-1.

1.4.2 Plan Adoption

Valley District and the retail purveyors adopted the 2015 RUWMP in June 2016. Following adoption and within 30 days of Board approval, the RUWMP was submitted to DWR, the California State Library, and any city or county within which Valley District or any of the purveyors provides water supplies. Resolutions adopting the RUWMP are provided in Appendix D.

This plan includes all information necessary to meet the requirements of Water Conservation Act of 2009 (Wat. Code, §§ 10608.12-10608.64) and the Urban Water Management Planning Act (Wat. Code, §§ 10610-10656).

1.4.3 Public Outreach

The water purveyors have encouraged community participation in water planning. Interested groups were informed about the development of the Plan along with the schedule of public activities. Copies of the Draft Plan were made available at the water purveyors' offices and websites, and notices sent to the cities, and the Counties of San Bernardino and Riverside, as well as to interested parties as identified in Table 1-1.

Copies of the public outreach materials are included in Appendix C.

Table 1-1 Agency Coordination Summary

Agency	Participated in UWMP	Received Copy of Draft	Commented on Draft	Attended Public Meetings	Contacted for Assistance	Sent Notice of Intent to Adopt	Not Involved
San Bernardino Valley Municipal Water District	X					X	
City of Colton	X					X	
City of Loma Linda	X					X	
City of Redlands	X					X	
City of San Bernardino	X					X	
East Valley Water District	X					X	
West Valley Water District	X					X	
Yucaipa Valley Water District	X					X	
Riverside Highland Water Company	X					X	
City of Rialto	X					X	
Baseline Garden Mutual Water Company						X	
Bear Valley Mutual Water Company						X	
Beaumont-Cherry Valley Water District						X	
Big Bear Mutual Water District						X	
Cal. State San Bernardino/Water Resources Institute						X	
City of Beaumont						X	
City of Calimesa						X	
City of Fontana						X	
City of Grand Terrace						X	
City of Highland						X	
City of Riverside						X	
City of Yucaipa						X	
County of Riverside						X	
County of San Bernardino						X	
Fontana Water Company						X	
Fontana Union Water Company						X	
Inland Empire Resources Conservation District						X	

Agency	Participated in UWMP	Received Copy of Draft	Commented on Draft	Attended Public Meetings	Contacted for Assistance	Sent Notice of Intent to Adopt	Not Involved
Muscoy Mutual Water Company						X	
San Bernardino County – Land Use Services Department						X	
San Bernardino County Local Agency Formation Commission (LAFCO)						X	
San Bernardino National Forest, US Forest Service						X	
San Bernardino Valley Water Conservation District						X	
San Gorgonio Pass Water Agency						X	
Santa Ana Watershed Project Authority						X	
South Mesa Water Company						X	
Terrace Water Company						X	
Western Heights Mutual Water Company						X	
Western Municipal Water District						X	
Yucaipa-Calimesa Joint Unified School District						X	

1.5 Water Agencies of the San Bernardino Valley

1.5.1 San Bernardino Valley Municipal Water District

Valley District was formed in 1954, under the Municipal Water District Act of 1911 (California Water Code Section 71000 et seq.) as a regional agency to plan a long-range water supply for the San Bernardino Valley. Valley District imports water into its service area through participation in the SWP and manages groundwater storage within its boundaries, and also provides stormwater disposal, recreation, and fire protection services. Valley District does not deliver water directly to retail water customers.

Valley District covers about 325 square miles mainly in southwestern San Bernardino County, about 60 miles east of Los Angeles. It spans the eastern two-thirds of the San Bernardino Valley, the Crafton Hills, and a portion of the Yucaipa Valley and includes the cities and communities of San Bernardino, Colton, Loma Linda, Redlands, Rialto, Fontana, Bloomington, Highland, East Highland, Grand Terrace, Mentone, and Yucaipa. Figure 1-1 shows Valley District's service area, along with the service areas of the retail water purveyors.

Valley District is responsible for long-range water supply management, including importing supplemental water, and is responsible for storage management of most of the groundwater basins within its boundaries and for groundwater extraction over the amount specified in the Orange County and Western Judgments explained below. Valley District has specific responsibilities for monitoring groundwater supplies in the San Bernardino Basin Area (SBBA) and Rialto-Colton Subbasin, and for a portion of the minimum Santa Ana River (SAR) flow required at the Riverside Narrows.

Valley District has developed a "cooperative recharge program" that is being successfully implemented to help replenish groundwater, using both SWP water and local runoff. Valley District takes delivery of SWP water at the Devil Canyon Power Plant Afterbay, which is located just within its northern boundary. The SWP water is conveyed 17 miles eastward to various spreading grounds and agricultural and wholesale domestic delivery points in the SBBA. Water is also conveyed westward for direct delivery in the Rialto-Colton Subbasin.

In the 1960s, dry conditions resulted in the over-commitment of water resources in the SAR watershed which led to lawsuits between water users in the upper and lower watersheds regarding both surface flows and groundwater. The lawsuits culminated in 1969 in the Orange County and Western Judgments. Under the terms of the judgments, Valley District became responsible for providing a portion of the specified SAR base flow to Orange County and for replenishing the SBBA under certain conditions. If the conditions of either judgment are not met by the natural water supply, including new conservation, Valley District is required to deliver supplemental water to offset the deficiency. The judgments resolved the major water rights issues that had prevented the development of long-term, region-wide water supply plans and established specific objectives for the management of the groundwater basins.

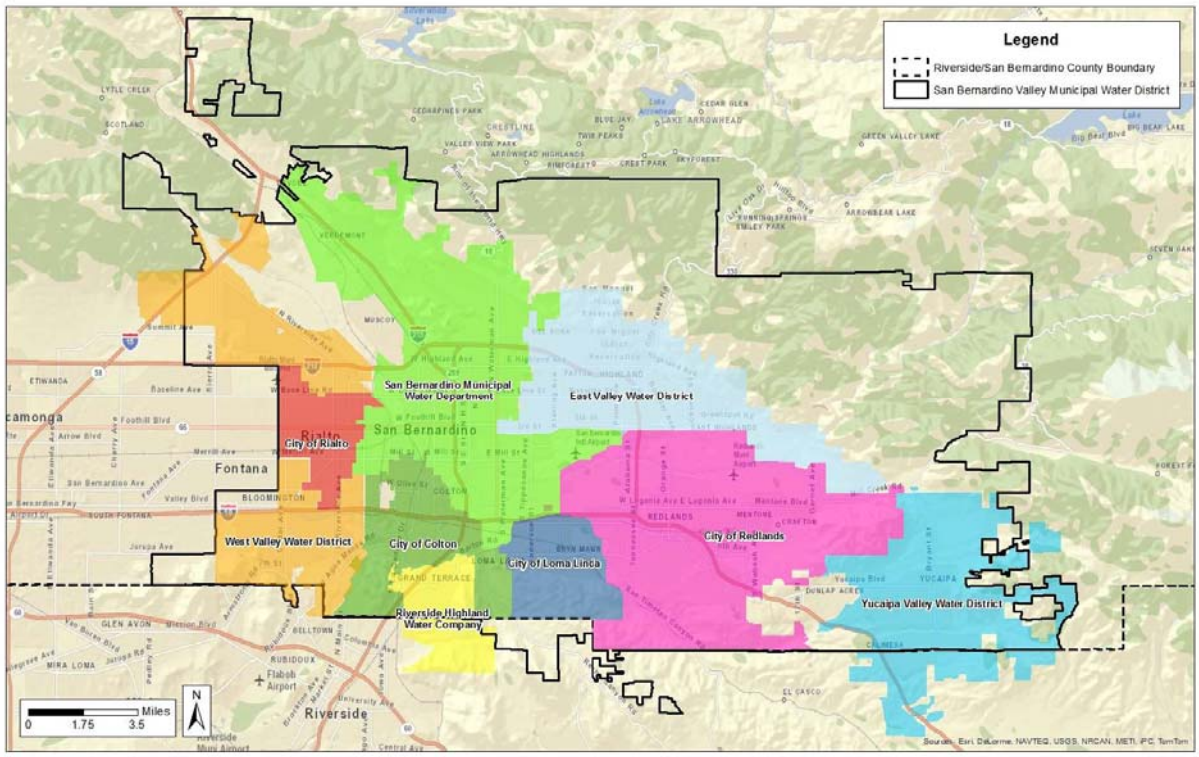


Figure 1-1. San Bernardino Valley Municipal Water District Service Area

Court-appointed Watermaster committees administer both Judgments; as a member of the Watermaster committees, Valley District is directly responsible for ensuring that groundwater and surface water resources are effectively managed for the benefit of the region.

Valley District participated in the development of the 2010 San Bernardino Valley RUWMP.

1.5.2 Retail Water Purveyors

A total of nine retail water purveyors in the Valley District service area participated in the development of this RUWMP. Seven also participated in the 2010 RUWMP, and two new purveyors have joined the RUWMP for 2015.

1.5.2.1 East Valley Water District

East Valley Water District (EVWD) is a special district formed in 1954 through an election by local residents who wanted water service by a public water agency. Originally called the East San Bernardino County Water District, it was formed to provide domestic water service to the agriculturally-based communities of Highland and East Highland. The name of the agency was changed from East San Bernardino County Water District to East Valley Water District in 1982. EVWD now serves the generally urban areas of the City of Highland, a portion of the City of San Bernardino, and a small portion of the unincorporated County. The district has a service area of approximately 33.5 square miles. EVWD's current water supplies are surface water from the Santa Ana River, groundwater from the SBBA, and imported water purchased from Valley District. EVWD is proposing to provide wastewater treatment service and to develop a recycled water system for groundwater recharge. Figure 1-2 illustrates the EVWD service area.

EVWD participated in the 2010 San Bernardino Valley RUWMP.

1.5.2.2 City of Loma Linda

The City of Loma Linda (hereafter Loma Linda) was incorporated in 1970. The Public Works Department provides potable water service to an area of approximately 7.8 square miles that includes the Veterans Administration Hospital and the Loma Linda Community Hospital. Loma Linda does not provide water service to the Loma Linda University Campus or Medical Center facilities, which operate on a separate self-contained system. Loma Linda's primary water supply is groundwater from the SBBA. Loma Linda also has two emergency connections to the City of San Bernardino and one to the City of Redlands to meet its supplemental needs. Loma Linda also provides wastewater collection service. Figure 1-3 illustrates the Loma Linda service area.

Loma Linda participated in the 2010 San Bernardino Valley RUWMP.

1.5.2.3 City of Redlands

For more than 90 years, the City of Redlands (hereafter Redlands) has been providing high-quality drinking water to the Redlands and Mentone areas. The water utility service area generally coincides with the area designated by the Local Area Formation Commission (LAFCO) as the City and its sphere of influence. The service area encompasses 36 square miles inside

the Redlands city boundaries and a relatively small area outside the city boundaries, but within the sphere of influence. Redlands supplies a blend of local groundwater, local surface water, and imported water purchased from Valley District. Redlands also owns and operates a sewer collection system and the Redlands Wastewater Treatment Facility, which can treat 7.2 million gallons per day (mgd) of wastewater for industrial and irrigation purposes, including supplying water to the Southern California Edison Mountainview Power Plant. Figure 1-4 illustrates the Redlands service area.

Redlands participated in the 2010 San Bernardino Valley RUWMP.

1.5.2.4 City of San Bernardino

The City of San Bernardino is served by a municipal utility, the San Bernardino Municipal Water Department (SBMWD). SBMWD was created as a municipal utility by Article 9 of the City of San Bernardino Charter. The SBMWD water service area is approximately 45 square miles, providing water to approximately 200,000 persons in the City of San Bernardino and unincorporated areas of San Bernardino County. SBMWD produces all of its water supply from wells in the SBBA. In addition to potable water, SBMWD provides wastewater collection and treatment services and is developing a recycled water system for groundwater recharge and non-potable reuse. Figure 1-5 illustrates the SBMWD service area.

SBMWD participated in the 2010 San Bernardino Valley RUWMP.

1.5.2.5 West Valley Water District

West Valley Water District (WVWD) is a public agency of the State of California and was formed in 1952 under the name of the Bloomington County Water District. Since that time, West Valley has gone through several name changes and has acquired numerous other water suppliers with water rights dating back over 100 years. WVWD is located primarily within southwestern San Bernardino County and a small portion within northern Riverside County. The majority of WVWD's service area lies within Valley District's boundaries. WVWD's service area is approximately 31 square miles, serving portions of the Cities of Rialto, Fontana, Colton, and Jurupa Valley, and unincorporated areas of San Bernardino County. WVWD utilizes water from five groundwater basins and treats surface water from Lytle Creek and SWP water at its 14.4-mgd Oliver P. Roemer Water Filtration Facility to serve over 19,000 water service connections. Figure 1-6 illustrates the WVWD service area.

WVWD participated in the 2010 San Bernardino Valley RUWMP.

1.5.2.6 Yucaipa Valley Water District

Yucaipa Valley Water District (YVWD) is a special district that provides water supply, treatment, and distribution, recycled water supply and distribution services, and wastewater collection and treatment. Formed in 1971, YVWD acquired many of the private water companies serving the Yucaipa Valley. Its most recent consolidations of water services occurred with the acquisition of the Harry V. Slack Water Company in 1987 and the Wildwood Canyon Mutual Water

Company in 1992. YVWD serves customers in the Cities of Calimesa and Yucaipa, and portions of Riverside and San Bernardino Counties. Figure 1-7 illustrates the YVWD service area.

YVWD participated in the 2010 San Bernardino Valley RUWMP.

1.5.2.7 City of Colton

The City of Colton is a community founded in 1875 and incorporated in 1887. The City of Colton (hereinafter, Colton), through the Water and Wastewater Division of its Public Utilities Department, provides water service to a majority of the residents and businesses located within Colton's corporate boundary, as well as to those in certain adjacent unincorporated areas of San Bernardino County. All of Colton's water supply is local groundwater pumped from the SBBA, the Rialto-Colton sub basin, and the Riverside North sub basin. Figure 1-8 illustrates the Colton service area.

Colton participated in the 2010 San Bernardino Valley RUWMP.

1.5.2.8 City of Rialto

The City of Rialto is provided water service by three different water agencies: the City of Rialto municipal water system through its water system operator (Veolia, through Rialto Water Services), the West Valley Water District (WVWD), and the Fontana Union Water Company (FUWC). Each agency has its own water supply and resources, and must meet its demands through those resources. The City of Rialto municipal water system provides potable, non-potable, and recycled water at retail to customers primarily within the City of Rialto and serves approximately one-half of the population of the City, or approximately 54,000 customers as of December, 2015. The service area is essentially the incorporated area of the City of Rialto located between Interstate 10 and State Route 210.

The City's water supply sources include local surface water from Lytle Creek, groundwater from five local groundwater basins, and water purchased from Valley District and delivered through the Baseline Feeder. Surface water treatment of Lytle Creek water is provided by the Oliver P. Roemer Water Filtration Facility owned and operated by WVWD. Rialto owns a portion of the capacity of that plant. Rialto also has an agreement to purchase excess SBBA water form SBMWD, when available. Rialto provides wastewater collection and treatment services for its residents and some residents of the City of Fontana through an Extra-Territorial Agreement. Rialto currently provides recycled water service to the California Department of Transportation for landscape irrigation. Figure 1-9 illustrates the Rialto service area.

The City of Rialto prepared a separate UWMP in 2010 and did not participate in the 2010 San Bernardino Valley RUWMP.

1.5.2.9 Riverside Highland Water Company

The Riverside Highland Water Company (RHWC) provides domestic and irrigation water services to the City of Grand Terrace, portions of the City of Colton, and portions of the unincorporated areas of the Counties of San Bernardino and Riverside. RHWC's service area lies partially within

the Valley District service area and partially within the service area of Western Municipal Water District (Western). RHWC's customers include single and multi-family residential, commercial, industrial and agricultural users. The RHWC service area is approximately 85 percent built-out and has several developments currently under construction or approved by the planning departments of the governing agencies. RHWC obtains water from the Lytle Creek Subbasin, the SBBA, the Rialto-Colton Subbasin, Riverside North and Riverside South Basins. Figure 1-10 illustrates the RHWC service area.

RHWC prepared a separate 2010 UWMP and did not participate in the 2010 San Bernardino Valley RUWMP.

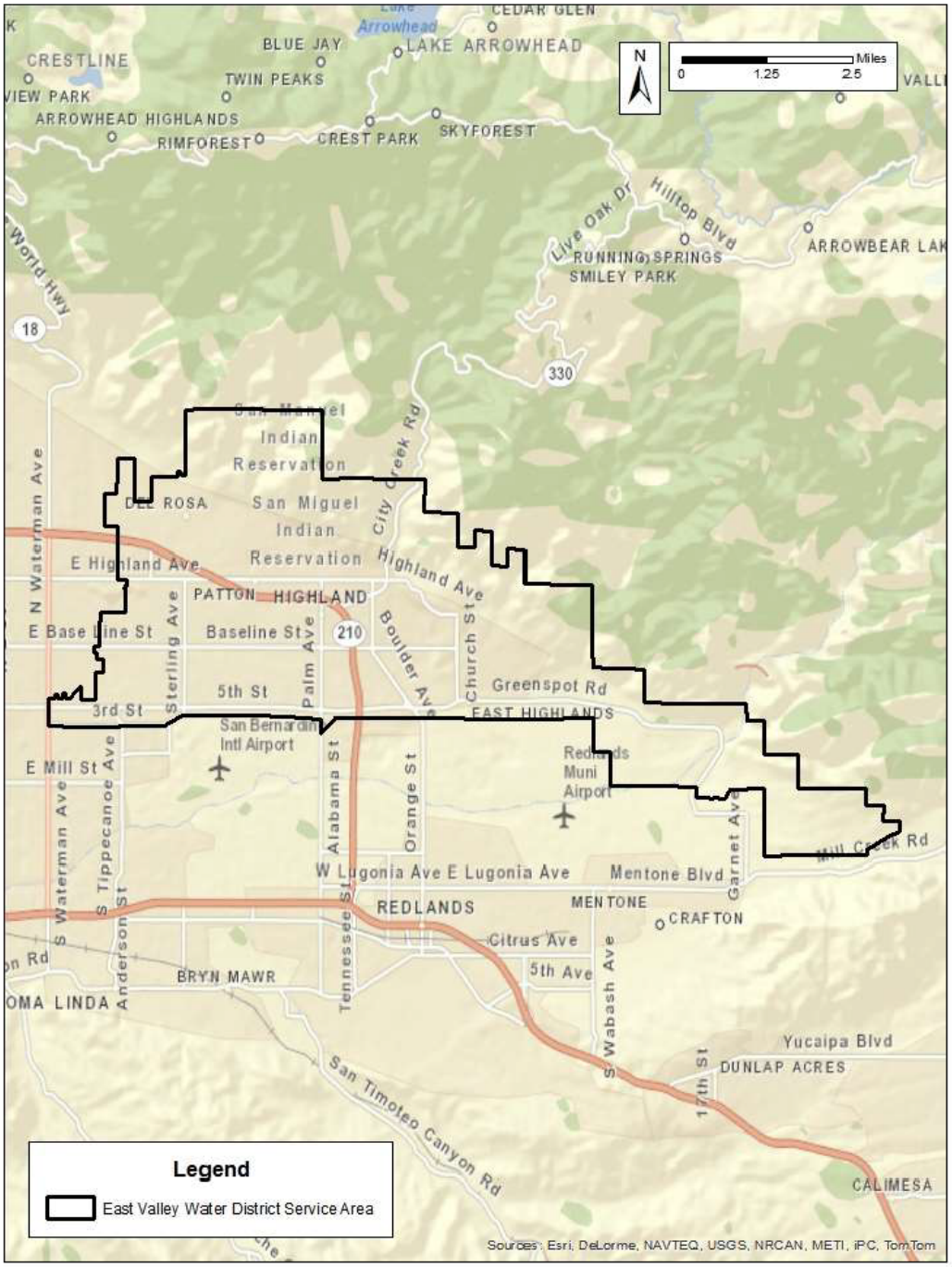


Figure 1-2. East Valley Water District Service Area

Figure 1-3. City of Loma Linda Service Area

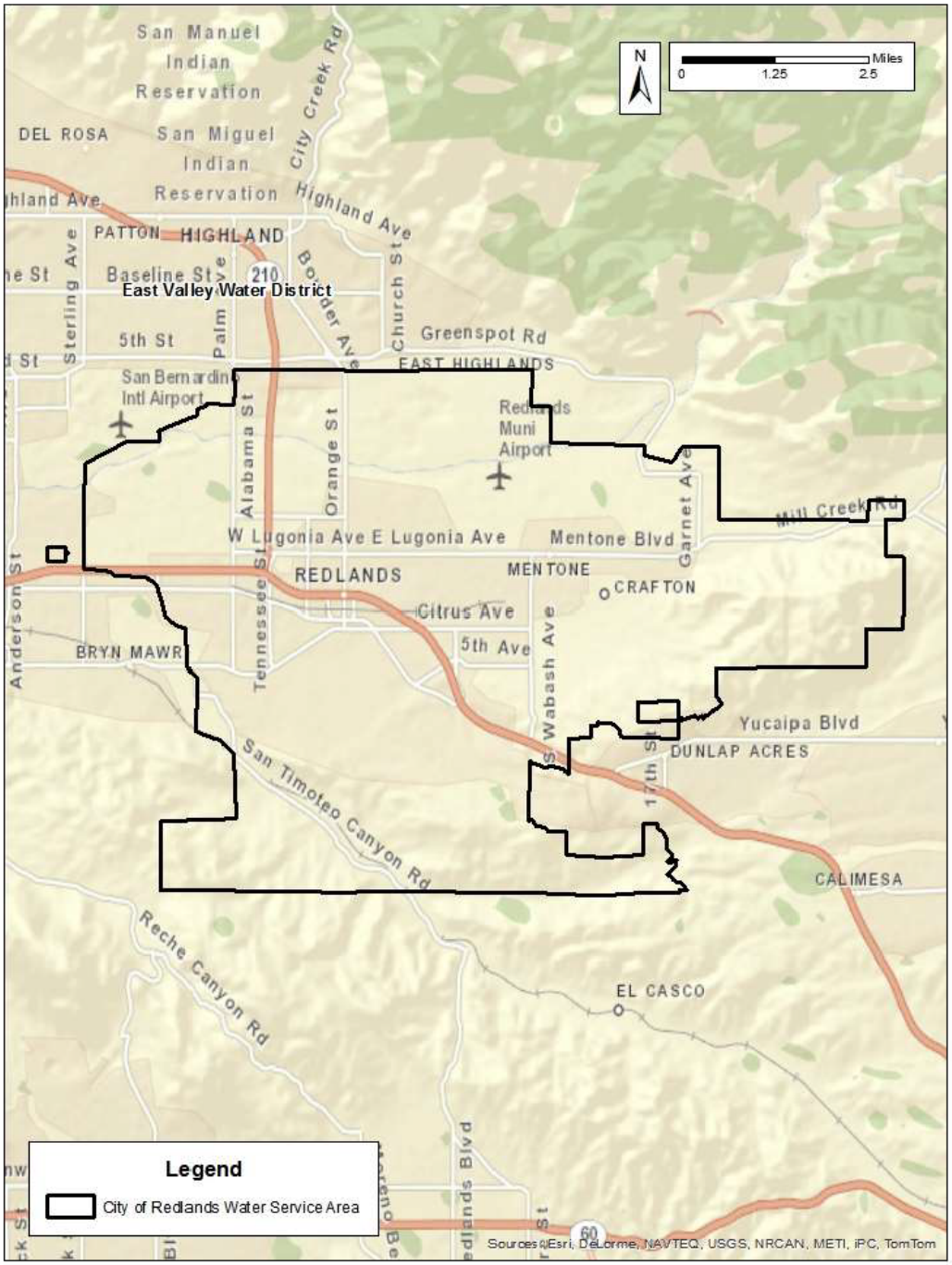


Figure 1-4. City of Redlands Service Area

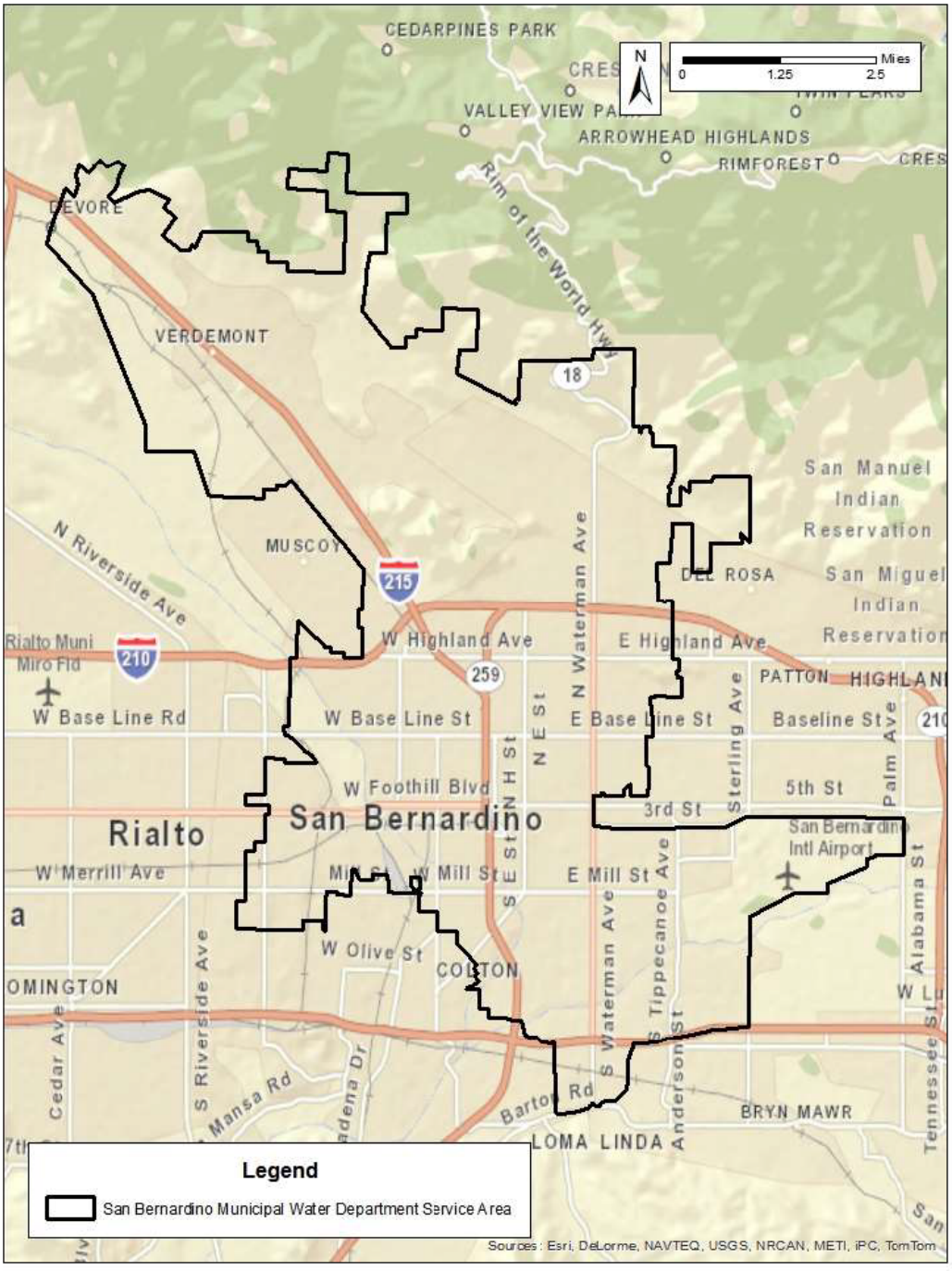


Figure 1-5. City of San Bernardino Municipal Water Department Service Area

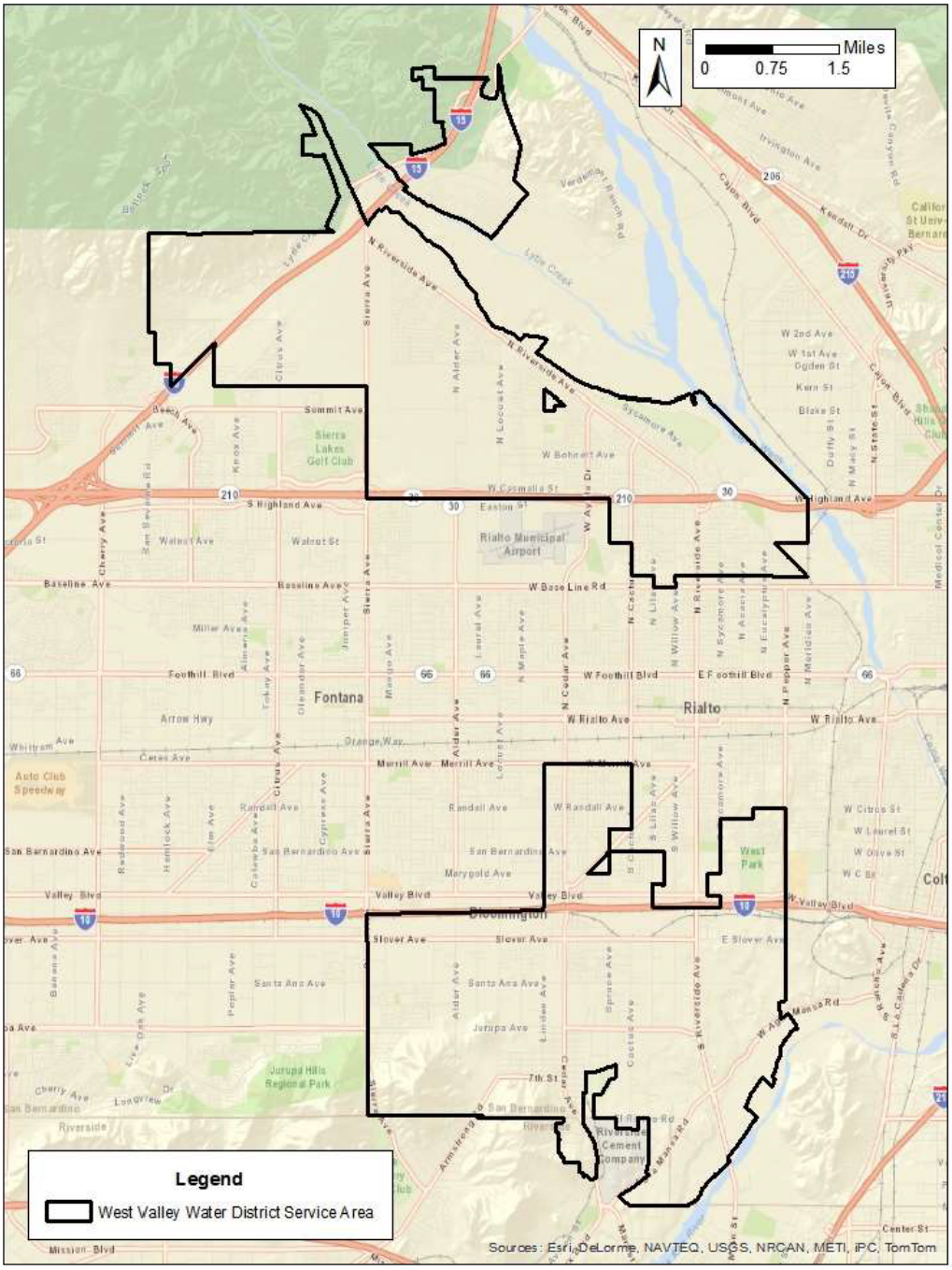


Figure 1-6. West Valley Water District Service Area

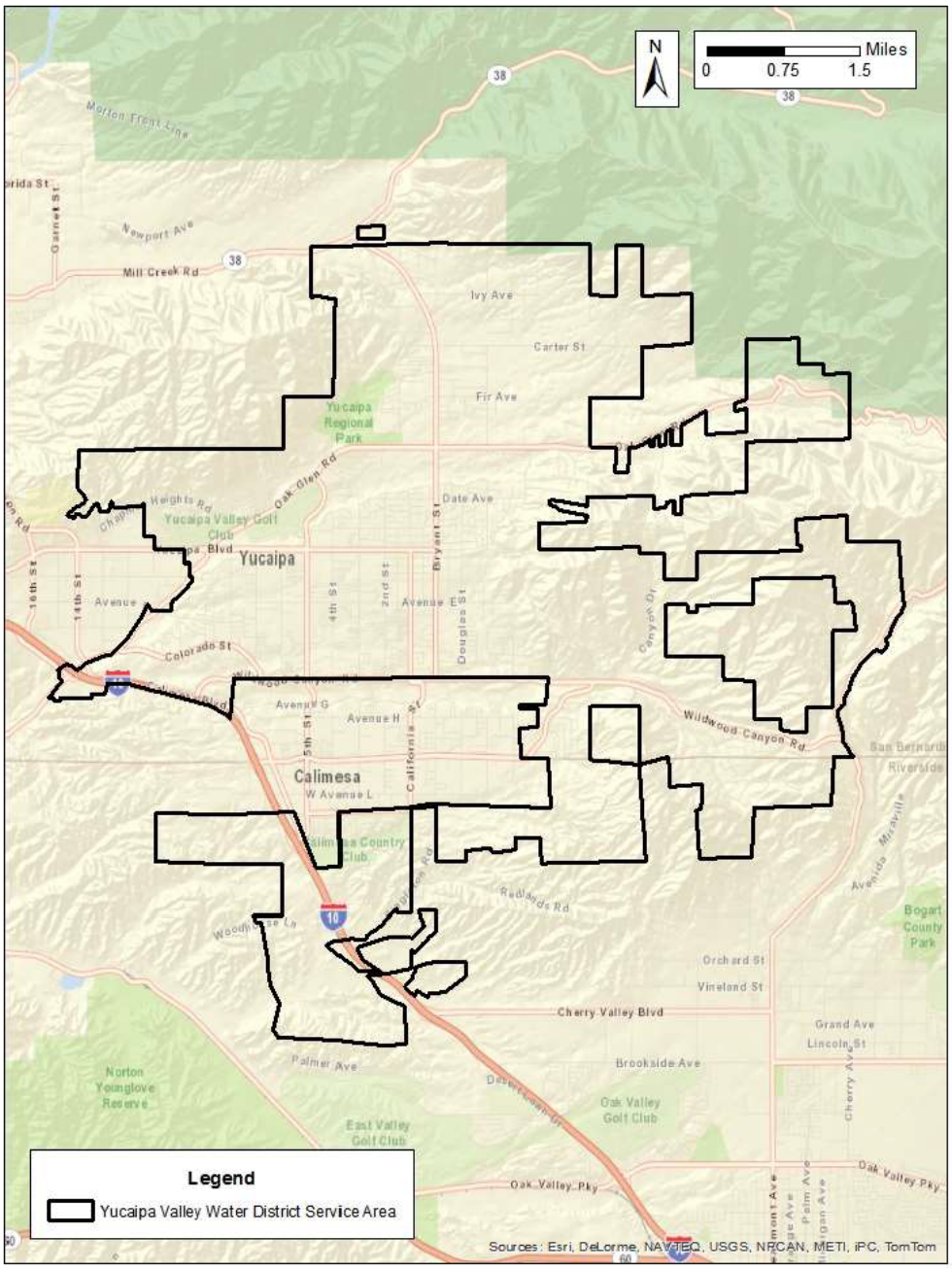


Figure 1-7. Yucaipa Valley Water District Service Area

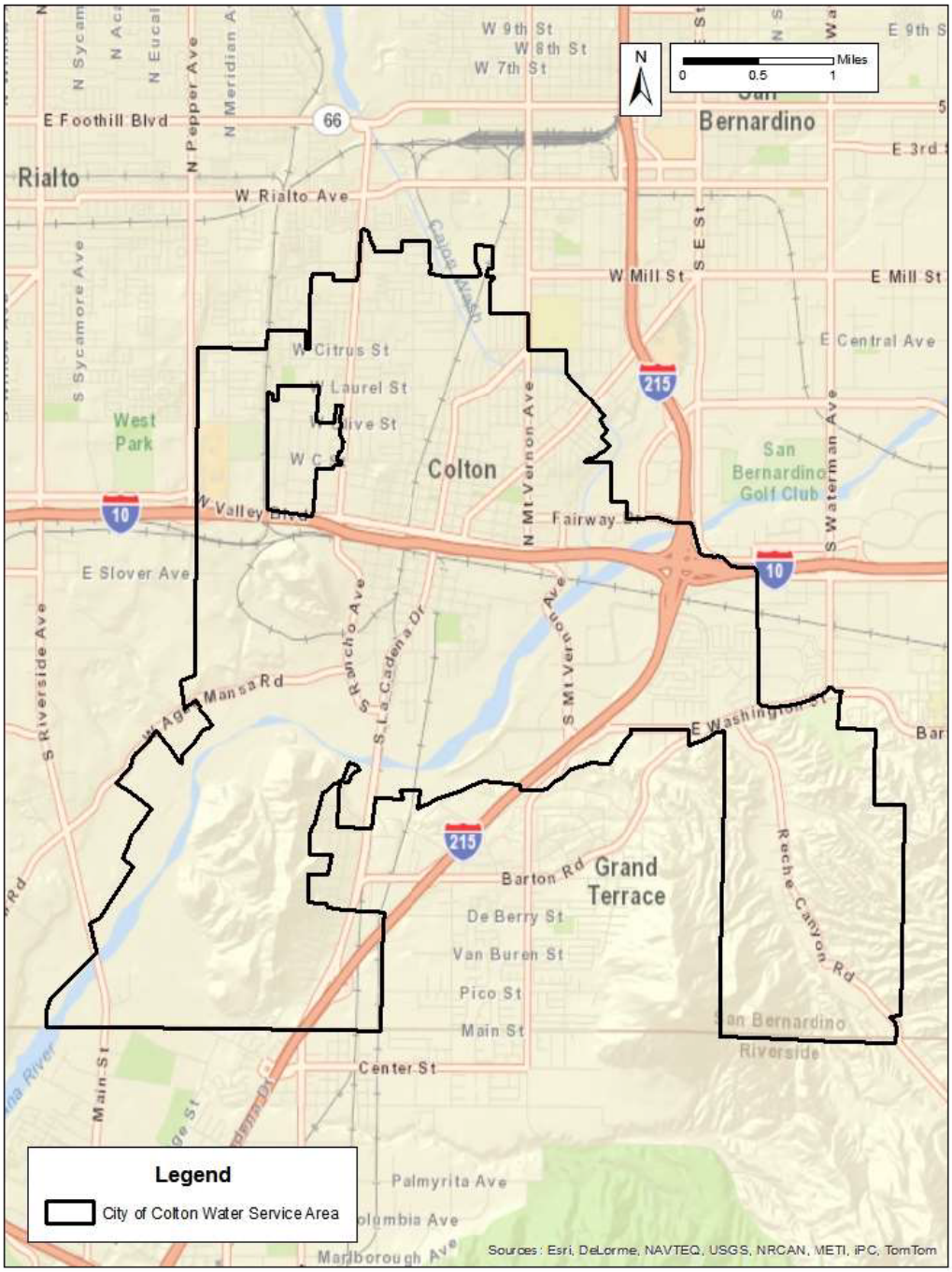


Figure 1-8. City of Colton Service Area

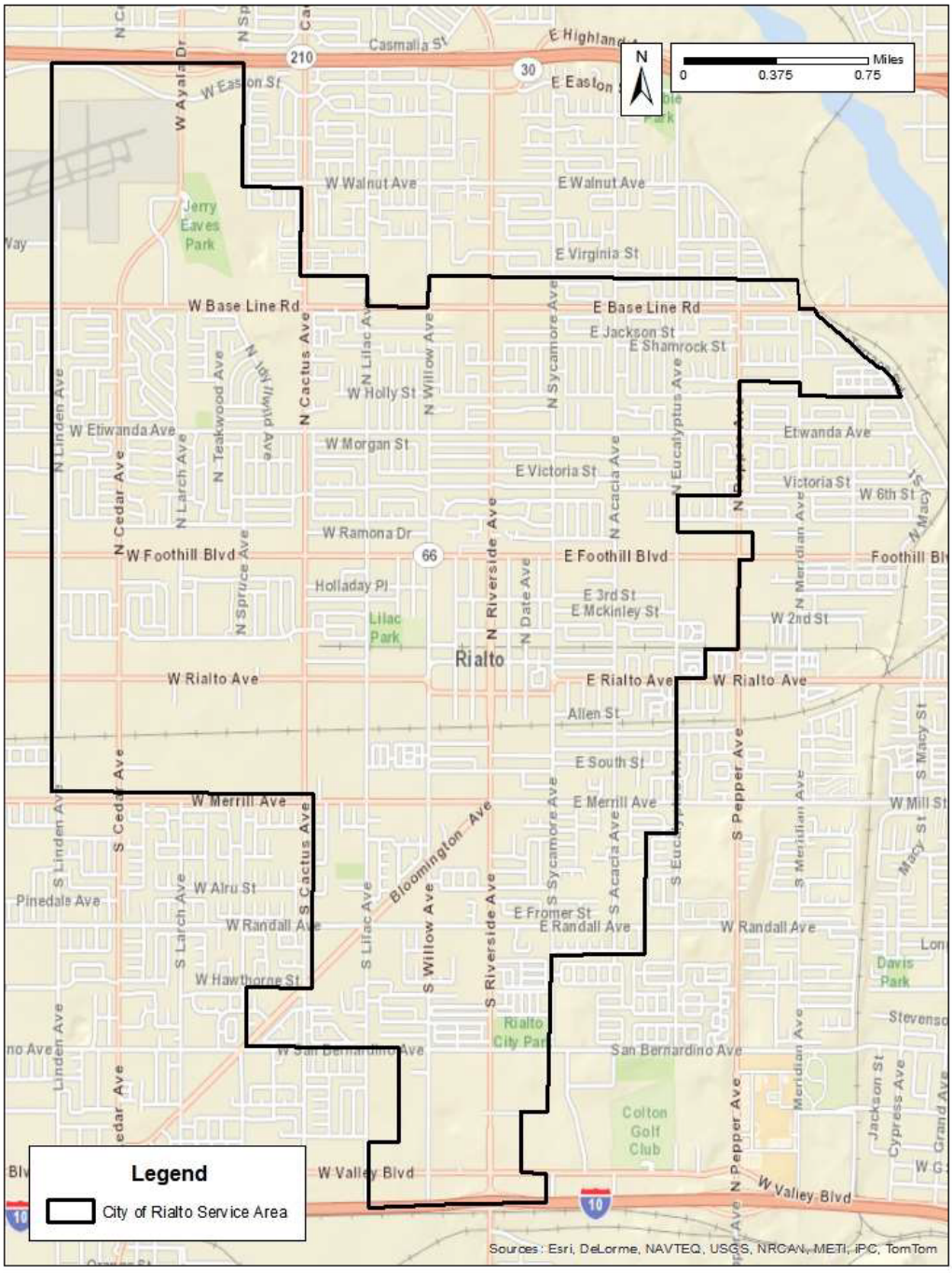


Figure 1-9. City of Rialto Service Area

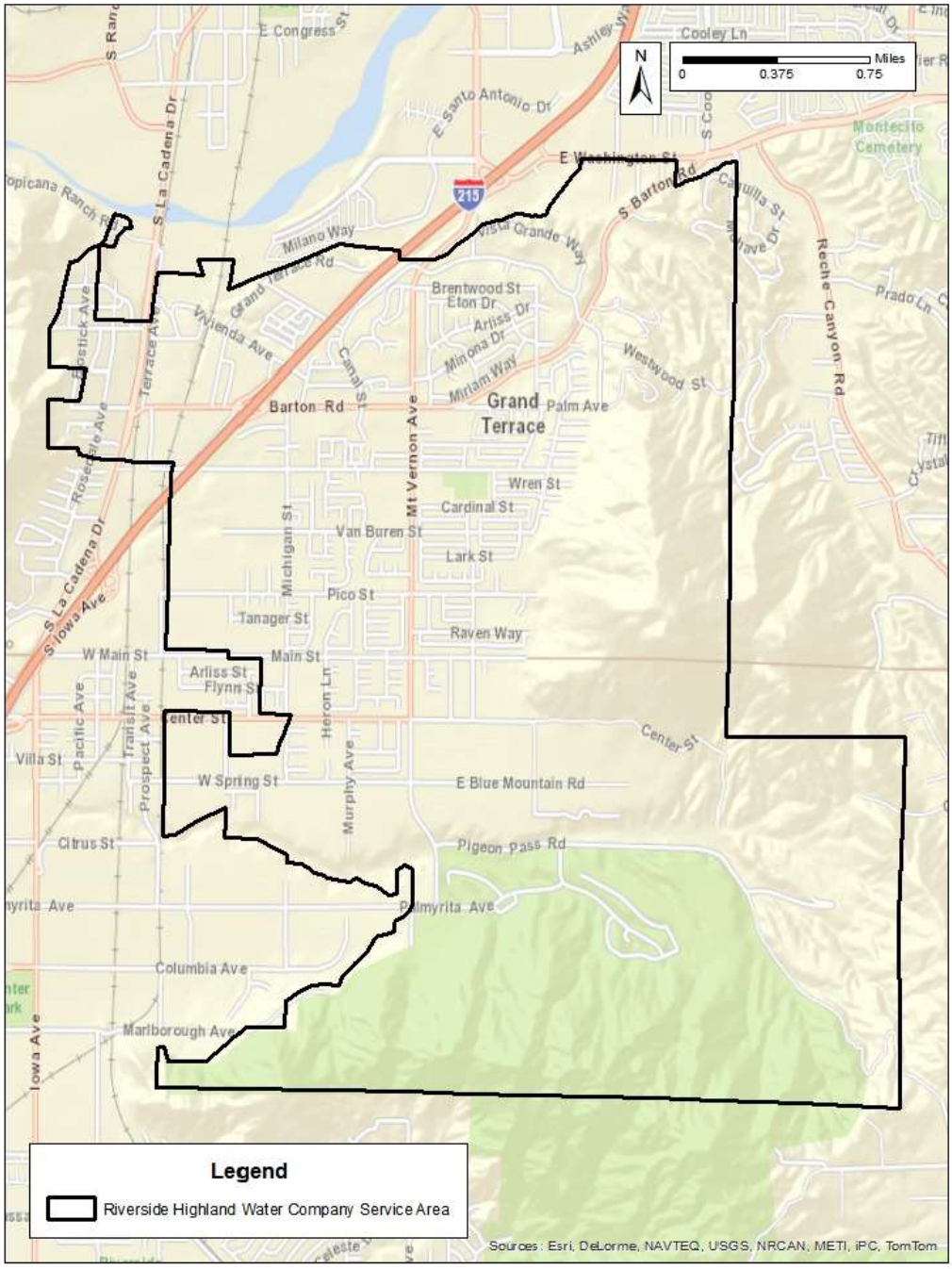


Figure 1-10. Riverside Highland Water Company Service Area

1.5.3 Other Retail Water Providers

Other retail water providers within the Valley District service area that provide water but which are not participants in this RUWMP include: Fontana Union Water Company, Bear Valley Mutual Water Company, Fontana Water Company, Muscoy Mutual Water Company, South Mesa Water Company, Terrace Water Company, and Western Heights Mutual Water Company.

1.6 Climate

Climate is a primary factor affecting water management in the San Bernardino Valley.

1.6.1 Regional Climate

The climate in the San Bernardino Valley is characterized by relatively hot, dry summers and cool winters with intermittent precipitation. The largest portion (73 percent) of average annual precipitation occurs during December through March, and rainless periods of several months are common in the summer. Precipitation is nearly always in the form of rain in the lower elevations and mostly in the form of snow beyond approximately 6,000 feet above mean sea level (MSL) in the San Bernardino Mountains.

Mean annual precipitation ranges from approximately 10 inches near Riverside to approximately 30 inches in the upper San Bernardino Mountains. The historical record indicates that a period of above-average or below-average precipitation can last more than 30 years, such as the dry period that extended from 1947 to 1977. The region has been experiencing an ongoing drought since about 1999.

Three types of storms produce precipitation in the Santa Ana River Basin: general winter storms, local storms, and general summer storms. General winter storms usually occur from December through March. They originate over the Pacific Ocean as a result of the interaction between polar Pacific and tropical Pacific air masses and move eastward over the basin. These storms, which often last for several days, reflect orographic (i.e., land elevation) influences and are accompanied by widespread precipitation in the form of rain and, at higher elevations, snow. Local storms cover small areas, but can result in high intensity precipitation for durations of approximately six hours. These storms can occur any time of the year, either as isolated events or as part of a general storm, and those occurring during the winter are generally associated with frontal systems (a "front" is the interface between air masses of different temperatures or densities). General summer storms can occur in the late summer and early fall months in the San Bernardino area, although they are infrequent.

Table 1-2 shows average monthly climate data for the mountains and valley areas in the region.

Table 1-2 Climatological Data

Month	Mountain[1]			Valley[2]		
	Average Temperature (°F)	Average Precipitation (in.)	Average Standard ETo (in.)	Average Temperature (°F)	Average Precipitation (in.)	Average Standard ETo (in.)
January	34.1	4.49	1.94	52.4	3.22	2.53
February	35.2	4.09	2.39	54.6	3.25	2.87
March	38.0	3.06	4.03	56.7	2.86	4.30
April	43.0	1.32	5.22	60.9	1.29	5.38
May	50.7	0.48	6.67	65.6	0.47	5.82
June	58.4	0.14	7.06	71.3	0.09	6.76
July	64.2	0.74	6.44	77.7	0.04	7.38
August	63.3	0.97	5.92	77.7	0.15	7.09
September	57.5	0.53	4.80	73.9	0.33	5.51
October	48.8	0.82	3.67	66.5	0.71	3.97
November	39.9	2.00	2.27	58.6	1.32	2.89
December	34.0	3.21	1.60	53.3	2.38	2.38
Totals						

Notes: [1]Mountain precipitation and temperature for NOAA weather station 040741 in Big Bear Lake; data from 1960 through 2015; http://wrcc.dri.edu; ETo data for CIMIS weather station 199 in Big Bear Lake; http://wwwcimis.water.ca.gov/

[2]Valley precipitation and temperature for NOAA weather station 047723 in San Bernardino; data from 1893 through 2004; http//wrcc.dri.edu; ETo data for CIMIS weather station 44 at University of California, Riverside; http://wwwcimis.water.ca.gov/

1.6.2 Potential Effects of Global Climate Change

A topic of growing concern for water planners and managers is climate change and the potential impacts it could have on California's future water supplies. The Upper Santa Ana River Watershed Integrated Regional Water Management Plan (IRWMP) included an assessment of the potential impacts of climate change. The IRWMP Climate Change Vulnerability Assessment Checklist is included in Appendix F of this Plan. A summary of the IRWMP discussion is included here.

Recent climate change modeling for the SAR watershed suggests that a changing climate will have multiple effects on the Region. Adaptation and mitigation measures will be necessary to account for these effects.

The IRWM Region's currently consistent climate with hot summers and cool winters with mild precipitation, and rain in low elevations with snow in higher elevations, would change as temperatures increase, resulting in less precipitation as snow which would affect the snow

pack. Increased precipitation as rain would make it more difficult to capture storm flows and store them for drier periods.

The Intergovernmental Panel on Climate Change has vetted and approved 112 climate models based on projections in greenhouse gas emissions and associated changes in precipitation and temperature. The models show that in the future the number of days over 95°F will increase in multiple locations. The Region chose two cities with different temperature ranges to compare the increase across the entire watershed. The cities of Riverside and Big Bear were used to see the projections of the number of days that would be above 95°F. The results are shown in Table 1-3.

Table 1-3 Days per Year exceeding 95°F

City	Historical (°F)	2020 (°F)	2050 (°F)	2070 (°F)
Riverside	43	58	72	82
Big Bear	0	0	2	4

The number of high temperature days in Riverside is expected to double between the present and 2070. Similar increases in temperature can be anticipated throughout Valley District's service area. These increased temperature levels will increase water demands across the watershed mainly for agricultural and irrigation purposes. The higher temperature days in Big Bear have the potential to affect the forest ecosystem and the snow related recreational activities in the area.

The forest ecosystems in the San Bernardino National Forest are currently on the decline. Alpine and subalpine forests are anticipated to decrease in area by fifty to seventy percent by 2100. It is believed that increased greenhouse gas emissions are a primary factor contributing to the decline of these fragile ecosystems.

While high elevation ecosystems decline, the severity of future floods is likely to increase. The likelihood of a 200-year storm event or longer is anticipated to be significantly higher in 2070. This increases the potential for negative impacts on nearby infrastructure. Furthermore, storms are expected to be more severe but less frequent. Despite these assumptions, the aftermath of a severe storm is highly variable.

In addition to changes in ecosystems and storm severity, warmer temperatures may also decrease the annual amount of snowfall and increase the instance of rain in higher elevations. This alteration of precipitation type is likely to cause negative impacts for snow-related recreational activities characteristic of the area's ski resorts. From a local standpoint, Big Bear and Snow Valley both lie below 3000 meters above MSL and are anticipated to experience a decline in snowpack by 2070. Furthermore, it is projected that there will be a decrease in overall winter precipitation of the area by 2070. On a larger scale, the increased temperatures could affect the Sierra Nevada Mountains in a similar way, threatening the reliability of the SWP.

1.6.3 Addressing Climate Change

Climate change can be addressed in two ways, mitigation and adaptation. Mitigation focuses on reducing the carbon emissions for water treatment and transportation. Decreasing carbon emissions for water treatment and transportation may also result in reduced energy costs for water purveyors. These measures will also help in compliance of the California Global Warming Solutions Act (Assembly Bill 32 or AB 32). Adaptation addresses operational changes that need to be made in order to accommodate the increasing temperatures, the increased possibility for severe flooding, and the decreasing precipitation as snow predicted by the climate models.

Plans for greenhouse gas mitigation focus on the relationship between water and energy. This relationship can be quantified and projections for future trends can be developed. The California Global Warming Solutions Act requires greenhouse gas levels to be reduced to their 1990 level by the year 2020.

A Greenhouse Gas Emissions Calculator was developed as part of a Basin Study of the Santa Ana River in a partnership between the Santa Ana Watershed Project Authority (SAWPA) and the United States Bureau of Reclamation (Reclamation). The calculator showed that for the Upper SAR watershed, the most appropriate ways to effectively reduce the volume of carbon emissions related to water treatment and meet AB 32 goals would be to reduce imported water usage and increase local supply usage and water use efficiency.

2 Regional Water Sources

This chapter describes the water resources available to Valley District and the retail purveyors for the 25-year period covered by the Plan. Both currently available and planned supplies are discussed.

2.1 Wholesale Water Supplies

This section provides a description of wholesale water supplies, entitlements to those supplies and current and planned wholesale water supplies.

2.1.1 Imported Water Supplies

Imported water is available to Valley District from the California State Water Project (SWP), which is the largest state-built, multi-purpose water project in the country. It was authorized by the California State Legislature in 1959, with the construction of most initial facilities completed by 1973. The SWP is a water storage and delivery system of reservoirs, aqueducts, power plants and pumping plants. Its main purpose is to store water and distribute it to 29 State Water Contractors in Northern California, the San Francisco Bay Area, the San Joaquin Valley, the Central Coast, and Southern California. Of the contracted water supply, approximately 70 percent goes to urban users and 30 percent goes to agricultural users. The SWP makes deliveries to two-thirds of California's population. It is maintained and operated by the California Department of Water Resources (DWR). The SWP is also operated to improve water quality in the Sacramento-San Joaquin Delta, control Feather River flood waters, provide recreation, and enhance fish and wildlife. Valley District is the fifth largest State Water Contractor, with an annual maximum entitlement of 102,600 acre-feet (AF).

The SWP includes 34 storage facilities, reservoirs and lakes, 20 pumping plants, four pumping-generating plants, five hydro-electric plants, and approximately 701 miles of aqueducts and pipelines. The primary water source for the SWP is the Feather River, a tributary of the Sacramento River. Water released from Oroville Dam on the Feather River flows down natural river channels to the Sacramento-San Joaquin River Delta (Delta). While some SWP supplies are pumped from the northern Delta into the North Bay Aqueduct, the vast majority of SWP supplies are pumped from the southern Delta into the 444-mile-long California Aqueduct. The California Aqueduct conveys water along the west side of the San Joaquin Valley to Edmonston Pumping Plant, where water is pumped over the Tehachapi Mountains. The aqueduct then divides into the East and West Branches.

The San Bernardino Valley lies on the East Branch of the California Aqueduct, and Valley District takes delivery of SWP water at the Devil Canyon Power Plant just northwest of California State University, San Bernardino. From this location, SWP water can be delivered in several directions in State facilities or in transmission systems belonging to State Water Contractors. Valley District can deliver water to the west via the San Gabriel Valley Municipal Water District Pipeline (Valley District owns capacity in this pipeline) or to the east through the East Branch Extension of the SWP. Once the bonds have been paid off in 2035, the taxpayers in Valley

District's service area will have invested over $1.23 billion for their share of the SWP storage and delivery system.

Each SWP contractor's SWP Water Supply Contract includes a "Table A," which lists the maximum amount of water an agency is entitled to throughout the life of the contract. The Table A amount is each contractor's proportionate share, or "allocation," of the SWP water supply. However, actual deliveries of SWP water each year vary, based mainly on the amount of precipitation (for other factors, see Section 2.1.3 below).

While the primary supply of water available from the SWP is allocated Table A supply, SWP supplies in addition to Table A water are periodically available, including "Article 56C" carryover water, "Article 21" water, "Turnback Pool" water, and DWR "Dry Year Purchase Programs". Pursuant to the long-term water supply contracts, SWP contractors have the opportunity to carry over a portion of their allocated water approved for delivery in the current year for delivery during the next year. Valley District has exercised this option in the past. Contractors can also "carry over" water under Article 56C of the SWP long-term water supply contract with advance notice when they submit their initial request for Table A water, or within the last three months of the delivery year. The carryover program was designed to encourage the most efficient and beneficial use of water and to avoid obligating the contractors to "use or lose" the water by December 31 of each year. The water supply contracts state the criteria for carrying over Table A water from one year to the next. Normally, carryover water is water that has been exported during the year, has not been delivered to the contractor during that year, and has remained stored in the SWP share of San Luis Reservoir to be delivered during the following year. Storage for carryover water no longer becomes available to the contractors if it interferes with storage of SWP water for project needs.

Article 21 water (which refers to the SWP contract provision defining this supply) is water that may be made available by DWR when excess flows are available in the Delta (i.e., when Delta outflow requirements have been met, SWP storage south of the Delta is full, and conveyance capacity is available beyond that being used for SWP operations and delivery of allocated and scheduled Table A supplies). Article 21 water is made available on an unscheduled and interruptible basis and is typically available only in average to wet years, generally only for a limited time in the late winter.

In wet periods, the amount of water available may exceed the amount of storage in the SWP system. During these times, State Water Contractors may have excess SWP water. In the past, when excess water was available to Valley District, it sold the excess SWP water to the Metropolitan Water District of Southern California (MWDSC).

Table 2-1 presents historical total SWP water deliveries to Valley District.

Table 2-1. Historical State Water Project Deliveries to Valley District

Calendar Year	Total Deliveries (AF)
2010	49,406
2011	38,126
2012	112,972
2013	30,585
2014	6,452
Source: 2015 DWR Delivery Capability Report	

2.1.1.1 SWP Contractors Explanation of SWP Contract Term

The Department of Water Resources (DWR) provides water supply from the State Water Project (SWP) to 29 SWP Contractors (Contractors) in exchange for Contractor payment of all costs associated with providing that supply. DWR and each of the Contractors entered into substantially uniform long-term water supply contracts (Contracts) in the 1960s with initial 75-year terms, which will begin to expire in 2035. While the Contracts provide for continued water service to the Contractors beyond the initial term, efforts are currently underway to extend the Contracts to improve financing for the SWP.

The majority of the capital costs associated with the development and maintenance of the SWP is financed using revenue bonds. These bonds have historically been sold with 30-year terms. It has become more challenging in recent years to affordably finance capital expenditures for the SWP because bonds used to finance these expenditures are limited to terms that only extend to the year 2035, less than 30 years from now. To ensure continued affordability of debt service to Contractors, it is necessary to extend the term of the Contracts, which will allow DWR to continue to sell bonds with 30-year terms.

Negotiations on extending the Contracts took place between DWR and the Contractors during 2013 and 2014, and were open to the public. The following terms were agreed to and are currently the subject of analysis under the requirements of the California Environmental Quality Act (CEQA) (Notice of Preparation dated September 12, 2014):

- Extend the term of the 29 Water Supply Contracts to December 31, 2085;
- Provide for increased SWP financial operating reserves during the extended term of the Contracts;
- Provide additional funding mechanisms and accounts to address SWP needs and purposes;
- Develop a revised payment methodology with a corresponding billing system that better matches the timing of future SWP revenues to future expenditures.

It is anticipated that the term of the SWP Contracts will be extended to December 31, 2085 and the data and information contained in this UWMP reflect that assumption to improve

coordination between supply and demand projections beyond the year 2035 as provided in the UWMP Act. (CWC Section 10631(b).)

2.1.2 Imported Water Supply Reliability

The amount of SWP water delivered to State Water Contractors in a given year depends on a number of factors, including the demand for the supply, amount of rainfall, snowpack, runoff, water in storage, pumping capacity from the Delta, and legal/regulatory constraints on SWP operation. Water delivery reliability depends on three general factors: the availability of water, the ability to convey water to the desired point of delivery, and the magnitude of demand for the water. Urban SWP contractors' requests for SWP water, which were low in the early years of the SWP, have been steadily increasing over time. Regulatory constraints have changed over time, becoming more restrictive.

DWR prepares a biennial report to assist SWP contractors and local planners in assessing the near and long-term availability of supplies from the SWP. DWR issued its most recent update, the 2015 DWR State Water Project Delivery Capability Report (DCR), in July 2015. In the 2015 update, DWR provides SWP supply estimates for SWP contractors to use in their planning efforts, including for use in their 2015 UWMPs. The 2015 DCR includes DWR's estimates of SWP water supply availability under both current and future conditions.

DWR's estimates of SWP deliveries are based on a computer model that simulates monthly operations of the SWP and Central Valley Project systems. Key assumptions and inputs to the model include the facilities included in the system, hydrologic inflows to the system, regulatory and operational constraints on system operations, and projected contractor demands for SWP water. For example, the 2015 DCR uses the following assumptions to model current conditions: existing facilities, hydrologic inflows to the model based on 82 years of historical inflows (1922 through 2003), current regulatory and operational constraints, and contractor demands at maximum Table A amounts. The Bay Delta Conservation Plan (BDCP) is a large project intended to help mitigate for the environmental problems and restore the delivery capability for the SWP.

In spring 2015, DWR announced that BDCP would move from a Section 10 permit to a Section 7 permit process under the Federal Endangered Species Act. As a practical matter, this split the project into two distinct parts known as California WaterFix (Alternative 4A), the conveyance portion, and California EcoRestore, the restoration portion. California WaterFix is Alternative 4A in the recirculated environmental document, and the preferred alternative. Alternative 4A is different than any of the future scenarios modeled by DWR in the DCR. The California WaterFix project is currently in the environmental review process which is not anticipated to be final until at least 2016. In addition, several regulatory and legal requirements must be met prior to construction.

To evaluate SWP supply availability under future conditions, the 2015 DCR included four model studies. The first of the future-conditions studies, the Early Long Term (ELT) scenario, used all of the same model assumptions for current conditions, but reflected changes expected to occur

from climate change, specifically, a 2025 emission level and a 15 cm sea level rise. The other three future-conditions include varying model assumptions related to the California WaterFix, such as changes to facilities and/or regulatory and operational constraints.

This UWMP uses the ELT scenario in the 2015 DCR to estimate future SWP supply availability because it is based on existing facilities and regulatory constraints, with hydrology adjusted for the expected effects of climate change. This scenario is consistent with the studies DWR has used in its previous SWP Delivery Reliability Reports for supply availability under future conditions.

The estimated long-term average availability for Valley District from the 2015 DCR is shown in Table 2-2.

Table 2-2. Wholesale Water Supplies Available (Long-term Average)

Wholesaler (Supply Source)	2020	2025	2030	2035	2040
State Water Project					
% of Table A Amount Available	61%	61%	61%	61%	61%
Anticipated Deliveries (AFY)	63,000	63,000	63,000	63,000	63,000
Source: 2015 DWR Delivery Capability Report					

The 2015 DCR includes a probability curve for each contractor's estimated delivery of Table A water. The curve for Valley District is shown in Figure 2-1.

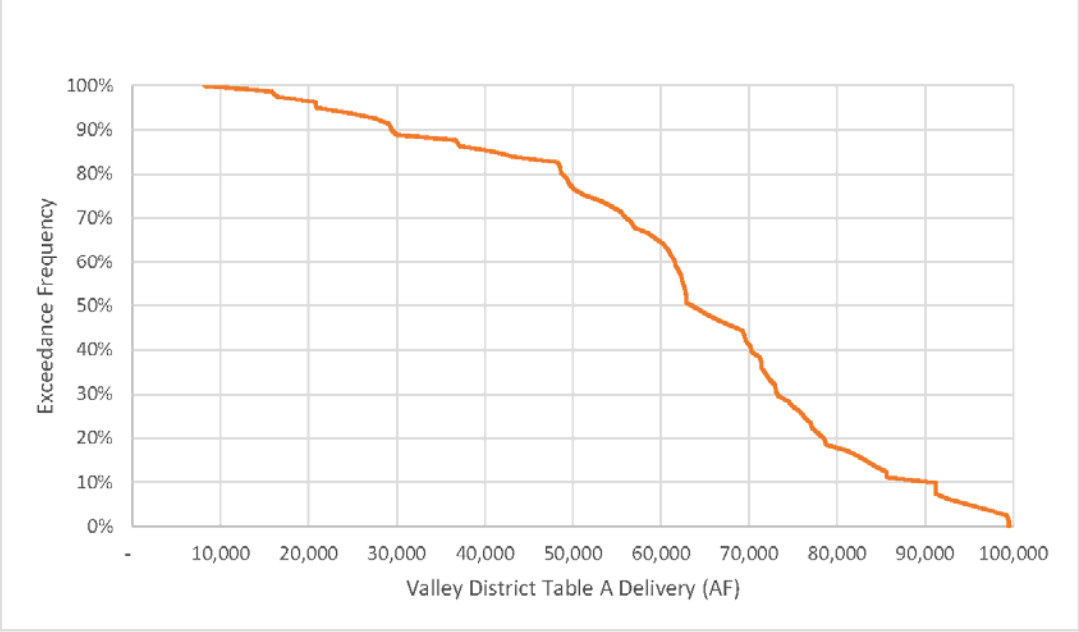


Figure 2-1. Estimated Table A Deliveries Probability Curve for Valley District (2015 DWR DCR)

Table 2-3 summarizes estimated SWP supply availability to Valley District in a single-dry year (based on a repeat of the worst-case historic hydrologic conditions of 2014) and over a multiple-dry year period (based on a repeat of the worst-case historic four-year drought of 1931 to 1934). The table also shows estimated delivery in a wet year, based on a repeat of hydrologic conditions of 1983.

Table 2-3 Estimated Wholesale Supply Reliability

Wholesale		Single Wet Year (1983)	Single Dry Year (2014)	Multiple Dry Year (1931-34)
State Water Project				
	% of Table A Amount Available	98%	5%	33%
	Anticipated Deliveries (AFY)	100,548	5,130	33,858
Source: 2015 DWR Delivery Capability Report				

As urban contractor demands increase in the future, the amount of water turned back and available for purchase will likely diminish. In critical dry years, DWR has formed Dry Year Water Purchase Programs for contractors needing additional supplies. Through these programs, water is purchased by DWR from willing sellers in areas that have available supplies and is then sold by DWR to contractors willing to purchase those supplies. Because the availability of these supplies is somewhat uncertain, they are not included as supplies available to Valley District in this Plan. However, Valley District's access to these supplies when they are available may enable it to improve the reliability of its SWP supplies beyond the values used throughout this report. The main strategy Valley District will use to supplement supplies in dry years is by storing water in wet years so that it can be used in dry years. Valley District is developing two conjunctive use programs that would be used for this purpose and would, hopefully, reduce, or eliminate, the need to participate in the DWR dry year programs.

2.1.2.1 Explanation of 2014 SWP Water Supply Allocation

The extremely dry sequence from the beginning of January 2013 through the end of 2014 was one of the driest two-year periods in the historical record. Water year 2013 was a year with two hydrologic extremes. October through December 2012 was one of the wettest fall periods on record, but was followed by the driest consecutive 12 months on record. Accordingly, the 2013 SWP supply allocation was a low 35 percent of SWP Table A amounts. The 2013 hydrology ended up being even drier than DWR's conservative hydrologic forecast, so the SWP began 2014 with reservoir storage lower than targeted levels and less stored water available for 2014 supplies. Compounding this low storage situation, 2014 also was an extremely dry year, with runoff for water year 2014 the fourth driest on record. Due to extraordinarily dry conditions in 2013 and 2014, the 2014 SWP water supply allocation was a historically low 5 percent of Table A amounts. The dry hydrologic conditions that led to the low 2014 SWP water supply allocation were extremely unusual, and to date have not been included in the SWP delivery estimates presented in DWR's 2015 Delivery Capability Report. It is anticipated that the hydrologic record used in the DWR model will be extended to include the period through 2014 during the next update of the model, which is expected to be completed prior to issuance of the next update to the biennial SWP DCR. For the reasons stated above, this UWMP uses a conservative

assumption that a 5-percent allocation of SWP Table A amounts represents the "worst case" scenario.

2.2 Local Water Supplies

Local precipitation that runs off in local streams or soaks into the ground, called "groundwater", meets nearly ¾ of the regional demand. This section provides a description of local surface water and groundwater management in the San Bernardino Valley, including court judgments, groundwater management plans, and groundwater pumping rights.

The groundwater basins utilized by RUWMP agencies are depicted in Figure 2-2. The figure also shows the San Bernardino Basin Area (SBBA), which encompasses several named basins, including the Bunker Hill and Lytle Creek Basins.

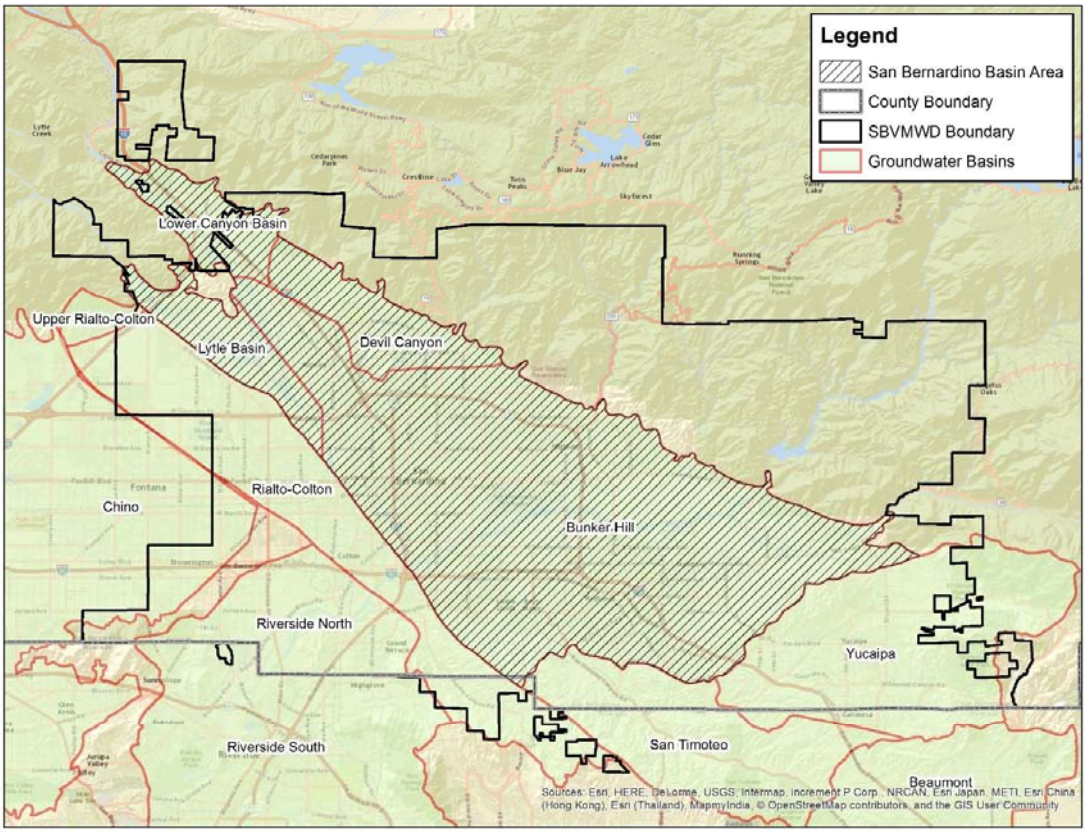


Figure 2-2. Groundwater Basins of the San Bernardino Valley Area

The basins of the RUWMP area are among the most rigorously managed in the State. Planning and management efforts evaluating needs and supplies have been established for most of the basins within the watershed through the next 20 to 40 years. Groundwater extractions and

conditions are monitored and tracked by the Western-San Bernardino Watermaster and the Basin Technical Advisory Committee.

2.2.1 San Bernardino Basin Area

The San Bernardino Basin Area (SBBA) was defined by, and adjudicated in gross, by the Western-San Bernardino Judgment (Western Judgment) in 1969. The SBBA has a surface area of approximately 141 square miles and lies between the San Andreas and San Jacinto faults. The basin is bordered on the northwest by the San Gabriel Mountains and Cucamonga fault zone; on the northeast by the San Bernardino Mountains and San Andreas fault zone; on the east by the Banning fault and Crafton Hills; and on the south by a low, east-facing escarpment of the San Jacinto fault and the San Timoteo Badlands. Alluvial fans extend from the base of the mountains and hills that surround the valley and coalesce to form a broad, sloping alluvial plain in the central part of the valley. The SBBA encompasses the Bunker Hill sub basin (DWR Number 8.02-06) defined by DWR and also includes a small portion of the Yucaipa Basin (8-02.07) and Rialto-Colton Basin (8-02.04) as defined by DWR. The SBBA also encompasses surface water.

The Western Judgment established the natural safe yield of the SBBA to be a total of 232,100 AF per year (AFY) for both surface water diversions and groundwater extractions (the Western Judgment is provided in Appendix I). Surface water is diverted from Mill Creek, Lytle Creek, and the SAR. The average surface water diversions in the SBBA for direct use from 1968 to 2000 were 39,000 AFY.

The Western Judgment allocates 64,862 AFY of the safe yield, which equates to 27.95 percent, to the Plaintiffs. The Plaintiffs include the City of Riverside (the successor to the Riverside Water Company and the Gage Canal Company), Riverside Highland Water Company, Meeks & Daley Water Company, and Regents of the University of California. The Riverside County agencies may not exceed their allocation unless they participate in "New Conservation" (explained below).

The Non-Plaintiffs' (agencies within San Bernardino County) rights were defined in the Judgment as 167,238 AFY, which equates to 72.05 percent of the safe yield. San Bernardino agencies are allowed to extract more than 167,238 AFY from the SBBA, as long as they import and recharge a like amount of water into the SBBA. The Western-San Bernardino Watermaster provides an annual accounting of both the plaintiff and non-plaintiff extractions and a comparison to the safe yield. The Watermaster bases the Valley District replenishment water requirement on the cumulative accounting of non-plaintiff extractions. If the cumulative extractions are less than the cumulative safe yield, there is a groundwater "credit" in the basin. In years when cumulative extractions are greater than their allocation, a "debit" is given. Recharge is also required to offset the export of water outside the SBBA in excess of the amount recorded during the base period (1959-1963). Credits are earned for any new supplies such as stormwater capture. As of the accounting performed for the 2015 Annual Western-San Bernardino Watermaster Report, the Non-Plaintiffs have 104,994 AF of net credit accumulated

in the SBBA and are, therefore, not required to recharge. Although there is no recharge requirement under the Judgment, the Non-Plaintiffs have continued to recharge the SBBA.

2.2.1.1 Lytle Creek Sub basin

Lytle Creek Basin is part of the SBBA, and it is not identified as a separate sub-basin in DWR Bulletin 118-2003; however, the sub basin is an integral part of the Upper Santa Ana Valley Groundwater Basin and a major recharge area for both the Bunker Hill and Rialto-Colton sub basins. Historically, local agencies have recognized Lytle Creek sub basin as a distinct groundwater sub basin. In the Western Judgment, the Bunker Hill and Lytle Creek sub basins are combined into the SBBA. However, the three separate water-bearing zones and intervening confining zones of the Bunker Hill sub basin are not observed in the Lytle sub basin. Sediments within the Lytle sub basin are, for the most part, highly permeable, and the aquifer has a high specific yield. High permeability and specific yield tend to result in an aquifer that responds rapidly to changes in inflow (precipitation and streamflow) and outflow (groundwater pumping, streamflow, and subsurface outflow).

Lytle Creek sub basin is adjoined on the west by the Rialto-Colton sub basin along the Lytle Creek fault, and on the east and southeast by the Bunker Hill sub basin along the Loma Linda fault and Barrier G. The northwestern border of the sub basin is delineated by the San Gabriel Mountains, and runoff from the mountains flows south/southeast through Lytle and Cajon Creeks into the basin.

Numerous groundwater barriers are present within Lytle Creek sub basin, resulting in six compartments within the sub basin. Barriers A through D divide the northwestern portion of the sub basin into five sub-areas and the southeastern portion of the sub basin comprises the sixth sub-area. Barrier F divides the northwestern sub-areas from the southeastern sub-area. Studies have shown that the groundwater barriers are less permeable with depth. When groundwater levels are high during wet years, more leakage occurs across the barriers than when groundwater levels are lower (i.e., during dry years). The amount of pumping in each sub-area, in large part, controls the movement of groundwater across the barrier within the older alluvium but not the younger alluvium.

It is important to note that the water rights in Lytle Creek are set forth in long-standing court judgments governing the rights of the parties in that basin. The Lytle Creek Basin was adjudicated under the 1924 Judgment No. 17,030 from the Superior Court of San Bernardino County and is managed by the Lytle Creek Water Conservation Association, which is made up of the successors to the stipulated parties of the judgment (a copy of the 1924 judgment is provided in Appendix J).

Table 2-4 shows historical extractions from the SBBA for years 2010-2014.

Table 2-4. Historic Groundwater Extractions and Surface Water Diversions from SBBA (AFY)

Entity	2010	2011	2012	2013	2014
Non-Plaintiffs					
Bear Valley Mutual Water Company (a)	17,524	16,862	15,560	15,259	17,102
City of Colton (a)	4,740	4,783	6,222	5,170	4,879
East Valley Water District (a)	18,120	18,408	19,538	18,796	17,896
City of Loma Linda (a)	4,863	5,401	5,776	5,571	5,449
City of Redlands (a)	28,960	31,908	31,918	29,641	29,100
City of Rialto (a)	5,325	3,377	3,109	4,082	4,132
San Bernardino Valley MWD (a)	291	618	3,790	7,485	8,178
City of San Bernardino (a)	49,185	50,331	50,250	46,853	44,798
West Valley Water District (a)	7,986	7,697	8,637	7,723	6,397
Yucaipa Valley Water District (a)	166	97	120	220	154
Other Agencies in San Bernardino and Private Entities (b)	16,474	19,288	23,053	17,597	15,062
Subtotal for Non-Plaintiffs					
Plaintiffs					
Riverside Highland Water Company (c)	1,136	1,655	2,135	2,873	2,077
Agencies in Riverside County (d)	52,987	54,151	60,159	60,885	57,072
Subtotal for Plaintiffs					
Total	**207,757**	**214,576**	**230,267**	**222,155**	**212,296**

Notes:
(a) Data from Volume 1 of the Western-San Bernardino Watermaster Annual Report for 2015.
(b) Includes Crafton Water Company, Devore Water Company, Fontana Union Water Company, Loma Linda University, Mentone Citrus Growers, Mount Vernon Water Company, Mountain View Generating Station, Muscoy Mutual Water Company, San Bernardino County – Facility Management, Tennessee Water Company, Terrace Water Company, and Redlands water Company. Data from Volume 1 of the Western-San Bernardino Watermaster Annual Report for 2015.
(c) Riverside-Highland Water Company's service area extends into both San Bernardino and Riverside counties. However, Riverside-Highland Water Company is a Plaintiff within the Western Judgment and therefore extractions for Riverside-Highland are typically included with those of Riverside County entities. Data from Table No. 11, Western-San Bernardino Watermaster Annual Report for 2015.
(d) Includes Agua Mansa Water Company and Meeks & Daley Water Company, Regents of the University of California, and the City of Riverside. Data from Table Nos. 10, 12, and 13 of the Western-San Bernardino Annual Report for 2015.

2.2.2 Rialto-Colton Sub basin (DWR 8-02.04)

The Rialto-Colton sub basin underlies a portion of the upper Santa Ana Valley in southwestern San Bernardino County and northwestern Riverside County. This sub basin is about 10 miles long and varies in width from about 3.5 miles in the northwestern part to about 1.5 miles in the southeastern part. This sub basin is bounded by the San Gabriel Mountains on the northwest, the San Jacinto fault on the northeast, the Badlands on the southeast, and the Rialto-Colton fault on the southwest. The Santa Ana River cuts across the southeastern part of the basin. The basin generally drains to the southeast, toward the Santa Ana River. Warm and Lytle

Creeks join near the southeastern boundary of the basin and flow to meet the Santa Ana River near the center of the southeastern part of the sub basin.

The principal recharge areas are Lytle Creek, Reche Canyon in the southeastern part, and the Santa Ana River in the south-central part. Lesser amounts of recharge are provided by percolation of precipitation to the valley floor, underflow, and irrigation and septic returns. Underflow occurs from fractured basement rock and through the San Jacinto fault in younger Santa Ana River deposits at the south end of the sub basin and in the northern reaches of the San Jacinto fault system. Groundwater recharge has been augmented through the use of spreading basins.

The groundwater extractions in the Rialto-Colton Basin are governed by the Rialto Basin Decree and the Western Judgment. The Western Judgment uses the terminology "Colton Basin Area". Fontana Water Company (FWC), the City of Rialto, the City of Colton, and West Valley Water District are subject to the Rialto Basin Decree, entered on December 22, 1961, by the Superior Court for the County of San Bernardino. Entitlement extractions for any given water year (October 1 to September 30) are affected by groundwater elevations between March and May for three specific "index" wells (Duncan Well, Willow Street Well, and Boyd Well). Under specified conditions, groundwater extractions may be limited during certain months.

The Western Judgment requires the average lowest static water levels in three index wells in the Rialto-Colton Basin and Riverside North Basins to be no lower than 822.04 feet above mean sea level (MSL). If the water levels fall below 822.04 feet above MSL, Valley District is obligated to recharge the basin with imported water or reduce extractions. Extractions for use in Riverside County are limited to 3,381 AFY.

The safe yield for the Rialto-Colton Basin was not defined by the Western Judgment or the Rialto Basin decree. Extractions during the five-year base period of the Western Judgment, 1959 to 1963, were, on average, 11,731 AFY.

Since the safe yield has not been determined for the Rialto-Colton Basin, the average extraction from 1996-2005 of 17,300 AFY was reported in the 2015 Upper Santa Ana River Watershed IRWMP as the sustainable supply from the Rialto-Colton Basin.

2.2.3 Riverside-Arlington Sub-basin (DWR 8-02.03)

The Riverside-Arlington sub basin underlies part of the Santa Ana River Valley in northwest Riverside County and southwest San Bernardino County. This sub basin is bounded by impermeable rocks of Box Springs Mountains on the southeast, Arlington Mountain on the south, La Sierra Heights and Mount Rubidoux on the northwest, and the Jurupa Mountains on the north. The northeast boundary is formed by the Rialto-Colton fault, and a portion of the northern boundary is a groundwater divide beneath the community of Bloomington. The Santa Ana River flows over the northern portion of the sub basin. Annual average precipitation ranges from about 10 to 14 inches. The Riverside-Arlington sub basin is replenished by infiltration from Santa Ana River flow, underflow past the Rialto-Colton fault, intermittent

underflow from the Chino sub basin, return irrigation flow, and deep percolation of precipitation.

The Western Judgment includes the Riverside Basin Area which consists of a portion of the Riverside-Arlington sub-basin upstream of Riverside Narrows. Groundwater extractions in the Riverside North Groundwater Basin (the portion of the Riverside Basin Area in San Bernardino County) are governed by the Western Judgment. Extractions for use in San Bernardino County are unlimited, provided that water levels at three index wells in the Rialto-Colton and Riverside North Basins stay above 822.04 feet MSL. Extractions from the Riverside North Basin for use in Riverside County are limited to 21,085 AFY.

2.2.4 Yucaipa Sub basin (DWR 8-02.07)

The Yucaipa sub basin underlies the southeast part of San Bernardino Valley. It is bounded on the northeast by the San Andreas fault, on the northwest by the Crafton fault, on the west by the Redlands fault and the Crafton Hills, on the south by the Banning fault, and on the east by the Yucaipa Hills. The average annual precipitation ranges from 12 to 28 inches. This part of the San Bernardino Valley is drained by Oak Glen, Wilson, and Yucaipa Creeks south and west into San Timoteo Wash, a tributary to the Santa Ana River.

Dominant recharge to the sub basin is from percolation of precipitation and infiltration within the channels of overlying streams, particularly Yucaipa and Oak Glen Creeks; underflow from the fractures within the surrounding bedrock beneath the sub basin; and artificial recharge at spreading grounds.

The Yucaipa Subbasin is not adjudicated; however, a groundwater management plan (AB 3030 Plan) is underway to proscribe collective management of the subbasin. According to a recent study, the Yucaipa Basin has a sustainable yield of approximately 9,600 AFY and a storage capacity totaling more than 356,000 AF. From 2007 to 2012, artificial recharge efforts increased the total groundwater storage in the Yucaipa Basin to 1998 levels. In the last few years, groundwater storage levels have bene going down as the area relies on stored groundwater to get through the drought.

With ample storage, ability to recharge the basin by spreading surface waters, and apparent flexibility in managing groundwater levels without subsidence problems, the Yucaipa subbasin could be conjunctively managed both to meet normal annual demands and to meet water resource needs in the event of a drought and curtailment or loss of inconsistent surface water supplies, resulting in a highly reliable water supply. Current goals are to secure agreements to not pump beyond the safe yield of the basin, supplementing supplies with imported surface water. Valley District, YVWD, Redlands, San Gorgonio Pass Water Agency (SGPWA), South Mesa Water Company, Western Heights Water Company, and the City of Yucaipa are currently working together to develop a basin wide conjunctive use program in the Yucaipa Basin.

2.2.5 San Timoteo Sub basin (DWR 8-02.08)

The San Timoteo Sub basin is largely outside of the Valley District service area, but is one of the sources used by YVWD. The San Timoteo sub basin underlies Cherry Valley and the City of Beaumont in southwestern San Bernardino and northwestern Riverside counties. The sub basin is bounded to the north and northeast by the Banning fault and impermeable rocks of the San Bernardino Mountains, Crafton Hills, and Yucaipa Hills; on the south by the San Jacinto fault; on the west by the San Jacinto Mountains; and on the east by a topographic drainage divide with the Colorado River hydrologic region. The surface is drained by Little San Gorgonio Creek and San Timoteo Canyon to the Santa Ana River. Average annual precipitation ranges from 12 to 14 inches in the western part to 16 to 18 inches in the eastern part of the sub basin.

Holocene-age alluvium, which consists of unconsolidated clay, silt, sand, and gravel, is the principal water-bearing unit in this sub basin. The alluvium, which is probably thickest near the City of Beaumont, thins toward the southwest and is not present in the central part of the sub basin. The Pliocene-Pleistocene-age San Timoteo Formation consists of alluvial deposits that have been folded and eroded. These deposits are widely distributed and principally composed of gravel, silt, and clay, with comparatively small amounts of calcite-cemented conglomerate. The clasts are chiefly granitic, with lesser amounts of volcanic and metamorphic pebbles and cobbles. The total thickness of the San Timoteo Formation is estimated to be between 1,500 and 2,000 feet, but logs of deep wells near the central part of the sub basin indicate water-bearing gravels to depths of only 700 to 1,000 feet.

The Banning and Cherry Valley faults and two unnamed faults in the northeast part of the sub basin offset impermeable basement rocks, stepping down to the south. Water levels change across the Banning fault, dropping 100 to 200 feet to the south. In the western part of the sub basin, water levels drop to the south about 75 feet across the Loma Linda fault and about 50 feet across the San Timoteo barrier. In the northeastern part of the sub basin, water levels drop to the south across two unnamed faults. Each of these faults appears to disrupt groundwater movement in the sub basin.

Groundwater is replenished by subsurface inflow and percolation of precipitation, runoff, wastewater discharge, and imported water. Runoff and imported water are delivered to streambeds and spreading grounds for percolation. The San Timoteo Subbasin is not adjudicated, and reliable estimates of total groundwater extractions are not available. However, water table elevations within the San Timoteo Subbasin have not declined over the years which is likely due to the constant flow of treated wastewater from YVWD that flows through San Timoteo Creek.

2.2.5.1 Beaumont Groundwater Basin

DWR considers the Beaumont Groundwater Basin to be composed of three other groundwater basins, primarily the San Timoteo sub basin, the Upper Santa Ana Valley Groundwater Basin (No. 8-02), and the San Gorgonio Pass Sub basin (No. 7-21.04). Locally, the Beaumont Basin is

treated as a distinct basin. The Beaumont Basin is outside of the Valley District service area, but is one of the sources used by YVWD.

The Beaumont Basin is located in northwestern Riverside County, south of the Yucaipa Basin. The basin eventually drains to San Timoteo Creek, a tributary of the Santa Ana River, and covers approximately 26 square miles. Groundwater elevations generally slope from the northeast to southwest in the basin.

Groundwater within the basin is predominantly found in Holocene age alluvium and in the San Timoteo Formation. While the San Timoteo Formation extends to depths in excess of 1,500 feet, water bearing sediments within the Beaumont Basin exist to depths of 700 to 1,000 feet. Estimates for total groundwater storage capacity within the basin vary. The Beaumont Basin storage capacity is estimated at approximately 1,000,000 AF.

In February 2004, the San Timoteo Watershed Management Authority filed a judgment adjudicating the groundwater rights in the Beaumont Basin and assigned the Beaumont Basin Watermaster (BBW) with the authority to manage the groundwater basin. The Beaumont Basin Watermaster is comprised of managers from the Beaumont Cherry Valley Water District, City of Banning, City of Beaumont, South Mesa Mutual Water Company, and YVWD. The Beaumont Basin Watermaster originally established a long-term yield for the Beaumont Basin of 8,560 AFY. The safe yield is reevaluated every ten years and on April 1st 2015, the BBW approved the adoption of Resolution 2015-01 (2013 Reevaluation of the Beaumont Basin Safe Yield Report and Redetermination of the Safe Yield of the Beaumont Basin), which reduced the safe yield to 6,700 AFY.

The Judgement includes a controlled overdraft (temporary surplus) provision that allows extraction up to 160,000 AF over the 10-year period immediately following the Judgement inception. During the first 10 years, the agencies could extract 16,000 AFY; after the first 10 years, extractions are limited to the amount each agency has in storage or credit. Agencies must provide the BBW with funds necessary to replace any amount of overproduction that may have occurred over a 5-year consecutive period. During the past four years, the Watermaster reports annual groundwater extractions in the basin that range from 11,800 to 15,100 AFY, with 2014 representing the third highest production year since the Judgement was in place. YVWD pumping from the Beaumont basin was 1,198 AF in 2014.

The adjudication of the Beaumont Basin has defined overlying and appropriator pumping rights and also allows for supplemental water to be stored and recovered from the basin. The Beaumont Basin, under this adjudication, is considered to be in a condition of overdraft with assigned maximum annual overlying production rights of 8,650 AF. YVWD has a right to an operating yield of 2,552 AFY from the Beaumont Basin, which consists of 381 AF of appropriative right and 2,173 AF of Controlled Overdraft and Supplemental Water Recharge Allocation. YVWD can deliver amounts in addition to the 2,552 AF as supported from overlying water right holders.

2.2.6 Chino Sub basin (DWR 8-02.01)

Fontana Water Company, the City of Rialto, and WVWD extract water from Chino Sub basin, an adjudicated basin managed by the Chino Basin Watermaster. The Chino Sub basin lies in the southwest corner of San Bernardino County. The Chino Sub basin is bordered to the east by the Rialto-Colton fault. In the other three directions, the Chino Sub basin is ringed by impermeable mountain rock, the San Gabriel Mountains to the north, the Jurupa Mountains and Puente Hills to the south and southwest. Average annual precipitation across the basin is 17 inches. This part of the San Bernardino Valley is drained by San Antonio Creek and Cucamonga Creek southerly to the Santa Ana River.

On January 2, 1975, several Chino Basin producers filed suit in California State Superior Court for San Bernardino County (the "Court") to settle the problem of allocating water rights in the Chino Basin. On January 27, 1978, the Court entered a judgment in Chino Basin Municipal Water District v. City of Chino et al. adjudicating water rights in the Chino Basin and establishing the Chino Basin Watermaster. The Judgment adjudicated all groundwater rights in Chino Basin and contains a physical solution to meet the requirements of water users having rights in or dependent upon the Chino Basin. The Judgment also appointed the Watermaster to account for and implement the management of the Chino Basin. The Judgment declared that the initial operating safe yield of the Chino Basin is 145,000 AFY. The Basin is managed through implementation of the Chino Optimum Basin Management Plan. Per the Judgment, WVWD has a minimum of approximately 1,000 AFY of extraction rights. Extractions above that amount must be replenished with SWP water through a program with the Chino Basin Watermaster.

2.2.7 No Man's Land Sub basin

Fontana Water Company and the City of Rialto extract water from a small area believed by some to be an unadjudicated groundwater basin between the Chino Basin and the Rialto-Colton Basin known as "No Man's Land." Water rights in the area, the hydrogeological nature of this area, as well as the quantities of water produced in this area, are the subject of a lawsuit currently pending in the Superior Court for the County of San Bernardino entitled San Bernardino Valley Municipal Water District et al. v. San Gabriel Valley Water Co. et al., Case No. CVDS1311085.

2.3 Local Water Management

2.3.1 Western Judgment

The Western Judgment, entered simultaneously with the Orange County Judgment, settled rights within the upper Santa Ana River watershed to ensure that those resources would be sufficient to meet the flow obligations in the lower Santa Ana River watershed set by the Orange County Judgment (Western Municipal Water District of Riverside County v. East San Bernardino County Water District, Superior Court of Riverside County, Case No. 78426 [April 17, 1969]). Toward this end, the Western Judgment generally provides for:

- A determination of safe yield of the SBBA at 232,100 AFY;

- Establishment of specific amounts (64,862 AF) of water that can be extracted from the SBBA by plaintiff parties (parties in Riverside County). This is equal to 27.95 percent of safe yield;
- An obligation of Valley District to provide replenishment for any extractions from the SBBA by non-plaintiffs (entities in the Valley District service area) in aggregate in excess of 167,238 AF, or72.05 percent of safe yield;
- An obligation of Western to replenish the Colton Basin Area and the Riverside North Basins if extractions for use in Riverside County in aggregate exceed 3,381 AF and 21,085 AF respectively; and
- An obligation of Valley District to replenish the Colton Basin Area and Riverside North Basin Areas if water levels are lower than 822.04 MSL in specified index wells.

The Western Judgment identifies regional representative agencies to be responsible, on behalf of the numerous parties bound thereby, for implementing the replenishment obligations and other requirements of the judgment. The representative entities for the Western Judgment are Valley District and Western. Valley District acts on behalf of all non-plaintiffs (San Bernardino County agencies) and Western acts on behalf of the Plaintiffs (Riverside County agencies). Plaintiff parties with specific rights to produce 27.95 percent of the safe yield from the SBBA are the City of Riverside, Riverside Highland Water Company, Meeks & Daley Water Company, and the Regents of the University of California.

The Western Judgment contemplates that the parties will undertake "new conservation" which is defined as any increase in replenishment from natural precipitation which results from operation of works and facilities not in existence as of 1969, other than works installed to offset losses from flood control channelization. The Western Judgment specifies that the parties to the Judgment have the right to participate in any new conservation projects, provided they pay the appropriate share of the cost. The net effect of new conservation is an increase in pumping rights by the Plaintiffs and "credits" for the non-Plaintiffs. A copy of the Western Judgment is provided in Appendix I.

In 2013, both the Plaintiffs and Non-Plaintiffs agreed to participate in the cost to capture water that historically flowed to the ocean. This New Conservation was due to the construction and operation of the Seven Oaks Dam. The 2015 Annual Report for the Western-San Bernardino Annual Report increases the rights for both Parties as shown in Table 2-5.

Table 2-5. Adjusted SBBA Rights Due to New Conservation Allocation

Parties	Percentage	Safe Yield Allocation (AF)	New Conservation Allocation (AF)	Adjusted Right (AF)
Non- Plaintiffs	**72.05%**	**167,238**	**5,507**	**172,745**
Plaintiffs	**27.95%**	**64,862**	**2,136**	**66,998**
City of Riverside		52,199	1,719	53,918
Riverside Highland Water Company		4,294	141	4,435
AM and MD Water Company		7,833	258	8,091
Regents of the University of California		536	18	554
Total Sum of Extractions	**100%**	**232,100**	**7,643**	**239,743**

2.3.2 Orange County Judgment

In 1963, the Orange County Water District (OCWD) filed suit against substantially all water users in the area tributary to Prado Dam seeking adjudication of water rights on the Santa Ana River. The litigation ultimately involved over 4,000 served water users and water agencies, the four largest of which were OCWD, Valley District, Western, and the Chino Basin Municipal Water District (now the Inland Empire Utilities Agency). Given the magnitude of the potential litigation, these four districts and other parties developed a settlement that was approved by the Orange County Superior Court in a stipulated judgment entered on April 17, 1969, Orange County Water District v. City of Chino et al., Case No. 117628 (Orange County Judgment). The Orange County Judgment imposes a physical solution that requires parties in the upper Santa Ana River watershed to deliver a minimum quantity of water to points downstream including Riverside Narrows and Prado Dam. A provision of the Orange County Judgment related to conservation establishes that, once the flow requirements are met, the Upper Area parties "may engage in unlimited water conservation activities, including spreading, impounding, and other methods, in the area above Prado Reservoir." The Orange County Judgment is administered by the five-member Sana Ana River Watermaster that reports annually to the court and the four representative agencies. Valley District, the Inland Empire Utilities Agency, and Western nominate one member each to the Watermaster, OCWD nominates two members, and members are appointed by the court. A copy of the Orange County Judgment is provided in Appendix H.

2.3.3 1961 Rialto Basin Decree

The Rialto Basin Decree was described previously in Section 2.2.2. A copy of the Rialto Basin Decree is provided in Appendix K.

2.3.4 Seven Oaks Accord

On July 21, 2004, Valley District, Western, the City of Redlands, EVWD, Bear Valley Mutual Water Company, Lugonia Water Company, North Fork Water Company, and Redlands Water Company signed a settlement agreement known as the Seven Oaks Accord (Accord). The Accord calls for Valley District and Western to recognize the prior rights of the water users for a portion of the natural flow of the Santa Ana River. In exchange, the water users agree to

withdraw their protests to the water right application submitted by Valley District on behalf of itself and Western. All the parties to the Accord have agreed to support the granting of other necessary permits to allow Valley District and Western to divert water from the Santa Ana River. By means of the Accord, Valley District agreed to modify its water right applications to incorporate implementation of the Accord. Additionally, the Accord requires Valley District and Western to develop a groundwater spreading program in cooperation with other parties, "that is intended to maintain groundwater levels at the specified wells at relatively constant levels, in spite of the inevitable fluctuations due to hydrologic variation." In response, local agencies included groundwater management in the USARW IRWMP and have collectively prepared a Regional Water Management Plan annually since 2008.

2.3.5 Integrated Regional Water Management Plan

The Valley District service area is incorporated into two Integrated Regional Water Management Plans.

The Santa Ana Watershed Project Authority (SAWPA) was formed in 1968 as a planning agency and was transformed in 1972 through a change in its mission to plan and build facilities that would protect the water quality of the SAR watershed. SAWPA is a Joint Powers Authority, classified as a Special District (government agency) in which it carries out functions useful to its member agencies: Inland Empire Utilities Agency, Eastern Municipal Water District, Orange County Water District, Valley District, and Western. SAWPA developed an Integrated Regional Water Management Plan (IRWMP) for the entire SAR watershed titled the One Water One Watershed (OWOW) Plan. This broad planning document is the framework for overall water management in the watershed and is largely based upon the planning efforts of its member agencies. The OWOW Plan is a "macro-level" plan that is consistent with DWR's *California Water Plan* (Bulletin 160) and State Water Resources Control Board's (SWRCB) Strategic Plan, Watershed Management Initiative, and the basin planning process.

The 2015 Upper Santa Ana River Watershed IRWMP (USARW IRWMP) provides data for the OWOW Plan. By focusing on a finer scale, the USARW IRWMP reveals that the Upper SAR watershed has several unique water management challenges and issues. The purpose of the USARW planning process is to focus on local issues specific to the upper watershed and to assess water management opportunities in greater detail. This collaborative process addresses some of the long-term water management strategies of the Upper SAR watershed and will greatly contribute to protecting and enhancing reasonable and beneficial uses of the watershed's water resources. This planning process is a part of the overall SAR water management planning process and is in agreement with past and current SAWPA regional planning initiatives. In addition, several agencies in the IRWM Region, including Valley District, also take part in SAWPA planning efforts.

The 2015 USARW IRWMP serves as an update to the IRWMP developed in 2007 and was developed by the following agencies:

1. Big Bear Lake Department of Water and Power

2. Big Bear City Community Services District
3. City of Loma Linda
4. City of Redlands Municipal Utilities and Engineering Department
5. City of Rialto
6. City of Riverside Public Utilities Department
7. East Valley Water District
8. Fontana Union Water Company
9. San Bernardino County Flood Control District
10. San Bernardino Municipal Water Department
11. San Bernardino Valley Municipal Water District
12. San Bernardino Valley Water Conservation District
13. San Gorgonio Pass Water Agency
14. West Valley Water District
15. City of Yucaipa
16. Yucaipa Valley Water District

The primary purpose of the USARW IRWMP is to provide a roadmap for the management of water resources in the area to ensure long-term, reliable water supply availability for the IRWM Region. The first step in developing this roadmap is the formulation of broad water management goals and more specific water management objectives that can help achieve those goals. The IRWMP identifies four key goals:

1. Improve water supply reliability
2. Balance flood management and increase stormwater recharge
3. Improve water quality
4. Improve habitat and open space

The USARW IRWMP also identifies 15 specific and measurable objectives to support achievement of the four goals. The USARW IRWMP stakeholders formed a Basin Technical Advisory Committee (BTAC) to facilitate implementation of the IRWMP.

Future updates of the OWOW Plan and the USARW IRWMP will build on the water supply and demand information presented in this RUWMP.

2.3.6 Annual Regional Water Management Plan

The BTAC develops the annual water management plan. Participation in the BTAC is open to any interested agency. The agencies currently participating in the BTAC are:

- City of Loma Linda
- City of Redlands Municipal Utilities and Engineering Department
- City of Rialto
- City of Riverside Public Utilities Department
- Western Municipal Water District
- San Bernardino Valley Municipal Water District

- East Valley Water District
- Bear Valley Mutual Water Company
- West Valley Water District
- San Bernardino Municipal Water Department
- San Bernardino Valley Water Conservation District
- Yucaipa Valley Water District
- San Bernardino County Flood Control District
- City of Colton

The BTAC works cooperatively and strives to make decisions by consensus. It focuses on long-term management of water resources by implementing the strategies in the USARW IRWMP. Currently, BTAC meets monthly with the primary purpose of providing technical advice for the management of local resources to the Western-San Bernardino Watermaster agencies, Western Municipal Water District and Valley District.

2.3.7 Settlement Agreement with San Bernardino Valley Water Conservation District

Valley District, Western, and the San Bernardino Valley Water Conservation District entered into a settlement agreement on August 9, 2005 whereby the agencies will work cooperatively to develop an annual groundwater management plan. Since both parties are members of the BTAC, this requirement is being met by the BTAC's Regional Water Management Plan, which largely emphasizes groundwater management.

2.4 Transfers, Exchanges, and Groundwater Banking Programs

2.4.1 Transfers and Exchanges

Transfers and exchanges are discussed in chapters for each individual agency.

2.4.2 Groundwater Banking Programs

As stated previously, storing water in local groundwater basins for later use during droughts is one of the primary management strategies in the USARW IRWMP. Valley District has been conducting groundwater recharge activities in the SBBA since 1972. The San Bernardino Valley Water Conservation District and its predecessors have conducted water conservation (groundwater recharge) activities since 1912 in areas that overlie the SBBA.

The USARW IRWMP evaluated additional conjunctive use scenarios and concluded that they were feasible. Conjunctive use projects currently under development in the Valley District Service area are described in Section 2.6.3.

2.5 Local Water Supply Reliability

2.5.1 Groundwater Quality

Groundwater quality varies among the Region's groundwater basins, particularly in the subbasins of the Upper SAR due to geology and faulting patterns and recharge points, and from

anthropogenic sources of contamination. Much of the groundwater sampling and evaluation was reported in California's Groundwater Bulletin 118 and in the 2015 IRWMP. Groundwater quality is regularly monitored and reported to the Regional Water Quality Control Board - Santa Ana Region.

Valley District and the retail agencies participate in regional efforts to monitor water quality. As part of efforts to use SWP Water to recharge local groundwater basins, Valley District prepares a triennial report for the Santa Ana RWQCB. Each report documents the water quality of SWP Water, as indicated by TDS and nitrogen, in comparison to the applicable groundwater objectives. Reports for different basins are prepared on a rotating schedule to provide a more robust view of water quality. Reports are prepared for groundwater recharge in Bunker Hill A, Bunker Hill B and portions of the Lytle Creek, Rialto, Yucaipa, San Timoteo, Colton and Riverside Basins Management Zones.

Valley District prepared a report for the Yucaipa and San Timoteo Basins in 2015, as well as one for the Bunker Hill A and B, Lytle, and Rialto-Colton Management Zones. The reports found that the TDS and nitrogen levels in the SWP Water were typically below the applicable groundwater objective for the groundwater management zone.

Valley District, Western, the City of Riverside, and the City of San Bernardino are collaborating on the development of a water quality model for the Riverside and Arlington Groundwater Basins. The model will be used to evaluate the potential impacts of groundwater recharge on basin TDS and nitrate levels.

2.5.2 Salinity Objectives

The 1995 Water Quality Control Plan for the Santa Ana River Basin, as amended in 2004, contains water quality objectives for nitrogen and total dissolved solids (collectively called "Salinity Objectives") in groundwater. These standards were set with the objective of protecting long-term conjunctive use of the basin. In June 2007, multiple water entities in the Upper Santa Ana River watershed and the SARWQCB entered into a Cooperative Agreement to "Protect Water Quality and Encourage the Conjunctive Uses of Imported Water in the Santa Ana River Basins." The Cooperative Agreement is intended to allow parties that recharge imported water within the Santa Ana Region to continue recharge while monitoring and improving groundwater basin quality. Specifically, the Cooperative Agreement requires parties that undertake groundwater recharge with imported water to:

- collect data on ambient water quality in each groundwater management zone;
- track the amount and quality of imported water recharged in each groundwater management zone;
- project ambient water quality in each groundwater management zone for the subsequent 20 years; and
- report the data described above every 3 years.

As part of the 2007 IRWMP, entities in the SBBA evaluated how and if nitrogen and TDS levels could impact the ability to use imported water for recharge. Modeling performed for the IRWMP found that historic yearly and monthly SWP nitrogen levels were always lower than the lowest ambient level in any of the groundwater management zones. Thus nitrogen is not anticipated to limit the use of SWP water in the San Bernardino Valley. However, review of SWP water quality data indicates that in some dry-year and multiple dry-year periods, SWP water TDS levels could exceed ambient groundwater TDS levels. However, since SWP water project supplies would be limited in dry-periods to between 12,300 to 35,900 AFY, and since TDS levels would be much lower during other times, the long-term impacts are difficult to quantify.

In January 2008, Valley District entered into an agreement with the SARWQCB which requires the development of a water quality report every three years. The intent of this report is to identify any potential water quality issues early on so they can be mitigated and to avoid any long-term impacts.

At the current time, water quality is not expected to limit the use of SWP water. However, water quality issues are constantly evolving. Agencies of the San Bernardino Valley will continue to take action to protect and treat supply when needed, but it is well recognized water quality treatment can have significant costs.

2.5.3 Inland Empire Brine Line

The Inland Empire Brine Line (herafter "Brine Line"), the portion of the Santa Ana Regional Interceptor (SARI) owned by SAWPA, was built over a period of 25 years (1975-2000) to collect and transport industrial brine that could not be treated at local (inland) wastewater treatment facilities. The Brine Line runs from the City of San Bernardino to a point just downstream of the Prado Dam. Another branch of the Brine Line runs from Lake Elsinore northwesterly until joining the Brine Line. The two branches combine into one branch and extend through Orange County to an ocean outfall. The entire SARI is 93 miles long. In 2012, YVWD constructed a thirteen mile Yucaipa Valley Brine Line to convey brine from YVWD's Wochholz Regional Water Recycling Facility to the Brine Line. The Brine Line is a tremendous asset to the Valley District service area by enabling the transport of salts out of the area.

2.5.4 Chino and Yucaipa Basins Salt Management

The buildup of TDS and nitrogen in groundwater is an on-going water quality challenge in the Chino and Yucaipa basins. Despite the construction and operation of the Brine Line, a salt imbalance remains. Modeling performed by SAWPA has indicated that water from the Chino and Yucaipa basins could consistently exceed the 500 mg/L secondary MCL in the future if mitigation measures are not taken.[1]

[1] EPA has established National Secondary Drinking Water Regulations. EPA does not enforce these "secondary MCLs." They are established only as guidelines to assist public water systems in managing their drinking water for aesthetic considerations, such as taste, color and odor. These contaminants are not considered to present a risk to human health at the secondary MCL.

SAWPA's Salinity Management Plan identifies potential long-term options to address the need for additional salt removal, including:

- Best management practices: source control measures aimed at reducing salt mass balances that would otherwise be discharged to ground or surface waters, or introduced into the wastewater stream. Examples include: eliminating salt-based domestic water softening devices, promoting the use of low-salt detergents, addressing salt runoff, and implementing pre-treatment programs.
- Desalters for water supply: Increase the amount of water desalted so as to create blended water with salinity less than 500 mg/L.
- Desalters for wastewater: Avoid adding salt to groundwater by adding desalination to all or a portion of the wastewater effluent stream. Providing advanced treatment to secondary effluent would also increase the possibility of reusing the effluent, including indirect potable water reuse via groundwater recharge or surface storage augmentation.
- Brine concentration: Increase the efficiency of desalters to limit the amount of liquid waste included in the brine stream entering the SARI.

WVWD can pump water from the Chino Basin, and YVWD can pump water from the Yucaipa Basin. Both these agencies recognize that groundwater from these basins may require treatment for TDS and nitrates.

2.5.5 Known Groundwater Contaminant Plumes

The SBBA has the following groundwater contaminant plumes:

- The Crafton-Redlands plume, with trichloroethylene (TCE) and lower levels of perchloroethylene (PCE), debromochloropropane (DBCP) and perchlorate;
- The Norton Air Force Base TCE and PCE plume, stretching 2.5 miles from its source and contaminating 100,000 AF of groundwater;
- The Muscoy and Newmark plumes near the Shandon Hills, which are Superfund sites with TCE and PCE; and
- The Santa Fe plume with PCE, TCE, and 1,2 dichloroethylene (1,2-DCE)

Other plumes include:

- Rialto Area Perchlorate Plume (Rialto-Colton Basin)
- North Riverside Basin MTBE Contamination (Riverside North Basin)

Separately from the foregoing remediation efforts, Fontana Water Company currently operates and maintains a groundwater remediation project at its Plant F10 pursuant to a long-term agreement with San Bernardino County, the owner and operator of the Mid Valley Sanitary Landfill and corresponding Clean-Up and Abatement Order issued to San Bernardino County by the RWQCB. The 5,000-gallons per minute (gpm) treatment plant utilizes liquid phase granular activated carbon to treat for volatile organic compounds including, but not

limited to, PCE, TCE, 1,1-DCE, and cis-1,2-DCE. The plant treats and removes those contaminants from groundwater extracted from both the Rialto-Colton and No Man's Land sub basins.

2.5.5.1 Crafton-Redlands Plume

Two commingled plumes, comprising the Crafton-Redlands plume, have impacted water supply wells for the cities of Riverside, Redlands, and Loma Linda, including Loma Linda University wells. One plume contains TCE and the other perchlorate; both are in the upper 300 to 400 feet of groundwater. TCE has been measured in water supply wells at over 100 parts per billion (ppb), over 20 times the MCL of 6 ppb. Currently, however, water supply well concentrations are around 7 ppb. Perchlorate is present in water supply wells at concentrations up to 77 ppb.

As required by the Santa Ana Regional Water Quality Control Board (SARWQCB), the Lockheed Martin Corporation (Lockheed) has prepared contingency plans to address impacts of the plume on water supply wells. These include blending, treatment, and/or providing alternative water supply sources. The plumes are currently being captured by the City of Riverside's Gage Well Field. Lockheed has installed granular activated carbon treatment units at some of the gage wells to remove TCE and has installed ion exchange units on some of these wells for the removal of perchlorate.

2.5.5.2 Norton Air Force Base Plume

The Norton Air Force Base plume, located just to the southwest of the former installation in the City of San Bernardino, is a major contaminant plume, consisting primarily of TCE and PCE. The plume has impaired 10 wells owned by the City of Riverside and the City of San Bernardino. Cleanup efforts by the Air Force, consisting of soil removal, soil gas extraction, and groundwater treatment, have significantly reduced this plume. The treatment plants now operate in a standby mode.

2.5.5.3 Newmark and Muscoy Plumes

Within the City of San Bernardino, the Newmark plume and the Muscoy plume consist primarily of PCE. The plumes have impacted San Bernardino water supply wells. Under the federal Superfund Program, the U.S. Environmental Protection Agency (EPA) has implemented cleanup of these plumes, including use of groundwater extraction and treatment using granulated activated carbon. The treated water is then used to supplement the City of San Bernardino's potable water supply. It appears that cleanup efforts will be adequate to protect 32 down-gradient water supply wells. However, groundwater model simulations suggest that containment of the plume will need additional extraction wells that will result in pumping of at least 14,000 AFY.

2.5.5.4 Sante Fe Plume

The Santa Fe groundwater plume consists primarily of 1,2-DCE, TCE, and PCE. This plume is currently being monitored.

2.5.5.5 Rialto Area Perchlorate Plume

Since 2002, the SARWQCB has been conducting an investigation of groundwater contamination in the area of the City of Rialto. The focus of the investigation has been facilities located on a 160-acre site in Rialto. The site has also been designated as a Superfund site by the US EPA. In 2005 the SARWQCB Executive Officer issued a Cleanup and Abatement Order and subsequent amendments naming a number of responsible parties. Since that time, the Cleanup and Abatement Order has been the subject of challenges in petitions filed by entities named as parties responsible for the contamination. The ongoing legal wrangling and persistent chemical contamination by TCE, perchlorate, and nitrates has required both WVWD and the City of Rialto to avoid use of certain wells and certain water sources.

WVWD and the City of Rialto have planned and designed a wellhead treatment system to protect local groundwater supplies. The wellhead treatment system will use a fluidized bed biological treatment system to breakdown perchlorate to chloride, and nitrate to nitrogen gas. The system will treat groundwater at a rate of about 2,000 gpm. WVWD and the City plan to treat groundwater pumped from two existing wells: Rialto Well No. 6 and WVWD Well No. 11. The Groundwater Wellhead Treatment System Project represents a scientific first in California; utilizing a state-approved biological treatment process employing micro-organisms to destroy the perchlorate and other contaminants in drinking water and minimize the need for waste handling and disposal.

The Groundwater Wellhead Treatment System Project will allow WVWD to restore a portion of its groundwater basin supply. Given the treatment to be provided by the Groundwater Wellhead Treatment System Project, the Rialto Area Perchlorate Plume is not anticipated to further negatively affect WVWD supply. However, water quality issues are constantly evolving. Agencies of the San Bernardino Valley will continue to take action to protect and treat supply when needed, but it is well recognized that water quality treatment can have significant costs.

2.5.5.6 North Riverside Basin MTBE Contamination

In 1988, the SARWQCB issued a Cleanup and Abatement Order to the SFPP Colton Fuel Terminal (owned by Kinder Morgan) located in Bloomington, California. The Terminal, which is located just south of the I-10 freeway on the east side of Riverside Avenue, is a bulk petroleum storage and distribution facility which was built in the 1950s. It currently occupies 82 acres and contains 32 refined petroleum product tanks and fuel-loading racks where transport tanker trucks are filled.

In response to the Cleanup and Abatement Order, a monitoring and extraction well network for the Terminal was constructed. It consists of 131 wells in and around the Terminal as well as 14 soil vapor extraction wells. The site samples for Benzene, methyl tertiary butyl ether (MTBE) and tertiary butyl alcohol (TBA).

WVWD has identified that a few wells located near the Terminal are vulnerable to MTBE contamination. Two WVWD wells are located south of the Terminal. Wells No. 40 and 41 are sampled monthly. No MTBE has been detected in these wells or any other WVWD Wells.

WVWD will continue to monitor MTBE in its wells. Existing technologies are available to treat groundwater affected by MTBE (air stripping, granulated activated carbon, biofiltration, advanced oxidation processes). For these reasons, MTBE is not anticipated to create a long-term effect on water supplies. It is recognized however, that treatment of supplies can have significant costs and delay the full use of a supply source.

2.5.6 Summary of Water Quality Impacts on Supply Reliability

Water quality is monitored, tracked, and addressed by implementing treatment, as necessary. In addition to the groundwater plumes described above, there are other contaminants in the basin, including but not limited to nitrate and DBCP, which can require treatment. There are also emerging contaminants and new water quality regulations which could increase the level of required treatment. Based on current conditions and knowledge, water quality is not anticipated to affect regional water supply reliability.

2.6 Planned Water Supply Projects and Programs

The USARW has collaborated to manage the region's unique water supply, water quality, flood, and habitat challenges. These challenges are key considerations in the implementation of new water supply projects and are reflected in the goals of the USARW IRWMP.

2.6.1 Water for Habitat

The region is home to a variety of threatened or endangered species. No projects may be completed without obtaining permits from the wildlife agencies. Rather than obtaining permits on a project-by-project basis, the agencies in the region decided to collectively apply for one permit for their proposed projects. This approach is believed to be better for the environment, less costly and faster than obtaining permits one at a time.

The Upper Santa Ana River Habitat Conservation Plan (HCP) is a collaborative effort currently underway among the water resource agencies of the SAR watershed, in partnership with the United States Fish and Wildlife Service, California Department of Fish and Wildlife, and several other government agencies and stakeholder organizations. The purpose of the HCP is to develop a comprehensive plan that provides sufficient water for species and allows the water agencies to construct their projects. The HCP will specify how species and their habitats will be protected and managed in the future and will provide the incidental take permits needed by the water resource agencies under the Federal and State endangered species acts to maintain, operate, and improve their water resource infrastructure. In addition to the HCP, there are multiple environmental and ecological management plans currently in place, including the Western Riverside County Multi-Species Habitat Conservation Plan and Upper Santa Ana Wash Land Management and Habitat Conservation Plan.

2.6.2 Recycled Water

Development of recycled water in a strategy in the USARW IRWMP. Although recycling wastewater is costly, it is very reliable. Although it is costly, it is also highly reliable since there

will be flows to wastewater plants whether the weather is wet or dry. For that reason, recycled water is often labeled "drought-proof". Because it is the costliest supply, the region has not heavily developed this supply choosing instead to develop other, less costly supplies first. The recent drought highlighted the advantage of having a drought-proof supply, like recycled water, as a part of the regional water portfolio. This led to Valley District and the agencies within its service area, as well as Western and the City of Riverside, to prepare a Regional Recycled Water Concept Study. This is a collaborative process to identify recycled water projects that maximize regional benefits to water supply reliability, water quality, and habitat sustainability. The stakeholder group is targeting development of 10,000 to 12,000 AFY of new recycled water supply in the near term, with that volume expanding in the future as population growth in the area generates additional recycled water supply. The recycled water projects identified in this process will also be incorporated into the HCP analysis to ensure that implementation of these projects supports both water supply and habitat sustainability.

Currently, some individual agencies are using recycled water for non-potable reuse. Recycled water produced in the Valley District service area that is not currently used for non-potable reuse is discharged to the SAR or its tributaries and has become a critical source of water that sustains habitat in natural rivers and streams, including the Santa Ana Sucker, which is a Federally listed endangered species. Development of new recycled water supplies in the upper SAR watershed must be balanced with the need to conserve and maintain this habitat.

Potential recycled water supplies for each retailer are described in their respective chapters. Anticipated recycled water supplies are included in the regional summary of supplies.

2.6.3 Conjunctive Use Projects

One of the foundational water management strategies in the USARW IRWMP is conjunctive use which has been generally described as using our groundwater basins to store water that is available in wet years so that it is available to be pumped out during dry years (dry year yield). Groundwater modeling for the IRWMP concluded that conjunctive use is feasible. In February 2012, the Basin Technical Advisory Committee (BTAC) recommended a cumulative total of 40,000 acre-feet per year of dry year yield. This capacity represents an efficient, initial project size with the possibility to expand to as much as 80,000 acre-feet per year.

Valley District, in cooperation with water agencies throughout the Santa Ana River Watershed and in cooperation with agencies within its service area have been developing a comprehensive conjunctive use program in the San Bernardino Basin Area (SBBA). The two programs will share facilities, wherever possible, to reduce costs. The watershed-scale program is called the Santa Ana River Conservation and Conjunctive Use Program (SARCCUP) and the local program is called the Bunker Hill Conjunctive Use Program (BHCUP). Both programs will benefit the retail water agencies within Valley District's service area by increasing water levels and by providing an alternate source of water in dry years. The programs will collectively store up to 112,500 acre-feet in the SBBA which will provide up to 37,500 acre-feet per year of dry year yield initially for up to 3 consecutive years. The portion of these projects available to agencies in

Valley District's service area is 88,500 (36,000 + 52,500) acre-feet of storage and 29,500 (12,000 + 17,500) acre-feet of dry year yield.

2.6.4 Groundwater Recharge

In addition to the ongoing recharge operations throughout the Valley District service area, this section describes new recharge projects that are currently being developed.

2.6.4.1 Cactus Basin Recharge

Valley District is working cooperatively with the San Bernardino County Flood Control District (Flood Control) to recharge SWP supplemental water in the Cactus Basins, which would recharge high quality water into the Rialto-Colton sub basin. The project includes the construction of new basins 3 and 3A, which are being built for flood control. Basin development will include the construction of a bypass pipeline to manage flood flows. To optimize the joint use of these basins for flood control, the recharge is planned to occur during the dry-season, from April to October.

2.6.5 Stormwater Capture

One of the goals of the USARW IRWMP is to balance flood management and increase stormwater recharge. Stormwater management has been an ongoing challenge in the USARW Region and flood control facilities, such as detention basins, have provided much needed control of these flows. While conveying flood water safely through the upper SAR watershed is of critical importance, detaining runoff for recharge is also desirable. The region's groundwater managers are working with flood control agencies to optimize the use of these flood control facilities to increase the recharge of stormwater into the groundwater basin. The goal is to strike a balance between flood control and recharge that will ensure protection from flooding, while providing additional supplies to meet growing future demands and to supplement these supplies during drought years.

2.6.5.1 Santa Ana River Enhanced Recharge Project

The Enhanced Recharge Project is located on the Santa Ana River and will divert up to 500 cubic feet per second (cfs) and up to approximately 80,000 AFY. Water will be temporarily captured at the Seven Oaks Dam and diverted flows will flow to recharge basins for recharge into the SBBA or be delivered for direct use through the first phase of the Plunge Pool Pipeline. This project is estimated to provide up to 12,000 acre-feet per year.

2.6.5.2 Active Recharge Project

The Active Recharge Project is envisioned to help better manage surface water available to the SBBA. In 2015, a stormwater flow and capture analysis was performed to determine:

- The volume of surface water which has historically migrated out of the SBBA,
- The volume of surface water that is generated internally within the SBBA as the result of historical and on-going urbanization of the SBBA,

- The quantity of stormwater that is generated by the major tributary creeks to the Santa Ana River,
- The location and preliminary (conceptual) designs of potential new stormwater capture facilities that could maximize the capture and recharge of surface water flows,
- Potential environmental constraints for each of the selected tributaries,
- Potential modifications to existing retention basins and spreading grounds to further increase surface water capture and recharge, and
- The volume of potential additional recharge to the SBBA and the effect to surface water volumes leaving the SBBA that will occur as a result of implementation of an active recharge project (this remaining flow out of the SBBA would be available for recharge in the proposed Riverside North Aquifer Storage and Recovery Project; see Section 2.6.5.3).

The study included preparation of proposed conceptual designs for new and improved existing surface water capture and recharge facilities in areas of the tributary creeks having the greatest stormwater flows and the least amount of environmental constraints. The project stakeholders are currently working to refine the conceptual designs and estimates of recharge.

2.6.5.3 Riverside North Aquifer Storage and Recovery

The Riverside North Aquifer Storage and Recovery Project is a proposed storm water capture project located in the southern portion of the City of Colton and north of the City of Grand Terrace. The project consists of proposed in-channel and off-channel recharge. The proposed off-channel recharge facility location is along the west side of the Santa Ana River and proposes the construction of up to eight individual recharge basins encompassing approximately 25 acres. The in-channel recharge basin proposes construction of an inflatable dam across the Santa Ana River channel, which can be raised and lowered depending on the amount of water flowing in the river.

This project is estimated to provide up to 12,800 acre-feet of water per year. The in-channel and off-channel water captured will be recharged into the Riverside North sub basin and a portion of the retained water will be diverted to the Riverside Canal pipeline for direct use.

2.7 Development of Desalination

2.7.1 Opportunities for Brackish Water and/or Groundwater Desalination

Desalination, or desalting, is a process to create drinking water from water containing higher salt levels. Desalination can use a thermal distillation process or a membrane process (such as electrodialysis or reverse osmosis). All desalination processes produce a brine waste stream that must be disposed. The need for brackish groundwater desalting is somewhat limited in the San Bernardino Valley.

Although elevated salts are currently not a concern in the San Bernardino Valley, elevated salts are an issue for retailers that overlie the San Timoteo Groundwater Basin where agencies in this basin are considering implementing desalter operations. The area is fortunate to have a Brine

Line which can transport non-reclaimable waste, by gravity, from the City of San Bernardino Wastewater Reclamation Plant to the Orange County Sanitation District's treatment plant.

2.7.2 Opportunities for Seawater Desalination

Seawater desalination would require two major components:

1. The development or financial contribution to a seawater desalination facility and associated facilities (e.g., brine disposal facility); and
2. The exchange of a like amount of SWP water for the amount of water desalted.

The development of (or financial participation in) a new seawater desalination project, while costly, is being investigated and implemented by other wholesale and retail water agencies in southern California. Because the San Bernardino Valley is an inland area, participation in desalination would require agencies in the San Bernardino Valley to join with other water purveyors in the development of a coastal desalination facility and then receive water from the SWP supplies of other participants via an exchange. Due to conveyance requirements, it is not cost-effective for the San Bernardino Valley to receive direct delivery of desalted ocean water.

Seawater desalination is an alternative that is technically viable. However, production and treatment costs have historically been several times higher than those of groundwater costs and SWP costs with conventional treatment. San Bernardino Valley agencies will continue to evaluate the viability of desalinated water supplies.

2.8 Anticipated Regional Water Supply Sources in Normal, Wet, Dry, and Multiple Dry Years

The following tables summarize anticipated regional water supply sources in normal, wet, dry, and multiple dry year periods.

Table 2-6. Regional Water Supply – Normal Year (AF)

Water Source	2020	2025	2030	2035	2040
Surface Water					
SBBA Surface Water	33,620	33,620	33,620	33,620	33,620
Oak Glen	500	500	500	500	500
Sub-Total Surface Water	34,120	34,120	34,120	34,120	34,120
Groundwater					
SBBA Groundwater	139,125	139,125	139,125	139,125	139,125
Rialto-Colton	17,300	17,300	17,300	17,300	17,300
Riverside North	30,100	30,100	30,100	30,100	30,100
Yucaipa	9,600	9,600	9,600	9,600	9,600
Beaumont	2,552	2,552	2,552	2,552	2,552
No Man's Land	1,000	1,000	1,000	1,000	1,000
Chino	900	900	900	900	900
Active Recharge Program	10,000	10,000	10,000	10,000	10,000
Sub-Total Groundwater	210,577	210,577	210,577	210,577	210,577
SWP Water					
Direct Deliveries	36,607	37,388	37,758	38,502	37,858
SWP Storage	26,393	25,612	25,242	24,498	25,142
Sub-Total SWP Water (e)	63,000	63,000	63,000	63,000	63,000
Recycled Water					
City of Redlands, City of San Bernardino, East Valley Water District, Yucaipa Valley Water District	17,039	26,248	32,408	38,568	44,728
Total All Supplies	**324,736**	**333,945**	**340,105**	**346,265**	**352,425**

Notes:

(a) The San Bernardino Basin is managed whereby total safe yield is a combination of Surface Water and Groundwater totaling 239,743 AFY. Per the Western Judgment, supply available to the Valley District service area is 172,745 AFY. A decrease in available surface water in any given year does not change available yield from the basin.

(b) Estimated based on demands. Return flow credits are 36% of volume extracted that is greater than non-plaintiff safe yield. See Table 3-1.

(c) Assumes SWP Water is stored in wet years so that it can supplement lower deliveries of SWP water in dry years.

(d) Assumes 36% return flow for direct imported water deliveries (see Table 3-2 for estimate of direct deliveries).

(e) Does not include SWP water from San Gorgonio Pass Water Agency.

(f) From Chapters 7 through 15 of this RUWMP.

Table 2-7. Regional Supply - Single Wet Year

Water Source	2020	2025	2030	2035	2040
Surface Water					
SBBA Surface Water	37,000	37,000	37,000	37,000	37,000
Oak Glen	500	500	500	500	500
Sub-Total Surface Water	37,500	37,500	37,500	37,500	37,500
Groundwater					
SBBA Groundwater	135,745	135,745	135,745	135,745	135,745
Rialto-Colton	17,300	17,300	17,300	17,300	17,300
Riverside North	30,100	30,100	30,100	30,100	30,100
Yucaipa	9,600	9,600	9,600	9,600	9,600
Beaumont	2,552	2,552	2,552	2,552	2,552
No Man's Land	1,000	1,000	1,000	1,000	1,000
Chino	900	900	900	900	900
Active Recharge Program	20,000	20,000	20,000	20,000	20,000
Sub-Total Groundwater	217,197	217,197	217,197	217,197	217,197
SWP Water					
Direct Deliveries	36,607	37,388	37,758	38,502	37,858
SWP Storage	63,941	63,160	62,790	62,046	62,690
Sub-Total SWP Water (e)	100,548	100,548	100,548	100,548	100,548
Recycled Water					
City of Redlands, City of San Bernardino, East Valley Water District, Yucaipa Valley Water District	17,039	26,248	32,408	38,568	44,728
Total All Supplies	**372,284**	**381,493**	**387,653**	**393,813**	**399,973**

Notes:

(a) The San Bernardino Basin is managed whereby total safe yield is a combination of Surface Water and Groundwater totaling 239,743 AFY. Per the Western Judgment, supply available to the Valley District service area is 172,745 AFY. A decrease in available surface water in any given year does not change available yield from the basin.

(b) Estimated based on demands. Return flow credits are 36% of volume extracted that is greater than non-plaintiff safe yield. See Table 3-1.

(c) Assumes SWP Water is stored in wet years so that it can supplement lower deliveries of SWP water in dry years.

(d) Assumes 36% return flow for direct imported water deliveries (see Table 3-2 for estimate of direct deliveries).

(e) Does not include SWP water from San Gorgonio Pass Water Agency.

(f) From Chapters 7 through 15 of this RUWMP.

Table 2-8. Regional Water Supply – Single Dry Year (AF)

Water Source	2020	2025	2030	2035	2040
Surface Water					
SBBA Surface Water	8,074	8,074	8,074	8,074	8,074
Oak Glen	175	175	175	175	175
Sub-Total Surface Water	8,249	8,249	8,249	8,249	8,249
Groundwater					
SBBA Groundwater	164,671	164,671	164,671	164,671	164,671
Rialto-Colton	17,300	17,300	17,300	17,300	17,300
Riverside North	30,100	30,100	30,100	30,100	30,100
Yucaipa	9,600	9,600	9,600	9,600	9,600
Beaumont	2,552	2,552	2,552	2,552	2,552
No Man's Land	1,000	1,000	1,000	1,000	1,000
Chino	900	900	900	900	900
Active Recharge Program	0	0	0	0	0
Sub-Total Groundwater	226,123	226,123	226,123	226,123	226,123
SWP Water					
Direct Deliveries	36,607	37,388	37,758	38,502	37,858
SWP Storage	(31,477)	(32,258)	(32,628)	(33,372)	(32,728)
Sub-Total SWP Water (e)	5,130	5,130	5,130	5,130	5,130
Recycled Water					
City of Redlands, City of San Bernardino, East Valley Water District, Yucaipa Valley Water District	17,039	26,248	32,408	38,568	44,728
Total All Supplies	**256,541**	**265,750**	**271,910**	**278,070**	**284,230**

Notes:

(a) The San Bernardino Basin is managed whereby total safe yield is a combination of Surface Water and Groundwater totaling 239,743 AFY. Per the Western Judgment, supply available to the Valley District service area is 172,745 AFY. A decrease in available surface water in any given year does not change available yield from the basin.

(b) Estimated based on demands. Return flow credits are 36% of volume extracted that is greater than non-plaintiff safe yield. See Table 3-1.

(c) Assumes SWP Water is stored in wet years so that it can supplement lower deliveries of SWP water in dry years.

(d) Assumes 36% return flow for direct imported water deliveries (see Table 3-2 for estimate of direct deliveries).

(e) Does not include SWP water from San Gorgonio Pass Water Agency.

(f) From Chapters 7 through 15 of this RUWMP.

Table 2-9. Regional Water Supply – Multiple Dry Year (AF)

Water Source	2020	2025	2030	2035	2040
Surface Water					
SBBA Surface Water	8,074	8,074	8,074	8,074	8,074
Oak Glen	175	175	175	175	175
Sub-Total Surface Water	8,249	8,249	8,249	8,249	8,249
Groundwater					
SBBA Groundwater	164,671	164,671	164,671	164,671	164,671
Rialto-Colton	17,300	17,300	17,300	17,300	17,300
Riverside North	30,100	30,100	30,100	30,100	30,100
Yucaipa	9,600	9,600	9,600	9,600	9,600
Beaumont	2,552	2,552	2,552	2,552	2,552
No Man's Land	1,000	1,000	1,000	1,000	1,000
Chino	900	900	900	900	900
Active Recharge Program	0	0	0	0	0
Sub-Total Groundwater	226,123	226,123	226,123	226,123	226,123
SWP Water					
Direct Deliveries	36,607	37,388	37,758	38,502	37,858
SWP Storage	(2,749)	(3,530)	(3,900)	(4,644)	(4,000)
Sub-Total SWP Water	33,858	33,858	33,858	33,858	33,858
Recycled Water					
City of Redlands, City of San Bernardino, East Valley Water District, Yucaipa Valley Water District	17,039	26,248	32,408	38,568	44,728
Total All Supplies	**285,269**	**294,478**	**300,638**	**306,798**	**312,958**

Notes:

(a) The San Bernardino Basin is managed whereby total safe yield is a combination of Surface Water and Groundwater totaling 239,743 AFY. Per the Western Judgment, supply available to the Valley District service area is 172,745 AFY. A decrease in available surface water in any given year does not change available yield from the basin.

(b) Estimated based on demands. Return flow credits are 36% of volume extracted that is greater than non-plaintiff safe yield. See Table 3-1.

(c) Assumes SWP Water is stored in wet years so that it can supplement lower deliveries of SWP water in dry years.

(d) Assumes 36% return flow for direct imported water deliveries (see Table 3-2 for estimate of direct deliveries).

(e) Does not include SWP water from San Gorgonio Pass Water Agency.

(f) From Chapters 7 through 15 of this RUWMP.

2.9 Water Use Efficiency

Water conservation programming for each of the retail water agencies can be found in their specific chapter.

Valley District has also supported the retail agencies in its service area with the following regional water conservation programs:

1. iEfficient.com: provides information and guides water customers to their specific rebates,
2. Weather Based Irrigation Controllers Program
3. Water Saving Garden Friendly: promotes low water use plants including plant sales at Home Depot stores and other stores and nurseries
4. water conservation demonstration garden and California State University San Bernardino
5. Inland Empire Landscape Contest: promotes water efficient landscapes by offering prizes for attractive installations
6. Turf removal programs
7. Inland Solar Challenge: high school students write a report about water conservation

These programs were coordinated and supported by Valley District to help retailers with their conservation objectives and are further discussed in Chapter 6.

3 Regional Water Use

This chapter describes anticipated water demands in the Valley District service area for imported water, groundwater, and surface water. Specific water use by sector and demands for each of the retail water agencies participating in the RUWMP are detailed in the chapter for that agency.

3.1 Imported Water Recharge to Maintain Sustainability of Local Groundwater Supplies

As detailed in Section 2.2.1, groundwater sustainability in the SBBA is maintained by comparing cumulative extractions to cumulative safe yield. Whenever the cumulative extractions exceed the cumulative safe yield, recharge is required. In the SBBA, the amount of recharge is offset by any "return flow" from sources outside of the safe yield calculation, namely, the amount of imported water and the amount of water extracted above the safe yield. To simplify the analysis in this report, it will not account for cumulative extractions and recharge. Instead, whenever the total extractions exceed the estimated safe yield, recharge of a like amount will be required. The offsets for return flow used in the SBBA will also be used for the other basins as shown in the below tables.

Table 3-1. Estimate of Potential Recharge Obligation in the SBBA

	2020	2025	2030	2035	2040
Potential Pumping					
City of Colton	6,783	6,994	7,408	7,991	7,991
East Valley Water District	28,312	32,150	36,042	39,992	39,992
City of Loma Linda	6,418	6,814	7,236	7,683	7,683
City of Redlands	55,496	55,564	55,632	55,696	55,696
City of Rialto	5,620	5,620	5,620	5,620	5,620
City of San Bernardino	52,671	54,730	56,866	59,082	59,082
West Valley Water District	15,000	19,500	22,500	25,000	25,000
Fontana Water Company	15,100	15,100	15,100	15,100	15,100
Marygold Mutual Water Company	1,500	1,500	1,500	1,500	1,500
Muscoy Mutual Water Company	2,100	2,100	2,100	2,100	2,100
Terrace Water Company	900	900	900	900	900
Other/Private	19,600	19,300	19,000	19,000	19,000
Total Estimated Demands by Non-Plaintiffs	**217,000**	**227,772**	**237,404**	**247,164**	**247,164**
Adjusted Safe Yield with New Conservation	172,745	172,745	172,745	172,745	172,745
Over extraction (Safe Yield minus Extractions)	(44,255)	(55,027)	(64,659)	(74,419)	(74,419)
Return flow from extractions above the safe yield (36% of extractions above the safe yield of 172,745 AF).	15,932	19,810	23,277	26,791	26,791
Return flow credits for imported water deliveries	10,097	10,378	10,511	10,779	10,547
Potential Replenishment Obligation/Credit	**(18,226)**	**(24,839)**	**(30,870)**	**(36,849)**	**(37,081)**

Notes:
(a) Data from Chapters 7 through 15 for retail agencies in this UWMP
(b) Data from 2015 IRWMP for Fontana Water Company, Marygold Mutual WC, Muscoy Mutual WC, Terrace WC, Other/Private.
(c) The Watermaster estimates a 36% return from the direct deliveries of SWP in the SBBA.
(d) Equal to Over Extraction less the return flow from extractions above the safe yield and return flow credits for imported water deliveries.

Table 3-2. Estimate of Potential Recharge Obligation in the Rialto-Colton Basin

	2020	2025	2030	2035	2040
Potential Pumping					
City of Colton	4,375	4,511	4,778	5,154	5,154
City of Rialto	1,456	1,456	1,456	1,456	1,456
West Valley Water District	6,000	6,000	6,000	6,000	6,000
Fontana Water Company	7,600	7,600	7,600	7,600	7,600
RPU	2,700	2,700	2,700	2,700	2,700
Other/Private	2,100	2,100	2,100	2,100	2,100
Total Estimated Demands	**24,231**	**24,367**	**24,634**	**25,010**	**25,010**
Estimated Safe Yield from 2015 IRWMP	17,300	17,300	17,300	17,300	17,300
Over extraction (Safe Yield minus Extractions)	(6,931)	(7,067)	(7,334)	(7,710)	(7,710)
Return flow from extractions above the safe yield	2,495	2,544	2,640	2,776	2,776
Potential Replenishment Obligation/Credit	**(4,436)**	**(4,523)**	**(4,694)**	**(4,935)**	**(4,935)**

Notes:
(a) Data from Chapters 7 through 15 for retail agencies in this UWMP
(b) Data from 2015 IRWMP for Fontana Water Company, RPU, Other/Private.
(c) The Watermaster estimates a 36% return from the direct deliveries of SWP.
(d) Equal to Over Extraction less the return flow from extractions above the safe yield and return flow credits for imported water deliveries.

Table 3-3. Estimate of Potential Recharge Obligation in the Riverside North Basin

	2020	2025	2030	2035	2040
Potential Pumping					
City of Colton	1,450	1,495	1,584	1,708	1,708
City of Rialto	1,000	1,000	1,000	1,000	1,000
West Valley Water District	2,500	3,500	4,000	4,500	4,500
Riverside Highland WC	4,000	4,000	4,000	4,000	4,000
San Bernardino RIX Overextraction	7,900	7,900	7,900	7,900	7,900
RPU	17,000	17,000	17,000	17,000	17,000
Other/Private	6,000	6,000	6,000	6,000	6,000
Total Estimated Demands	**39,850**	**40,895**	**41,484**	**42,108**	**42,108**
Estimated Safe Yield from 2015 IRWMP	30,100	30,100	30,100	30,100	30,100
Over extraction (Safe Yield minus Extractions)	(9,750)	(10,795)	(11,384)	(12,008)	(12,008)
Return flow from extractions above the safe yield	3,510	3,886	4,098	4,323	4,323
Potential Replenishment Obligation/Credit	**(6,240)**	**(6,909)**	**(7,286)**	**(7,685)**	**(7,685)**

Notes:
(a) Data from Chapters 7 through 15 for retail agencies in this UWMP
(b) Data from 2015 IRWMP for Fontana Water Company, RPU, Other/Private.
(c) The Watermaster estimates a 36% return from the direct deliveries of SWP.
(d) Equal to Over Extraction less the return flow from extractions above the safe yield and return flow credits for imported water deliveries.

3.2 Demands for Imported Water

In addition to recharge operations undertaken by Valley District, imported water is also used to make direct deliveries to several retail water producers and used in-lieu of releases from Big Bear Lake.

3.2.1 Demands for Direct Deliveries

Delivering water directly to water treatment plants is the most efficient way to utilize imported water because there are less losses when compared to groundwater recharge. Several retail water producers have water treatment plants to treat imported water. The City of San Bernardino uses the ground as a filter (Sweetwater Turnout on Valley District's Foothill Pipeline), recharging imported water and then immediately extracting it downstream using wells. The following agencies have indicated that they anticipate taking direct delivery of imported water: East Valley Water District, the City of Redlands, City of San Bernardino, West Valley Water District, Yucaipa Valley Water District, Fontana Water Company, and Crestline-Lake Arrowhead Water Company.

3.2.2 Other Obligations for Imported Water

Bear Valley Mutual Water Company (Bear Valley Mutual) constructed the original Bear Valley Dam in 1884 to create Big Bear Lake as a storage reservoir for their customers, downstream farmers. In 1964, the residents of Big Bear Lake formed the Big Bear Municipal Water District (Big Bear Municipal) in an effort to eliminate Lake releases to Bear Valley Mutual so that the lake level would remain high for recreational use and tourism. After more than a decade of litigation, a Judgment was executed in 1977 which reduced the amount of Lake releases to Bear Valley Mutual. Under the terms of this Judgment, Big Bear Municipal purchased from Bear Valley Mutual the lake bottom, Bear Valley Dam, and the right to utilize and manage the surface of Big Bear Lake for recreation and wildlife. In return, deliveries to Bear Valley Mutual were capped at a total of 65,000 AF in any ten-year period. These deliveries can be made in the form of Lake releases or can be provided from other sources "in-lieu" of Lake releases (in-lieu deliveries). In-lieu deliveries to Bear Valley Mutual are preferable to Big Bear Municipal since they do not result in water being removed from the lake.

In 1996, Big Bear Municipal entered into a water purchase agreement with Valley District. For an annual payment to Valley District, this agreement provides that when the Lake is at specified levels, no water will be released from the Lake to meet the downstream water needs. Instead, Valley District provides Bear Valley Mutual with in-lieu water from the SWP or any other available sources authorized under the Judgment. This historic agreement helped Big Bear Municipal achieve its mission of Lake stabilization while providing Bear Valley Mutual with the water it needs for its customers. Under the terms of the Agreement, Bear Valley Mutual may request any amount of delivery for a given year, provided that the total of all their requested deliveries do not exceed 65,000 AF in any ten-year period. Bear Valley Mutual's typical request each year has been the ten-year average, or 6,500 AFY.

The Judgment directed the in-lieu water program be monitored through a series of accounts that are managed by the Big Bear Watermaster Committee. The three-member committee consists of one representative from each of the three member agencies: Big Bear Municipal Water District, Bear Valley Mutual Water Company and San Bernardino Valley Water Conservation District. This is a committee whose sole responsibility is to monitor the "physical solution" set forth in the Judgment. The basic premise behind the physical solution is the comparison of Big Bear Municipal's actual Lake management versus Bear Valley Mutual's historic management. Big Bear Municipal is then responsible for making up any net groundwater deficiency in the San Bernardino basin which may occur as a result of maintaining a higher Lake level than would have occurred under Bear Valley Mutual's historic operations. The amount of the deficiency or surplus is maintained in the basin make-up water account (commonly referred to as "basin compensation account"). A number of other accounting mechanisms are in place to calculate totals for Lake releases, inflow, spills, evaporation, wastewater export and other related data. An annual Watermaster report is prepared documenting the annual accounting procedures.

3.2.3 Storage of Imported Water

One of the primary water management strategies in the San Bernardino Valley is to store imported water when it is available so that it can be used during drought periods. The amount of SWP water that is planned to be stored for later pumping is shown in Table 3-4.

3.2.4 Total Anticipated Demands on Imported Water from Valley District

Table 3-4 summarizes potential total demands for imported water from Valley District during the period of this Plan.

Table 3-4. Estimated Total Demands for Imported Water from Valley District 2020 to 2040 (AF)

	2020	2025	2030	2035	2040
Retail Agencies Receiving SWP Water					
East Valley Water District	8,960	8,960	8,960	8,960	8,960
City of Redlands	1,500	2,000	2,500	3,000	3,000
West Valley Water District	7,000	7,000	7,000	7,000	7,000
Yucaipa Valley Water District	10,587	10,868	10,738	10,982	10,338
Fontana Water Company	2,000	2,000	2,000	2,000	2,000
Total Direct Deliveries(a)	**30,047**	**30,828**	**31,198**	**31,942**	**31,298**
Big Bear Municipal Water District/Big Bear Lake	6,500	6,500	6,500	6,500	6,500
Total Demands	36,547	37,328	37,698	38,442	37,798
Potential Obligation in SBBA	18,226	24,839	30,870	36,849	37,081
Potential Obligation in Rialto-Colton	4,436	4,523	4,694	4,935	4,935
Potential Obligation in Riverside North	6,240	6,909	7,286	7,685	7,685
Total Demand Applied to Imported Water	**65,449**	**73,599**	**80,548**	**87,911**	**87,499**

Notes:
(a) Demands for imported water for East Valley Water District, City of Redlands, West Valley Water District, and Yucaipa Valley Water District provided as part of this RUWMP. Demands for Fontana Water Company estimated from 2015 IRWMP.

3.2.5 Yucaipa Valley Water District Demands for Imported Water from San Gorgonio Pass Water Agency

Yucaipa Valley Water District, in addition to receiving imported water from Valley District, can also receive imported water from San Gorgonio Pass Water Agency (SGPWA). YVWD's estimated demand for imported water from SGPWA is shown in Table 3-5. Additional discussion of these demands is included in Chapter 12.

Table 3-5. Estimated Demands for Imported Water from San Gorgonio Pass Water Agency 2020 to 2040 (AF)

Wholesale Source	2020	2025	2030	2035	2040
YVWD Purchase from SGPWA	4,313	5,007	5,758	6,735	6,051

3.3 Demands for Recycled Water

In addition to regional water sources (SBBA water and other local surface and groundwater, imported water), some water agencies have plans to use recycled water. Table 3-6 summarizes the anticipated future demand for recycled water.

Table 3-6. Estimated Demands for Recycled Water 2020 to 2040 (AF)

Agency	2020	2025	2030	2035	2040
City of Redlands	3,040	3,290	3,290	3,290	3,290
City of Rialto	20	20	20	20	20
City of San Bernardino	2,800	11,200	16,800	22,400	28,000
East Valley Water District	6,700	6,700	6,700	6,700	6,700
Yucaipa Valley Water District	4,479	5,038	5,598	6,158	6,718
Total Recycled Water	**17,039**	**26,248**	**32,408**	**38,568**	**44,728**
Notes: Further details about recycled water use are included in each agency's individual chapter.					

3.4 Water Losses

In accordance with DWR requirements, the individual retail agencies have quantified their water losses, using the American Water Works Association (AWWA) Water Audit process, and their total nonrevenue water, using the difference between production and sales. Water lost through leaks represents a loss of revenue for the retail agencies and increases the amount of groundwater or surface water that must be produced. Because the region relies so heavily on groundwater, this water is not permanently lost; it eventually contributes to recharge of the local groundwater basin. Each individual agency's chapter discusses nonrevenue water and estimated losses.

3.5 Total Demands by Agency

Table 3-7 presents an estimate of total demands for agencies within Valley District.

Table 3-7. Total Demand by Agency 2020 to 2040 (AF)

	2020	2025	2030	2035	2040
City of Colton	10,458	11,301	11,978	12,698	13,462
East Valley Water District	28,234	29,333	30,253	31,210	32,206
City of Loma Linda	5,349	5,686	6,044	6,424	6,828
City of Rialto	10,583	11,216	11,886	12,597	13,350
City of Redlands	31,026	32,052	32,828	33,603	33,603
Riverside Highland Water Company	4,107	4,294	4,492	4,702	4,923
City of San Bernardino	43,927	52,494	59,839	67,223	74,649
West Valley Water District	20,799	22,256	23,802	25,492	27,312
Yucaipa Valley Water District	12,891	13,751	14,730	15,815	17,009
Subtotal of Agencies Participating in RUWMP	**167,375**	**182,382**	**195,852**	**209,764**	**223,342**
Fontana Water Company	44,613	45,700	45,700	45,700	45,700
Marygold Mutual Water Company	1,500	1,500	1,500	1,500	1,500
Muscoy Mutual Water Company	2,100	2,100	2,100	2,100	2,100
Terrace Water Company	900	900	900	900	900
Crestline Lake Arrowhead Water Company	60	60	60	60	60
Big Bear Municipal Water District	6,500	6,500	6,500	6,500	6,500
Other/Private	19,600	19,300	19,000	19,000	19,000
Total	**242,648**	**258,442**	**271,612**	**285,524**	**299,102**
10% reliability Margin	24,265	25,844	27,161	28,552	29,910
Total Including Reliability Margin	**266,913**	**284,286**	**298,774**	**314,076**	**329,012**

Notes:
(a) From Chapters 7 through 15 of this UWMP.
(b) Estimated demands for SBBA water, direct deliveries of imported water, and No Man's Land groundwater, does not include demands for recycled water from IEUA. From 2015 IRWMP
(c) Estimated demands for SWP water from Valley District. From 2015 IRWMP.
(d) Estimated demands for SWP water in lieu of Big Bear Lake releases.
(e) From 2015 IRWMP.

Two major factors that affect water usage are weather and water conservation. Historically, when the weather is hot and dry, water usage increases. The increases vary according to the number of consecutive years of hot, dry weather and the conservation activities imposed. During cool-wet years, historical water usage has decreased to reflect less water usage for external landscaping. Past studies have indicated that demands increase 6 to 12 percent during dry periods. For this analysis it is estimated that demands will increase 10 percent during dry periods, unless otherwise stated in the individual agency chapters.

In recent years, water conservation has become an increasingly important factor in water supply planning in California. Since 2005, there have been a number of regulatory changes related to conservation including new standards for plumbing fixtures, a new landscape ordinance, a state universal retrofit ordinance, metering and billing requirements, new Green Building standards, demand reduction goals and more. SB X7-7 requires a 20-percent reduction in urban per capita water use in California by December 31, 2020 ("20 by 2020"). The bill requires each urban retail water supplier to determine their "base daily per capita water use," develop an urban water use target for year 2020, and set a 2015 interim urban water use

target. For the 2015 UWMP cycle, DWR established updated requirements for the use of census data in estimating historic service area populations. Therefore, retail agencies have re-calculated their baseline water use and their targets for the 2015 RUWMP. The individual retail agency chapters (Chapters 7 through 15) provide information on compliance with SB X7-7 for the retail agencies participating in this plan.

4 Comparison of Regional Supplies and Demands

The UWMP Act requires urban water suppliers to assess water supply reliability by comparing total projected water use with the projected water supply over the next twenty years or beyond in 5 year increments. The UWMP Act also requires an assessment for a single-dry year and multiple-dry year period. In addition, the Plan participants have elected to assess a wet year scenario to help support the goal of maximizing the use and storage of wet year supplies for later use during dry periods.

Chapter 2 provided information about regional water supplies during a normal year, while Chapter 3 provided information on total demands by the participants in this UWMP. This section compares available supplies for regional water supplies to demands for these sources. A discussion of the supplies and demands by retail agency are described in Chapters 7 through 15.

4.1 Normal / Average Water Year

Table 4-1 provides a comparison of regional water supplies and demands for a normal year for the agencies participating in the RUWMP. Table 4-1 demonstrates that adequate regional supplies are anticipated for years 2020 to 2040 under normal/average conditions.

Table 4-1. Normal Year Supply and Demand Comparison

Totals	2020	2025	2030	2035	2040
Supply Totals	263,815	287,252	305,821	324,962	330,294
Demand Totals	167,375	182,382	195,852	209,764	223,342
Difference	96,440	104,870	109,969	115,199	106,952

4.2 Single Wet Year

Table 4-2 provides a comparison of supplies and demands for a single wet year for the agencies participating in the RUWMP. This demonstrates that a supply surplus is anticipated in wet years, which presents an opportunity to store this excess supply. This information will help water resource managers in the San Bernardino Valley as they continue to develop strategies and projects to maximize the use of wet year supplies to improve water supply reliability in dry years.

Table 4-2. Wet Year Supply and Demand Comparison

Totals	2020	2025	2030	2035	2040
Supply Totals	263,639	287,076	305,645	324,786	330,118
Demand Totals	150,637	164,144	176,267	188,787	201,008
Difference	113,002	122,932	129,378	135,999	129,110

4.3 Single Dry Year

Table 4-3 provides a comparison of regional water supplies and demands for a single dry year for the agencies participating in the RUWMP. The single-dry year is generally the lowest annual runoff for a water source in the record. Table 4-3 anticipates adequate regional water supplies for years 2020 to 2040 under single-dry year conditions.

Table 4-3. Single Dry Year Supply and Demand Comparison

Totals	2020	2025	2030	2035	2040
Supply Totals	249,269	272,706	291,275	310,416	315,748
Demand Totals	181,070	197,860	213,342	229,400	246,040
Difference	68,199	74,846	77,933	81,016	69,708

4.4 Multiple Dry Years

Table 4-4 provides a comparison of regional water supplies and demands for a multiple-dry year period for the agencies participating in the RUWMP. The multiple-dry year period is generally the lowest annual runoff for a three year or more consecutive period. Table 4-4 anticipates adequate regional supplies for years 2020 to 2040 under multiple-dry year conditions.

Table 4-4. Multiple Dry Years Supply and Demand Comparison

Year	Totals	2020	2025	2030	2035	2040
First Year	Supply Totals	260,269	283,706	302,275	321,416	326,748
	Demand Totals	180,230	196,565	211,224	226,359	241,121
	Difference	80,039	87,141	91,052	95,057	85,627
Second Year	Supply Totals	260,269	283,706	302,275	321,416	326,748
	Demand Totals	170,655	185,885	199,577	213,728	227,564
	Difference	89,614	97,821	102,698	107,689	99,184
Third Year	Supply Totals	260,269	283,706	302,275	321,416	326,748
	Demand Totals	161,080	175,205	187,930	201,096	214,008
	Difference	99,189	108,501	114,345	120,320	112,740

5 Regional Water Shortage Contingency Planning

5.1 Overview

Water supplies may be interrupted or reduced significantly through drought, natural disaster such as earthquake, a regional power outage, or a toxic spill that prevents delivery due to poor water quality. This chapter describes regional planning for such emergencies. Specific water shortage contingency planning for each agency is discussed in Chapters 7 through 15.

5.2 Coordinated Planning

As part of the IRWMP (San Bernardino Valley Municipal Water District, January 2015), agencies in the region developed a water shortage contingency plan. The water shortage contingency plan provides a framework for implementing specific measures to deal with water shortages during emergencies. The plan provides specific actions that should be taken to ensure critical water needs of the region are met during a period in which water supplies are cut by 50 percent.

Furthermore, nearly all of the retailers in the San Bernardino Valley participate in the Emergency Response Network of the Inland Empire (ERNIE). ERNIE is a water/wastewater mutual aid network within San Bernardino and Riverside counties. ERNIE meets monthly and provides regular training for utilities in emergency response and long-term emergency planning.

The 2015 IRWMP included an assessment entitled Vulnerability to Catastrophic Interruption of Water Supply and Disaster Preparedness, which is included in Appendix F of the IRWMP.

5.3 Actions to Prepare for Catastrophic Interruption

This section addresses vulnerability of the region's water supply system to catastrophic events that may interrupt the water deliveries in the Region. Given the presence of the San Andreas Fault, San Jacinto Fault and many other faults, a large magnitude earthquake is generally considered the most likely and "worst case" natural disaster for the region. The other possible catastrophic interruptions such as regional power failure, terrorist attack, or other man-made or natural catastrophic event would cause similar conditions but would likely not be as severe. For purposes of this report, a major earthquake is defined as an earthquake on the San Andreas Fault (SAF) on the order of 8.0.

The San Bernardino Valley is a seismically active area of Southern California. Four major fault zones are found in the region, including the San Jacinto Fault, the Chino-Corona segment of the Elsinore Fault, the Cucamonga Fault, and the SAF. Numerous other minor faults associated with these larger fault structures may also present substantial hazards. The SAF is a right-lateral strike-slip fault that runs approximately 800 miles through western and southern California. The fault marks a transform boundary between the Pacific Tectonic Plate and the North

American Tectonic Plate. In Southern California, the SAF runs along the southern base of the San Bernardino Mountains, crosses through Cajon Pass, and continues northwest along the northern base of the San Gabriel Mountains. Historical records indicate that massive earthquakes have occurred in the central section of the SAF in 1857 and in the northern section in 1906 (the San Francisco Earthquake). In 1857, an estimated magnitude 8+ earthquake occurred on the San Andreas Fault rupturing the ground for 200 to 275 miles, from near Cholame to Cajon Pass and possibly as far south as San Gorgonio Pass. The recurrence interval for a magnitude 8 earthquake along the total length of the fault is estimated to be between 50 and 200 years. It has been over 150 years since the 1857 rupture.

5.3.1 Facility Reliability

The following sections summarize the findings of the Vulnerability to Catastrophic Interruption of Water Supply and Disaster Preparedness prepared for the IRWMP. These findings have been developed from a search of literature reporting the impacts of major earthquakes and limited work by water purveyors.

5.3.1.1 Reliability of Groundwater Wells

Review of post-earthquake lifeline performance reports reveals little discussion of groundwater well failure. However, loss of commercial power, damage to electrical equipment and above ground appurtenances, or damage to the distribution system may effectively put wells out of service. Liquefaction, especially in areas where there are high groundwater levels between depths of 5 to 50 feet, may cause ground settlement and interfere with continued well operation. No discussion of the performance of wellhead treatment systems during earthquakes was found. This may be due to the limited amount of well head treatment in place during prior earthquakes. As wellhead treatment typically includes purchased equipment installed in a field location, there is significant opportunity for lapses in the seismic design. The groundwater basin and the groundwater production wells are a reliable part of the water supply system for the San Bernardino area.

5.3.1.2 Reliability of Pipelines

Pipelines are generally the most fragile part of a water system. Generally, damage is a function of displacement rather than shaking. Empirical algorithms have been developed to predict seismic reliability of pipelines.

5.3.1.3 Reliability of Pump Stations

Past earthquakes indicate that the structural and mechanical elements of a pump station are highly resistant to earthquake damage. The most likely failures are to the electrical equipment and loss of commercial power. Most pump stations are either equipped with an automatic transfer switch to enable connection to a permanent standby generator or have an electrical outlet for connection to a mobile generator.

5.3.1.4 Reliability of Surface Water Treatment Facilities

The major elements of a surface water treatment system are typically concrete structures that are very resistant to damage. However, these facilities include a large variety of mechanical

equipment, much of it long and lightweight and subject to damage not only from the direct force of an earthquake, but also from the wave action created by the earthquake. Similar to a pump station, power supply and electrical equipment are fragile. However, treatment facilities also are constructed with provisions for standby power, either permanent or temporary.

5.3.1.5 Reliability of the State Water Project

While little specific information was found on anticipated damage to the SWP, the high susceptibility of the Santa Ana Valley Pipeline (California Aqueduct) is recognized. A major vulnerability of the SWP is the Sacramento-San Joaquin Delta. The SWP does have a Business Resumption Plan and an Emergency Operations Plan.

5.3.1.6 Length of Outages

Length of water service outages vary by earthquake and by purveyor. The Loma Prieta earthquake affected a large number of separate systems. The San Jose Water Company serves most of San Jose and all of Los Gatos. Los Gatos was hard hit and half of the water customers lost water service. In San Francisco, the worst hit area was the Marina District. Both fires and liquefaction affected the district. East Bay Municipal Water District serves 1.1 million customers and suffered $3.7 million in damage. Damage included a break in a 60-inch raw water line. After the Northridge earthquake, the Los Angeles Aqueducts Nos. 1 and 2 were in and out of service for temporary and permanent repairs over several months; these facilities were not critical at that time. Alternate supplies were available and drought conditions limited supply to these aqueducts.

Valley District's Emergency Operations Plan includes estimates for repair of Valley District facilities. Electrical and pipe repairs are estimated to take 35 to 77 days. Pump repairs are estimated to take 168 to 273 days. In summary, the Region should prepare for up to a four-month outage.

5.3.2 Existing Strategies

Valley District and the purveyors recognize that water availability through the SWP is intermittent. As a result, Valley District's "Rules for Service" require that all of its customers have a 100 percent backup for any amount of water they order from the SWP.

The primary regional contingency strategy is groundwater storage. During an outage of the statewide system, agencies would rely primarily on local groundwater supplies. One of the primary management strategies in the IRWMP is to store water in wet years so that it is available in dry years. However, any additional stored water would also be available during a water shortage.

A second strategy for addressing water supply during an emergency is system redundancy and interconnections between purveyors. Table 5-1 lists the interties between purveyors in the San Bernardino Valley.

Finally, Valley District has identified alternative conveyance facilities which could be used in the event of a failure of one of Valley District's pipelines. For example, Valley District has an agreement with Metropolitan Water District of Southern California which could allow the use of the Inland Feeder Pipeline to bypass a large portion of the District's primary delivery pipeline, the Foothill Pipeline.

Table 5-1. System Interties between Retail Agencies

Agencies	Direction	Capacity (MGD)
City of San Bernardino/East Valley Water District	Either	4
City of San Bernardino/City of Riverside	To San Bernardino	2
City of San Bernardino/West Valley Water District	Either	3
City of San Bernardino/Loma Linda	To Loma Linda	5
City of San Bernardino/Colton	To Colton	3
City of San Bernardino/Rialto	Either	3.6
City of San Bernardino/Riverside Highland Water Company	To Riverside Highland Water Company	3
Fontana/Cucamonga Valley	Either	3.6
West Valley Water District/Fontana	Either	
West Valley Water District/Rialto	Either	
West Valley Water District/Colton	To Colton	
City of Redlands/City of Loma Linda	To Loma Linda	1
Source: 2015 IRWMP		

All of the retail agencies that are included in this RUWMP are also members of the BTAC. The BTAC works together on an annual basis to review water supplies and evaluate how to prioritize and distribute any shortage of SWP supplies. During a shortage, it is anticipated that the first priority for any SWP water would be direct deliveries.

5.3.3 Strategies to Improve Regional Preparedness

Based on the recommendations in the 2015 IRWMP, the following strategies were identified to enhance regional disaster preparedness.

- Valley District is planning to implement seismic improvements for high priority facilities, including the Foothill Pipeline, Santa Ana River Connector, Morton Canyon Connector, and Greenspot pipeline.
- Projects are proposed that could provide production and conveyance system redundancies for regional facilities. These include:
  - The BHCUP, which could provide backup well production capacity needed for retail water agencies when SWP supplies have been severed.
  - The Central Feeder/EBX2 Intertie, which provides an additional connection between Valley District's system and DWR's system, and could be used to bypass a portion of Valley District's conveyance system in the event of failure.
- Consider the opportunities that Big Bear Lake presents as an emergency source of water after an earthquake that interrupts SWP deliveries for many weeks.

- A catastrophic earthquake may cause loss of electricity for an indeterminate amount of time. In order to ensure water supplies in the immediate aftermath and weeks following a major earthquake, it is critical to have back-up generators or internal combustion engines for important production wells throughout the Region.
- Valley District is also developing a storage program to help meet direct delivery demands during a shortage on the SWP. The current storage program includes the DWR Carryover Storage Program, the Yuba Accord and the DWR Dry Year Water Transfer Program. Valley District is also evaluating "upstream" groundwater banks located along the California Aqueduct.

5.3.4 General Response Strategies

The San Andreas Fault, which traverses the length of the southern San Joaquin Valley, could impact the State Water Project. The California Division of Mines and Geology has stated that two of the aqueduct systems that import water to southern California (including the California Aqueduct) could be ruptured by displacement on the San Andreas Fault. The situation would be further complicated by physical damage to pumping equipment and local loss of electrical power.

DWR has an Aqueduct Outage Plan for restoring the California Aqueduct to service should a major break occur, which it estimates would take approximately four months to repair. Limitations on supplies of groundwater and/or imported water for an extended period, due to power outages and/or equipment damage, could result in severe water shortages until the supplies could be restored.

The public would be asked to reduce consumption to minimum health and safety levels, extending the supply in treated water storage a number of days. This would provide sufficient time to restore a significant amount of groundwater production. After the groundwater supply is restored, the pumping capacity of the retail purveyors could meet the reduced demand until such time that the imported water supply was reestablished. Updates on the water situation would be made as often as necessary.

Valley District's water sources are generally of good quality, and no insurmountable problems resulting from industrial or agricultural contamination are foreseen. If contamination did result from a toxic spill or similar accident, the contamination would be isolated and should not significantly impact the total water supply. In addition, such an event would be covered by the purveyors Emergency Response Plan.

5.3.5 SWP Emergency Outage Scenarios

In addition to earthquakes, the SWP could experience other emergency outage scenarios. Past examples include slippage of aqueduct side panels into the California Aqueduct near Patterson in the mid-1990s, the Arroyo Pasajero flood event in 1995 (which also destroyed part of Interstate 5 near Los Banos) and various subsidence repairs needed along the East Branch of the Aqueduct since the 1980s. All these outages were short-term in nature (on the order of

weeks), and DWR's Operations and Maintenance Division worked diligently to devise methods to keep the Aqueduct in operation while repairs were made. Thus, the SWP contractors experienced no interruption in deliveries.

One of the SWP's important design engineering features is the ability to isolate parts of the system. The Aqueduct is divided into "pools." Thus, if one reservoir or portion of the California Aqueduct is damaged in some way, other portions of the system can still remain in operation.

Other events could result in significant outages and potential interruption of service. Examples of possible nature-caused events include a levee breach in the Delta near the Harvey O. Banks Pumping Plant, a flood or earthquake event that severely damages the Aqueduct along its San Joaquin Valley traverse, or an earthquake event along either the West or East Branches. Such events could impact some or all SWP contractors south of the Delta.

The response of DWR, Valley District and other SWP contractors to such events would be highly dependent on the type and location of any such events. In typical SWP operations, water flowing through the Delta is diverted at the SWP's main pumping facility, located in the southern Delta, and is pumped into the California Aqueduct. During the relatively heavier runoff period in the winter and early spring, Delta diversions generally exceed SWP contractor demands and the excess is stored in San Luis Reservoir. Storage in SWP aqueduct terminal reservoirs, such as Pyramid and Castaic Lakes, is also refilled during this period. During the summer and fall, when diversions from the Delta are generally more limited and less than contractor demands, releases from San Luis Reservoir are used to make up the difference in deliveries to contractors. The SWP share of maximum storage capacity at San Luis Reservoir is 1,062,000 AF.

In addition to SWP storage south of the Delta in San Luis and the terminal reservoirs, a number of contractors have stored water in groundwater banking programs in the San Joaquin Valley, and many also have surface and groundwater storage within their own service areas. Two scenarios that could impact the delivery of SWP supply, previously banked supplies or other supplies delivered to it through the California Aqueduct are described below. For each of these scenarios, it was assumed that an outage of six months could occur. Valley District's ability to meet demands during the worst of these scenarios is presented following the scenario descriptions.

5.3.5.1 Scenario 1: Levee Breach New Banks Pumping Plant

As demonstrated by the June 2004 Jones Tract levee breach and previous levee breaks, the Delta's levee system is fragile. The SWP's main pumping facility, Banks Pumping Plant, is located in the southern Delta. Should a major levee in the Delta near these facilities fail catastrophically, salt water from the eastern portions of San Francisco Bay would flow into the Delta, displacing the fresh water runoff that supplies the SWP. All pumping from the Delta would be disrupted until water quality conditions stabilized and returned to pre-breach conditions. The re-freshening of Delta water quality would require large amounts of additional Delta inflows, which might not be immediately available, depending on the time of year of the

levee breach. The Jones Tract repairs took several weeks to accomplish and months to complete; a more severe breach could take much longer, during which time pumping from the Delta might not be available on a regular basis.

Assuming that the Banks Pumping Plant would be out of service for six months, DWR could continue making at least some SWP deliveries to all southern California contractors from water stored in San Luis Reservoir. The water available for such deliveries would be dependent on the storage in San Luis Reservoir at the time the outage occurred and could be minimal if it occurred in the late summer or early fall when San Luis Reservoir storage is typically low. Valley District water stored in groundwater banking programs in the San Joaquin Valley may also be available for withdrawal and delivery to Valley District.

5.3.5.2 Scenario 2: Complete Disruption of the California Aqueduct in the San Joaquin Valley

The 1995 flood event at Arroyo Pasajero demonstrated vulnerabilities of the California Aqueduct (the portion that traverses the San Joaquin Valley from San Luis Reservoir to Edmonston Pumping Plant). Should a similar flood event or an earthquake damage this portion of the aqueduct, deliveries from San Luis Reservoir could be interrupted for a period of time.

In any of these SWP emergency outage scenarios, DWR and the SWP contractors would coordinate operations to minimize supply disruptions. Depending on the particular outage scenario or outage location, some or all of the SWP contractors south of the Delta might be affected. But even among those contractors, potential impacts would differ given each contractor's specific mix of other supplies and available storage. During past SWP outages, the SWP contractors have worked cooperatively to minimize supply impacts among all contractors. Past examples of such cooperation have included certain SWP contractors agreeing to rely more heavily on alternate supplies, allowing more of the outage-limited SWP supply to be delivered to other contractors, and exchanges among SWP contractors, allowing delivery of one contractor's SWP or other water to another contractor, with that water being returned after the outage was over.

5.3.6 Emergency Freshwater Pathway Description (Sacramento-San Joaquin Delta)

DWR has estimated that in the event of a major earthquake in or near the Delta, regular water supply deliveries from the SWP could be interrupted for up to three years, posing a substantial risk to the California business economy. Accordingly, a post-event strategy has been developed which would provide necessary water supply protections. The plan has been coordinated through DWR, the Army Corps of Engineers (Corps), Bureau of Reclamation, California Office of Emergency Services (Cal OES), the Metropolitan Water District of Southern California, and the State Water Contractors. Full implementation of the plan would enable resumption of at least partial deliveries from the SWP in less than six months.

5.3.7 DWR Delta Flood Emergency Management Plan

DWR has developed the Delta Flood Emergency Management Plan to provide strategies for a response to Delta levee failures, which addresses a range of failures up to and including

earthquake-induced multiple island failures during dry conditions when the volume of flooded islands and salt water intrusion are large. Under such severe conditions, the plan includes a strategy to establish an emergency freshwater pathway from the central Delta along Middle River and Victoria Canal to the export pumps in the south Delta. The plan includes the pre-positioning of emergency construction materials at existing and new stockpiles and warehouse sites in the Delta, and development of tactical modeling tools (DWR Emergency Response Tool) to predict levee repair logistics, water quality conditions, and timelines of levee repair and suitable water quality to restore exports. The Delta Flood Emergency Management Plan has been extensively coordinated with state, federal and local emergency response agencies. DWR, in conjunction with local agencies, the Corps and Cal OES, regularly conduct simulated and field exercises to test and revise the plan under real time conditions.

DWR and the Corps provide vital Delta region response to flood and earthquake emergencies, complementary to an overall Cal OES structure. Cal OES is preparing its Northern California Catastrophic Flood Response Plan that incorporates the DWR Delta Flood Emergency Management Plan. These agencies utilize a unified command structure and response and recovery framework. DWR and the Corps, through a Draft Delta Emergency Operations Integration Plan (April 2015), would integrate personnel and resources during emergency operations.

5.3.8 Levee Improvements and Prioritization

The DWR Delta Levees Subvention Program has prioritized, funded, and implemented levee improvements along the emergency freshwater pathway and other water supply corridors in the central and south Delta region. These efforts have been complementary to the DWR Delta Flood Emergency Management Plan, which along with use of pre-positioned emergency flood fight materials in the Delta, relies on pathway and other levees providing reasonable seismic performance to facilitate restoration of the freshwater pathway after a severe earthquake. Together, these two DWR programs have been successful in implementing a coordinated strategy of emergency preparedness for the benefit of SWP and CVP export systems.

Significant improvements to the central and south Delta levee systems along Old and Middle Rivers began in 2010 and are continuing to the present time at Holland Island, Bacon Island, Upper and Lower Jones Tracts, Palm Tract and Orwood Tract. This complements substantially improved levees at Mandeville and McDonald Islands and portions of Victoria and Union Islands. Together, levee improvements along the pathway and Old River levees consisting of crest raising, crest widening, landside slope fill and toe berms, meet the needs of local reclamation districts and substantially improve seismic stability to reduce levee slumping and create a more robust flood-fighting platform. Many urban water supply agencies have participated or are currently participating in levee improvement projects along the Old and Middle River corridors.

6 San Bernardino Valley Municipal Water District

6.1 Description of Agency

Valley District was formed in 1954, under the Municipal Water District Act of 1911 (California Water Code Section 71000 et seq.) as a regional agency to plan a long-range water supply for the San Bernardino Valley. It imports water into its service area through participation in the SWP and manages groundwater storage within its boundaries. Its enabling act includes a broad range of powers to provide water, wastewater and stormwater disposal, recreation, and fire protection services. Valley District is a wholesale water agency and does not deliver water directly to retail water customers.

Valley District covers about 325 square miles mainly in southwestern San Bernardino County, about 60 miles east of Los Angeles. It spans the eastern two-thirds of the San Bernardino Valley including the Crafton Hills and a portion of the Yucaipa Valley. The following cities and communities are within its boundary: Bloomington, Colton, East Highland, Fontana, Grand Terrace, Highland, Loma Linda, Mentone, Redlands, Rialto, San Bernardino, and Yucaipa.

Valley District is responsible for long-range water supply management, including importing supplemental water, and is responsible for managing the San Bernardino Basin Area, Rialto-Colton Basin Area, and Riverside Basin Area per the Western Judgment. It also has responsibility for maintaining flows in the Santa Ana River (SAR) at the Riverside Narrows per the Orange County Judgment. It fulfills its responsibility in the SAR using treated wastewater and fulfills its responsibilities for managing local groundwater basins and by working with the BTAC each year on an annual management plan. For more information, see Chapter 2.

Valley District cooperates in a program to help replenish groundwater basins, using both SWP water and local runoff. It takes delivery of SWP water at the Devil Canyon Power Plant Afterbay, which is located just within the northwestern corner of its boundary. Water can then be conveyed east or west to various treatment plants and spreading grounds. A map illustrating Valley District's service area is shown in Figure 6-1.

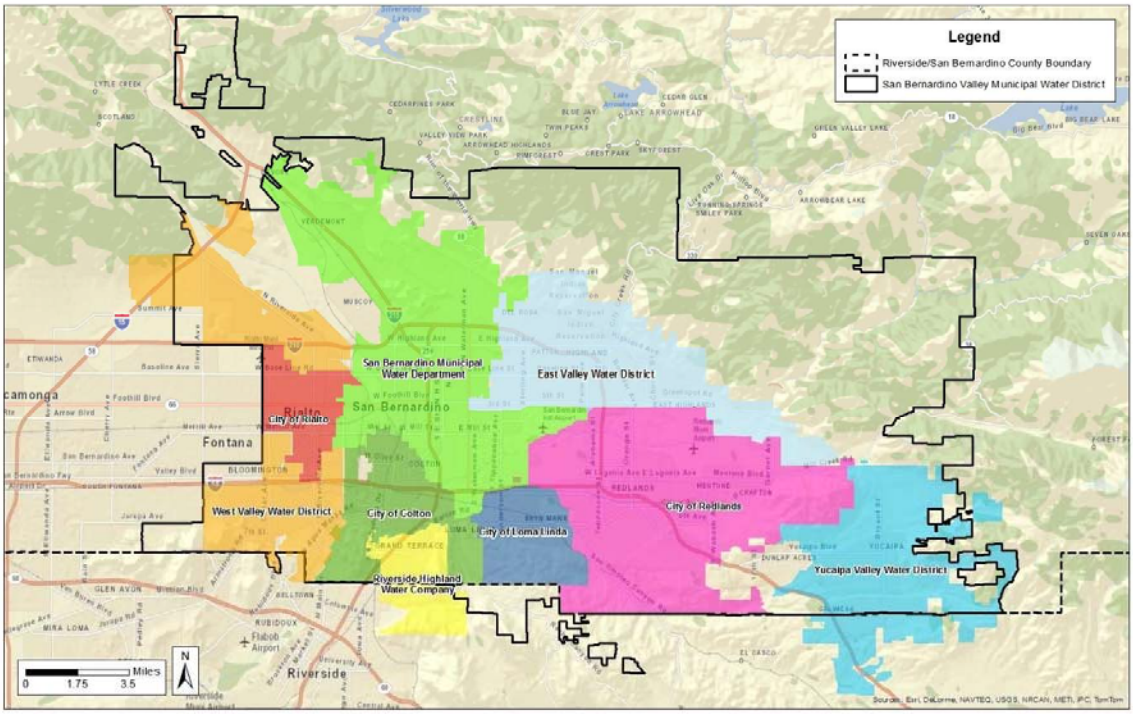


Figure 6-1. Valley District Service Area

The DWR Population Tool was used to intersect the Valley District service area with historic census population data. The estimated 2010 population within the Valley District service area is approximately 662,000. Valley District has prepared an estimate of future population for 2020 to 2040, based on an intersection of Valley District's service area with projections developed by the Southern California Association of Governments (SCAG) in their 2012 Integrated Growth Forecast. The growth rates projected by SCAG were used to estimate future population within Valley District's service area. Population projections are shown in Table 6-1.

Table 6-1. Service Area Population - Current and Projected

	2015	2020	2025	2030	2035	2040
Valley District	690,758	721,223	757,015	794,584	834,017	875,407

6.2 Climate

The climate within Valley District's service area is characterized by warm, dry summers and mild winters with moderate amounts of rainfall. Most of the precipitation occurs during the months of December through March. Table 6-2 presents average climate data for the service area, including temperature, rainfall and reference evapotranspiration (ETo).

Table 6-2. Historical Climate Data

Month	Average Temperature (°F)[1]	Average Precipitation (in.)[1]	Average Standard ETo (in.)[2]
January	52.4	3.22	2.53
February	54.6	3.25	2.87
March	56.7	2.86	4.30
April	60.9	1.29	5.38
May	65.6	0.47	5.82
June	71.3	0.09	6.76
July	77.7	0.04	7.38
August	77.7	0.15	7.09
September	73.9	0.33	5.51
October	66.5	0.71	3.97
November	58.6	1.32	2.89
December	53.3	2.38	2.38
Total		**16.1**	

Notes:
[1]NOAA weather station 0407723 in San Bernardino; data from 1893 through 2004; http://wrcc.dri.edu;
[2]CIMIS weather station 44 at University of California, Riverside; http://wwwcimis.water.ca.gov/

6.3 Supply

As discussed in Chapter 2, Valley District is a State Water Contractor and imports SWP Water into the study area. Valley District also operates groundwater wells that pump from the SBBA. Historical pumping data from the past five (5) years is shown in Table 6-3.

Table 6-3. DWR Table 4-1W. Historical Groundwater Pumping Data

Groundwater Type	Location or Basin Name	Water Quality	2011	2012	2013	2014	2015
Alluvial Basin	SBBA	Drinking Water	618	3,790	7,485	8,178	6,226
	Total		618	3,790	7,485	8,178	6,226

6.4 Demand Management Measures

In recent years, water conservation has become an increasingly important factor in water supply planning in California. Demand Management Measures (DMMs) are programs and activities through which a water supplier can communicate with their customers and encourage, regulate or incentivize water conservation.

As part of the IRWMP and UWMP process, agencies in the San Bernardino Valley area have formed a group to study and address conservation needs in the San Bernardino Valley. The first step in this process was identifying the costs and benefits of various demand management measures. Special attention was given to those demand management measures that are not cost effective for an individual agency, but which could be cost effective if implemented on as part of a regional collaboration. The second step in the process was to identify the water conservation target, which was done as part of the 2010 UWMP. At the conclusion of Steps 1 and 2, the agencies participating in this UWMP met to coordinate regional implementation of selected conservation actions. The group engaged a Regional Conservation Coordinator. In addition to the programs listed above, the Regional Conservation Coordinator leads public outreach programs and school education programs. The UWMP agencies, along with the Regional Conservation Coordinator, evaluate existing agency resources available to assist with conservation programs and then select conservation programs and processes to be implemented at the regional level. The UWMP agencies utilize the Regional Conservation Coordinator to track conservation actions, conservation successes, and estimate water savings. Valley District has played the primary role in coordinating the IRWMP and UWMP processes and is coordinating the ongoing work of the agencies to implement additional conservation.

The following is a description of Valley District's status in implementing the requirements of the revised California Urban Water Conservation Council (CUWCC) Memorandum of Understanding (MOU). For the 2015 UWMP cycle, DWR made changes to the reporting requirements for DMMs. This discussion is organized to follow the format recommended in the DWR Guidebook for Urban Water Suppliers (Guidebook).

6.4.1 Metering

All of Valley District's connections are metered. Valley District monitors these meters and repairs or replaces them as necessary.

6.4.2 Public education and outreach

Public education and outreach efforts include marketing of rebates and giveaways, communicating water use via water bills, providing school education programs, information booths at fairs and public events, newsletters, informative websites, online tools, social media, or newspaper articles.

Valley District provided $500,000 for a demonstration garden at California State University San Bernardino and is spending $11,000 on maintenance of the garden in 2016. In addition, Valley District is also funding public education classes in the garden during Fiscal Year (FY) 15-16 at a rate of about two per month and is preparing eye-catching posters that will be displayed in the garden. Valley District has also provided almost $400,000 toward the launch of a new, regional public outreach campaign, iEfficient.com. The District also has conservation-related information on its website.

Valley District funds a consultant to provide school education programs to retail agencies in its service area. Currently, the program has focused on the agencies that have most of Valley District's population: West Valley Water District, East Valley Water District, the City of Redlands, and the City of San Bernardino.

In FY 12-13, Valley District began offering courses to adults, in addition to the courses offered to schools. Table 6-4 provides a summary of the outreach that was performed between 2007 and 2015.

Table 6-4. Water Conservation Education Programs Completed by Valley District

Year	School Programs	Adult Programs
2007	2	0
2008	24	0
2009	39	0
2010	55	0
2011	60	0
2012	83	0
2013	100	2
2014	70	80
2015	120	130
Total	553	212

In addition to this educational programming, Valley District has sponsored the Inland Solar Challenge since 2008. This event requires students to build a solar powered boat and to prepare and present a report on a water use efficiency topic.

6.4.3 Water conservation program coordination and staffing support

A part-time coordinator has been assigned to manage water conservation efforts. The position is filled by the Manager of Water Resources. In addition, Valley District utilizes consultants to manage water conservation activities. Valley Soil assists with the Weather Based Irrigation

Controller Program (WBIC), the Inland Empire Resource Conservation District provides public education programs, and CV Strategies coordinates the public outreach program, iEfficient.

6.4.4 Other demand management measures

Valley District is not a retail agency but does support water waste prohibition and water conservation. The District is actively involved in supporting its retailers through a variety of programs including: school education programs to four of its retail agencies (WVWD, EVWD, Redlands, and San Bernardino); allocating funding (over $430,000) towards WBIC incentives; and as the primary contributor ($500,000) to the proposed San Bernardino Valley Water Conservation Demonstration Garden at California State University, San Bernardino.

In addition, Valley District started and has taken a leadership role in developing the iEfficient and Inland Empire Garden Friendly Programs. These programs seek to save water by helping consumers implement "climate appropriate" plants and the installation of drip irrigation systems. This program has corporate sponsors, the largest of which is Home Depot.

6.4.5 Asset management

Valley District is a wholesale water agency with no retail customers, and its system consists of steel pipe that is welded internally and externally. Properly welded joints do not leak. Therefore, the only likely place the pipeline could leak is at delivery points. These points are inspected on a monthly basis and are dry.

6.4.6 Wholesale supplier assistance programs

Valley District is actively involved in supporting its retailers through a variety of programs mentioned above.

Valley District, because it is a wholesale agency, is not directly implementing water survey programs for single-family residential and multi-family residential customers, residential plumbing retrofits, metering with commodity rates, large landscape conservation programs, high efficiency washing machine rebate programs, or CII programs. Rather, Valley District supports the retail agencies with their conservation programs by providing 25% of what they pay to their customers.

In addition, Valley District has also provided up to $200,000 in FY 15-16 for residential turf removal and about $828,000 for turf removal at larger, institutional sites, totaling over $1 million in turf removal. Valley District continues to offer a WBIC program for large water users. Under this program, Valley District pays 50 percent of the costs and the customer pays the other 50 percent of the cost making this a "free" program to the water retailers. Some of the water retailers have chosen to increase the incentive to the customer by splitting the customer portion of the cost with them.

6.5 Water Shortage Contingency Plan

Water supplies may be interrupted or reduced significantly in a number of ways, such as drought which limits supplies, a fire or earthquake which damage delivery or storage facilities, chemical spill, or a regional power outage. Section 5 of this UWMP describes water shortage contingency planning for regional water supply sources.

6.6 Supply and Demand Comparisons

The UWMP Act requires urban water suppliers assess water supply reliability by comparing total projected water use with the expected water supply over the next 20 years in 5-year increments. The UWMP Act also requires an assessment of single-dry year and multiple-dry years. These comparisons for the Valley District are presented in Chapter 4 of this UWMP.

6.7 Adoption

Valley District, on behalf of the retail agencies, sent letters to cities and counties, as well as other water agencies, notifying them of RUWMP preparation and soliciting input to the Plan. Notification letters were sent in February and March 2016. Each agency published hearing notices consistent with UWMP Act requirements. Hearings were conducted by each agency regarding the selection of water use targets, the implementation plan for complying with SB X7-7, and the potential economic impacts of complying with SB X7-7.

Valley District held a public hearing to present the draft RUWMP. Valley District provided notice of the public hearing to the cities and counties to which it provides water. These agencies are identified in Appendix C.

Legal public notices for the public hearing were published in the local newspapers and posted at Valley District offices and on the Valley District website. The notice that was published in advance of the public hearing is attached as Appendix C.

Copies of the draft RUWMP were available at the Valley District office located at 380 E Vanderbilt Way, San Bernardino CA 92408 or as a PDF on the Valley District website prior to the public hearing.

The draft Final RUWMP was presented to the Board at a public hearing on June 7, 2016.

The draft Final RUWMP was presented to the Board for adoption on June 22, 2016.

A copy of the resolution adopting the RUWMP is attached as Appendix D.

12 Yucaipa Valley Water District

12.1 System Description

Yucaipa Valley Water District (YVWD) was formed as part of a reorganization, pursuant to the Reorganization Act of 1965, being Division I of Title 6 of the Government Code of the State of California. This reorganization consisted of the dissolution of the Calimesa Water Company and formation of Improvement District No. 1 of YVWD as successor-in-interest thereto, and the dissolution of Improvement District "A" of the San Bernardino Valley Municipal Water District and the formation of Improvement District "A" of YVWD as successor-in-interest thereto. On September 14, 1971, the Secretary of State of the State of California certified and declared the formation of the District.

YVWD operates under the County Water District Law, being Division 12 of the State of California Water Code. Although the immediate function of the District at the time was to provide water service, YVWD currently provides a variety of services to residential, commercial and industrial customers. These services include: potable water service, drinking water treatment, recycled water service, sewer collection, sewer treatment and salinity elimination.

YVWD is located in the upper portion of the Santa Ana Watershed approximately 40 miles west of Palm Springs, 70 miles east of Los Angeles, and 120 miles north of San Diego in a high elevation valley at the base of the San Bernardino Mountain Range. YVWD's primary service area ranges in elevation from a low elevation of 2,044 feet above sea level to a high elevation of 5,184 feet above sea level. The range in elevation of 3,140 feet within the District requires YVWD to provide water service from 18 separate pressure zones.

YVWD's current service area encompasses approximately 25,742 acres, or 40 square miles which include the City of Calimesa and the City of Yucaipa. Neighboring cities include the City of Redlands and the City of Beaumont. YVWD's sphere of influence expands the acreage to 43,525 acres, or 68 square miles.

The YVWD service area includes two mutual water companies the Western Heights Water Company and the South Mesa Water Company. The service area of the Western Heights Mutual Water Company is 4.53 square miles (2,902 acres) and the service area of the South Mesa Mutual Water Company is 4.00 square miles (2,561 acres). In the future, the population of Western Heights Mutual Water Company and South Mesa Water Company are expected to have limited growth as compared to the larger service area boundary of YVWD.

Figure 12-1 shows the YVWD service area and sphere of influence boundary.

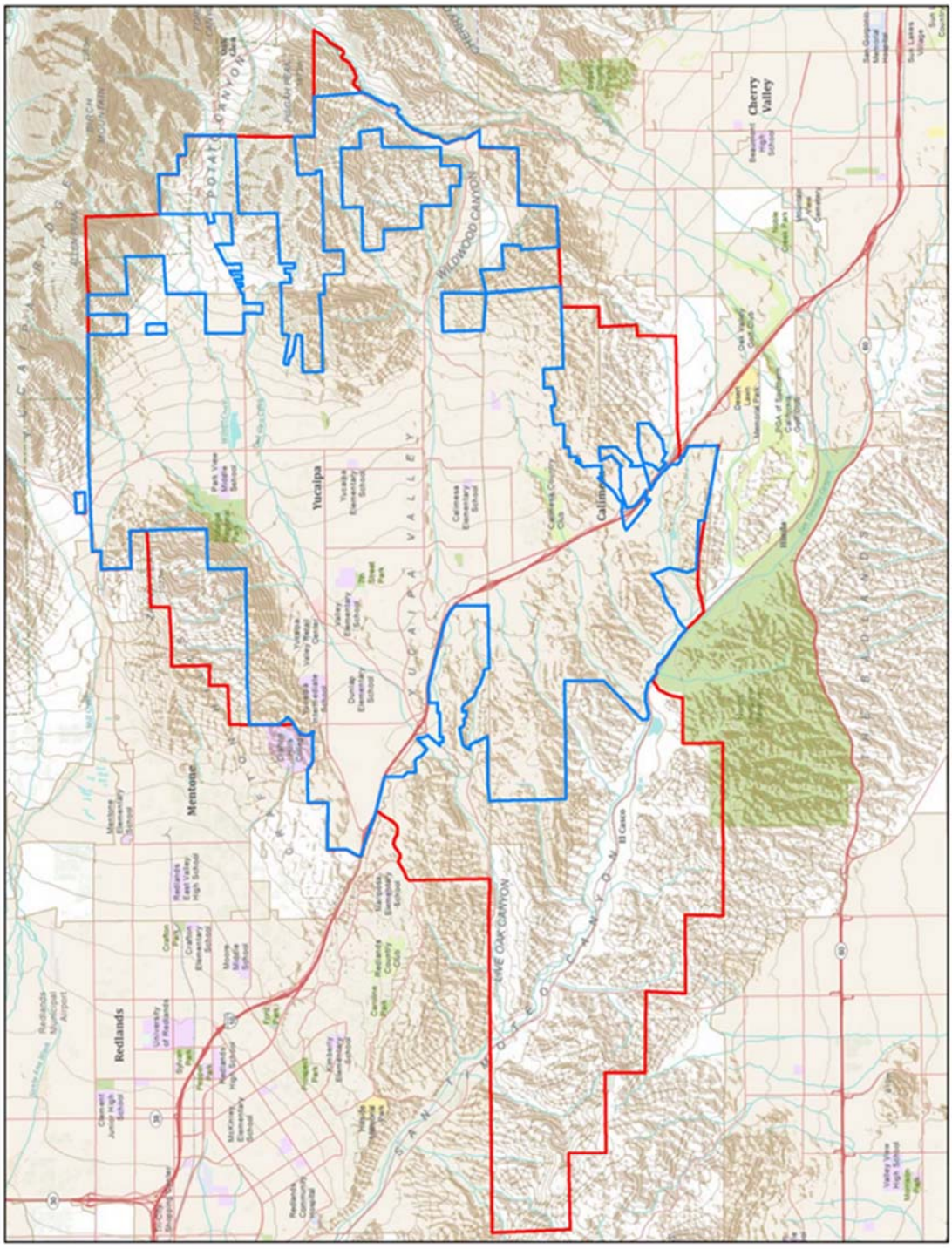


Figure 12-1 Yucaipa Valley Water District Service Area boundary (blue) and Sphere of Influence (red).

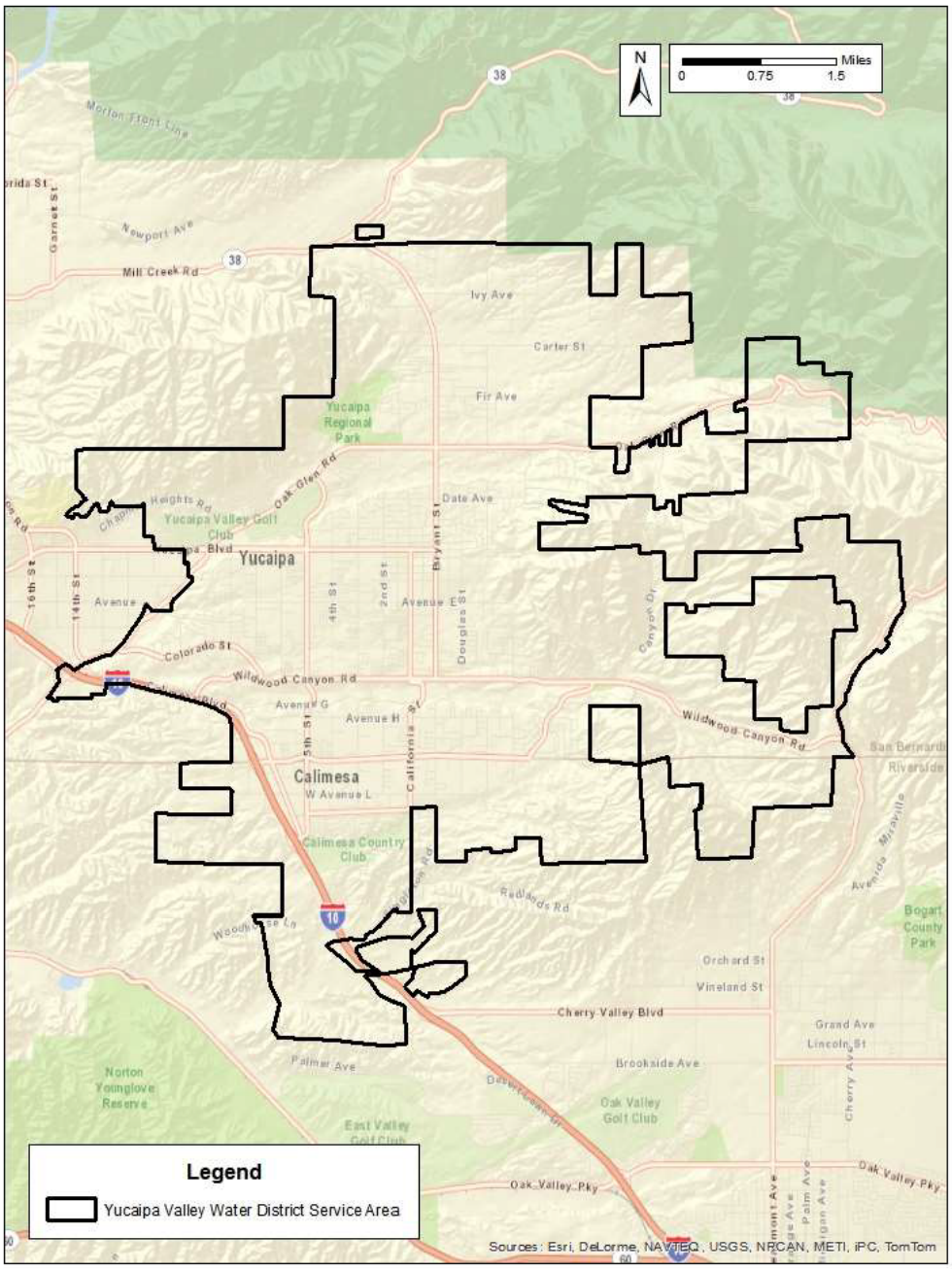


Figure 12-2. Yucaipa Valley Water District Service Area

To calculate the population of the YVWD service area, the YVWD service area boundary in Figure 7-1b was used with census data to provide population estimates for 1990, 2000, and 2010. Population for intermediate non-census years was estimated using an anticipated growth rates based on future development projections. The service area population for 2015 was estimated using the number of water connections in 2010 and 2015. The estimated population of Western Heights Mutual Water Company and South Mesa Mutual Water Company are not included in these calculations.

The estimated service area populations are shown in Table 12-1 for the existing service area of YVWD.

Table 12-1 DWR Table 3-1R. Population - Current and Projected

Population Served	2015	2020	2025	2030	2035	2040	2045
Population Served	44,745	47,809	51,676	55,976	60,558	65,410	69,207

12.2 Service Area Climate

YVWD is located in the upper portion of the Santa Ana Watershed within the South Coast Hydrologic Region. Temperatures range from an average high of 78° and an average low of 49°. The record high for the area is 117° and the record low is 17°.

The annual average rainfall for the area is about 15.80 inches per year. The climate is characterized by hot dry summers when temperatures can rise above 100º, and moderate winters, with rare freezing temperatures. A major portion of the precipitation occurs between December and March. Snow in the upper reaches of the area is possible, but is not considered an important contributing factor to runoff.

Average temperature, precipitation, and evapotranspiration by month are shown in Table 7-2. Evapotranspiration (ET) is the loss water to the atmosphere by the combined processes of evaporation (from soil and plant surfaces) and transpiration (from plant tissues). It is an indicator of how much water crops, lawn, garden, and trees need for healthy growth and productivity. ET from a standardized grass surface is commonly denoted as ETo. These data are based on 30 years of record (1986-2015) at Station 044 (University of California Riverside) within the California Irrigation Management Information System (CIMIS).

Table 12-2. Historical Climate Data

Month	Average Minimum Temperature (°F)	Average Maximum Temperature (°F)	Average Precipitation (in.)	Average Standard ETo (in.)
January	39.3	64.7	2.67	3.32
February	41.3	66.1	2.65	2.41
March	43.6	69.1	2.31	4.62
April	46.8	73.7	1.18	5.58
May	51.1	78.5	0.48	6.32
June	55.2	86.7	0.11	5.37
July	60.3	94.5	0.06	7.60
August	60.6	94.2	0.15	6.68
September	57.5	90.0	0.29	5.89
October	51.2	81.0	0.70	4.40
November	44.0	72.6	1.14	3.18
December	39.6	65.9	1.79	2.08
Annual	49.2	78.1	13.53	57.45
Notes: Precipitation and temperature for NOAA weather station 0407723 in San Bernardino; data from 1893 through 2004; http://wrcc.dri.edu; ETo data for CIMIS weather station 44 at University of California, Riverside; http://wwwcimis.water.ca.gov/				

12.3 System Water Use

12.3.1 Water Uses by Sector

YVWD has experienced significant growth in the last 20 year as with many areas in San Bernardino and Riverside County. Within the last 8 years Yucaipa and Calimesa's growth has slowed due to overall economic conditions across the United States.

YVWD categorizes its water customers based on the following categories (the percentages represent the proportionality of service connections as of March 31, 2016):

- Single Family Residential - 91.84%
- Multi-Family Residential - 4.00%
- Commercial - 1.79 %
- Irrigation Potable - 0.88%
- Institutional - 0.56%

- Irrigation - Recycled Water - 0.55%
- Construction Water - 0.17%
- Fire Service - 0.13%
- Industrial - 0.07%

YVWD anticipates a fairly consistent distribution of customer its customer base in the future. Actual water deliveries from 2011 through 2015 are provided in Table 7-3.

Sources of nonrevenue water include:

- Customer Meter Inaccuracies - Customer meters represent one of the main sources of nonrevenue water as they tend to under-represent actual consumption in the water system. YVWD has a replacement program to replace malfunctioning meters and a systematic program to replace and upgrade water meters on a 10-year basis.
- Storage Reservoir overflows - This represents unrecorded water use when reservoirs overflow.
- Leaks from water lines - Leakage from water pipes is a common occurrence in water systems. A significant number of leaks remain undetected over long periods of time as they are very small; however, these small leaks contribute to the overall nonrevenue water.

The historic and estimated future demands are shown in Table 12-3 and Table 12-4 in acre feet (af).

Table 12-3. DWR Table 4-1R. Demands for Raw and Potable Water - Actual

Use Type	Level of Treatment When Delivered	2011	2012	2013	2014	2015
Single Family	Drinking Water	7,536.36	8,184.36	8,039.54	8,235.27	6548.60
Multi-Family	Drinking Water	1,223.41	1,242.32	1,240.91	1,201.16	1050.34
Commercial	Drinking Water	315.42	332.81	338.18	332.82	298.00
Construction Water	Drinking Water	26.63	18.02	19.25	61.48	30.03
Fire Service	Drinking Water	0.05	0.10	0.00	0.18	0.31
Industrial	Drinking Water	82.11	91.02	46.76	88.40	50.05
Institutional	Drinking Water	178.39	211.78	201.36	216.61	149.61
Landscape Irrigation	Drinking Water	615.33	697.03	618.58	633.94	456.88
Nonrevenue	Drinking Water	1,541.05	1,021.04	1360.80	1109.06	1010.97
	Total	**11,518.75**	**11,801.48**	**11,865.38**	**11,878.91**	**9,594.78**

Table 12-4. DWR Table 4-2R. Demands for Raw and Potable Water - Projected

Use Type	Level of Treatment	2020	2025	2030	2035	2040
Single Family	Drinking Water	7,510	7,737	7,986	8,248	8,522
Multi-Family	Drinking Water	1,161	1,196	1,234	1,275	1,317
Commercial	Drinking Water	315	325	335	346	358
Construction Water	Drinking Water	30	31	32	33	34
Industrial	Drinking Water	70	72	74	77	79
Institutional	Drinking Water	187	192	198	205	212
Landscape Irrigation	Drinking Water	589	607	626	647	668
Sales/Transfers/Exchanges to other agencies	Drinking Water	200	200	200	200	200
Nonrevenue	Drinking Water	1,178	1,214	1,253	1,294	1,337
		11,240	**11,574**	**11,938**	**12,325**	**12,727**

YVWD total demands including expected recycled water use are shown in Table 12-5. Recycled water is discussed further in Section 12.6.

Table 12-5. DWR Table 4-3R. Total Water Demands

Demand	2015	2020	2025	2030	2035	2040
Potable and Raw Water	9,595	11,240	11,574	11,938	12,325	12,727
Recycled Water Demand	1,213	1,651	2,177	2,792	3,490	4,282
Total Water Demand	10,808	12,891	13,751	14,730	15,815	17,009

12.3.2 Distribution System Water Losses

YVWD has an active water loss control program and has performed a water loss audit using the AWWA Manual 36 for calendar year 2014. The audit results are summarized in Table 12-6.

Table 12-6. DWR Table 4-4R. Water Loss Summary Most Recent 12 Month Period Available

Reporting Period Start Date (mm/yyyy)	Volume of Water Loss
01/2014	1,965.567 AF

Based on the results of the 2014 Distribution System Water Loss report, the YVWD has implemented a refinement of this program to involve additional staff members to participate in the compilation of the report so there is a better understanding of water losses in an effort to improve the efficiency and effectiveness of the operations.

The AWWA water audit methodology will be performed annually in preparation of the 2020 UWMP document that requires reporting information for 2016, 2017, 2018, 2019, and 2020.

12.3.3 Estimating Future Water Savings

YVWD is committed to long-range planning to provide a reliable, cost-effective, and diversified water supply to its customers. YVWD actively monitors water consumption in its service area as part of their active planning and management strategies. Portions of the information collected by YVWD are included in the monthly reports sent to the State Water Resources Control Board.

For this report, YVWD has projected that future demands will increase at different growth rates applied to each decade together with the following factors:

- The percentage growth in service area population based on projections for each decade to 2070;
- The variations associated with imported water availability for the San Bernardino Valley Municipal Water District (for potable water service to the City of Yucaipa) and the San Gorgonio Pass Water Agency (for potable water service to the City of Calimesa);
- Anticipated reductions to the current per-capita consumption for the reporting period;
- Active construction of recycled water infrastructure for dual-plumed residential developments; and
- Projections for each type of customer classification served by YVWD.

In the 2015 UWMP, water suppliers have the option of preparing more detailed demand forecasts by estimating demand factors based on land use categories. For example, YVWD could identify typical water use per single family customer and per commercial account. These customer classes can be further sub-divided by lot size, neighborhood, or other variables. The intent is to quantify the estimated water use per customer in different customer classes, and then to forecast how future changes will impact water use within each customer class.

For this document, YVWD has elected not to develop land use-based demand factors and apply future savings from codes and standards. Recent drought regulations have induced significant changes in water consumption patterns, and there is considerable uncertainty as to how demands will change in the future if the drought subsides. Given this uncertainty, YVWD has elected not to quantify passive savings for this UWMP.

12.3.4 Water Use for Lower Income Households

Senate Bill 1087 requires that water use projections of an UWMP include the projected water use for single-family and multi-family residential housing for lower income households as identified in the housing element of any city, county, or city and county in the service area of the supplier.

The YVWD contains two jurisdictions, the City of Yucaipa and the City of Calimesa and two mutual water companies that also provide service to lower income households. YVWD reviewed the most recent General Plan for each of these entities to determine the percentage of households that are lower income (less than 80 percent of the median household income). YVWD estimated a weighted average of 15 percent of households in the service area are lower income. In the absence of more detailed information, YVWD estimated that this percentage

applies to its single-family residential and multi-family residential water use across the service area. The estimated water use for lower-income households is shown in Table 12-7. These demands are included in the projections presented throughout this report.

Table 12-7. Estimated Demands for Lower-Income Households

Demand	2015	2020	2025	2030	2035	2040
Single Family Residential	982	1,127	1,161	1,198	1,237	1,278
Multi-Family Residential	158	174	179	185	191	198
Total	1,140	1,301	1,340	1,383	1,428	1,476

YVWD will not deny or put unreasonable conditions for water services, or reduce the amount of services applied for by a proposed development that includes housing units affordable to lower income households unless one of the following occurs:

- YVWD specifically finds that it does not have sufficient water supply
- YVWD is subject to a compliance order issued by the State that prohibits new water connections
- the applicant has failed to agree to reasonable terms and conditions relating to the provision of services

The conditions above apply to all applicants and developers.

12.4 SB X7-7 Baselines and Targets

An urban retail water supplier must set a 2020 water use target (herein called the Compliance Water Use Target) and a 2015 interim target (herein called the Interim Water Use Target). YVWD had previously calculated baseline water use and water use targets in the 2010 RUWMP using 2010 census data in the calculation of service area populations.

DWR has prepared standardized tables to record and document the calculations required for this section. The standardized tables for YVWD's calculations are included in Appendix O.

12.4.1 Baseline Water Use

Years 2000 to 2009 have been selected for calculation of the 10-year base period, while years 2005 to 2009 have been selected for calculation of the 5-year base period.

YVWD's service area population was calculated using census data for the determination of the service area population for 1990, 2000, and 2010. Populations for intermediate years were calculated based on the number of residential water accounts between census years.

The calculation of gross water use begins with the total amount of water that was put into the potable water distribution system by YVWD. Water that was exported to another agency was then subtracted, to leave the amount used by YVWD retail customers.

For the period from 2000 through 2009, the 10-year average Base Daily Per Capita Water Use for YVWD is 291 GPCD; the 5-year is 307 GPCD.

12.4.2 2015 and 2020 Targets

The Water Conservation Bill of 2009 (SBX7-7) is one of four policy bills enacted as part of the November 2009 Comprehensive Water Package (Special Session Policy Bills and Bond Summary). The Water Conservation Bill of 2009 provides the regulatory framework to support the statewide reduction in urban per capita water use described in the 20 by 2020 Water Conservation Plan. Consistent with SBX7-7, each water supplier must determine and report its existing baseline water consumption and establish future water use targets in gallons per capita per day (GPCD); reporting is to begin with the 2010 UWMP.

An urban retail water supplier must set a 2020 water use target (herein called the Compliance Water Use Target) and a 2015 interim target (herein called the Interim Water Use Target). There are four methods for calculating the Compliance Water Use Target:

1. Eighty percent of the urban water supplier's baseline per capita daily water use

2. Per capita daily water use estimated using the sum of the following:

    a) For indoor residential water use, 55 gallons per capita daily water use as a provisional standard. Upon completion of DWR's 2016 report to the Legislature reviewing progress toward achieving the statewide 20 percent reduction target, this standard may be adjusted by the Legislature by statute.

    b) For landscape irrigated through dedicated or residential meters or connections, water use efficiency equivalent to the standards of the Model Water Efficient Landscape Ordinance set forth in section 490 et seq. of Title 23 of the California Code of Regulations, as in effect the later of the year of the landscape's installation or 1992.

    c) For commercial, industrial, and institutional (CII) uses, a ten percent reduction in water use from the baseline CII water use by 2020.

3. Ninety-five percent of the applicable state hydrologic region target as stated in the state's April 30, 2009, draft 20 by 2020 Water Conservation Plan. YVWD falls within the South Coast Hydrologic Region; the region target is 142 GPCD. The South Coast region encompasses several coastal counties (Ventura, Los Angeles, Orange, and San Diego) and also includes portions of inland areas such as San Bernardino and Riverside. This target is more appropriate for coastal, rather than inland, areas.

4. Reduce the 10 or 15-year Base Daily Per Capita Water Use a specific amount for different water sectors:

a) Indoor residential water use to be reduced by 15 GPCD or an amount determined by use of DWR's "BMP Calculator".

b) A 20 percent savings on all unmetered uses.

c) A 10 percent savings on baseline CII use.

d) A 21.6 percent savings on current landscape and water loss uses.

The Interim Water Use Target is set as a halfway point between the Base Daily Water Use GPCD and the 2020 Compliance Water Use Target GPCD.

In addition to calculating base gross water use, SBX7-7 requires that a retail water supplier identify its demand reduction targets. YVWD is chose to meet SBX7-7 targets as an individual agency rather than as part of a regional alliance. YVWD also selected Method 1 to calculate its 2020 Compliance Water Use Target and Interim Water Use Target.

Compliance Water Use Target under Method 1 is eighty percent of the water supplier's baseline per capita water use. The resulting Compliance Water Use Target is 233 GPCD, the interim Water Use Target is 262 GPCD.

Table 12-8. DWR Table 5-1R. Baselines and Targets Summary

Baseline Period	Start Year	End Year	Average Baseline GPCD	2015 Interim Target	Confirmed 2020 Target
10-year	2000	2009	291.38	262	233
5-year	2005	2009	306.82	- -	- -

12.5 Demand Management Measures

Demand Management Measures are mechanisms implemented by Yucaipa Valley Water District to increase water conservation. The District is a signatory to the California Urban Water Conservation Council's Memorandum of Understanding which was developed to expedite implementation of reasonable water conservation measures in urban areas and to establish assumption for use in calculating estimates of reliable future water conservation savings. The Department of Water Resources Demand Management Measures coincide with the Best Management Practices developed by the California Urban Water Conservation Council (CUWCC). The 2013 and 2014 Coverage Reports required by CUWCC have been completed to comply with CWC 10631(i). See Appendix N. The status of the two 'Not on Track' BMP's are described below.

2013 – 2014 Best Management Practice	Status
BMP 1.1 Operation Practices	On Track
BMP 1.2 Water Loss Control	Not on Track
BMP 1.3 Metering with Commodity Rates	On Track
BMP 1.4 Retail Conservation Pricing	On Track (2013) Not on Track (2014)
BMP 2.1 Public Outreach	On Track
BMP 2.2 School Education Programs	On Track
BMP 3.1 Residential	On Track / GPCD Compliance
BMP 4.1 CII	On Track / GPCD Compliance
BMP 5.1 Landscape	On Track / GPCD Compliance

BMP 1.2 Water Loss Control

In order to comply with BMP 1.2 – System Water Audits, YVWD recognizes that completing the standard water audit and balance using the American Water Works Association (AWWA) Water Loss software and completing the Component Analysis. This is to determine the current volume of apparent and real water loss and the cost impact of these losses on utility operations. The AWWA Water Audit has been completed but the Component Analysis was not completed by the most recent BMP Reporting cycle. Since then, the training in Component Analysis and process has been complete and will be On Track for the next BMP reporting cycle.

BMP 1.4 Retail Conservation Pricing

The Retail Water Service Rate BMP was developed to establish a strong nexus between volume-related system costs and volumetric commodity rates, allowing conservation pricing to reward water efficient customers. The District practices conservation pricing for its water service with a commodity rate structure that includes five tiers.

The District is currently implementing conservation pricing. With the incentive to conserve structured in the water rate, it is deemed unnecessary to attempt to construct a commodity rate structure for sewer service. Additionally the accuracy of such rate structures, which rely on a formula based on water consumption, are questionable as they generally assess charges based upon winter season demands, which vary demanding on hydrology of a given year and landscaping demands YVWD UWMP, 2005).

YUCAIPA VALLEY WATER DISTRICT
CONSERVATION PRICING

Units	Cost/Unit
1-15	$1.429
16-60	$1.919
61-100	$2.099
101 & over	$2.429
30+ multiple units x 0.800 factor	
Non-Potable Water - Commodity Charge	
1000 gallons	$1.235

Note:
Potable Water Commodity Charge – Step Rate Table-per 1000 gallon units

12.6 System Supplies

YVWD relies on four primary water resources to meet annual water demands: groundwater resources, local surface water resources; imported water resources; and recycled water resources. YVWD's water supply consists primarily of groundwater from 25 wells located throughout the YVWD service area. These wells provide about 50 percent of the total drinking water supply. In addition to groundwater, The Oak Glen Surface Water Treatment Plant provides about 3 percent of the total drinking water supply and the Yucaipa Valley Regional Water Filtration Facility provides the remaining 47 percent of the total drinking water supply.

12.6.1 Purchased or Imported Water

YVWD purchases imported water from two State Water Project contractors, the San Bernardino Valley Municipal Water District (SBVMWD) for the San Bernardino County portion of the service area, and the San Gorgonio Pass Water Agency (SGPWA), for the Riverside County portion of the service area.

The two State Water Contractors convey imported water from the Sacramento San Joaquin Delta which is utilized as a supplemental potable water source to the local supply and is treated at the Yucaipa Valley Regional Filtration Facility. The imported water is also used for groundwater recharge.

12.6.1.1 San Bernardino Valley Municipal Water District (Valley District)

The San Bernardino Valley Municipal Water District has an entitlement to 102,600 AFY of SWP water that is used for both direct deliveries to treatment plants and artificial recharge of the Yucaipa groundwater basins.

The following table and chart reflects the anticipated imported water demands from Valley District.

SBVMWD WHOLESALE SUPPLIES – EXISTING AND PLANNED SOURCES OF WATER (AF)

Imported Water Demands	2015	2020	2025	2030	2035	2040
Drinking Water Demands: Yucaipa Valley Water Filtration Facility	6,000	6,195	6,366	6,537	6,693	6,843
Conjunctive Use Demands: Local Water Banking	900	1,500	1,500	1,500	1,500	1,500
New Development Long-Term Supply Sustainability Program	1,200	2,892	3,002	2,701	2,789	1,995
Purchase from Valley District	***8,100***	***10,587***	***10,868***	***10,738***	***10,982***	***10,338***

12.6.1.2 San Gorgonio Pass Water Agency

The San Gorgonio Pass Water Agency has an entitlement to 17,300 AFY of SWP water that is used for both direct deliveries to treatment plants and artificial recharge of the groundwater basins. The San Gorgonio Pass Water Agency needs to secure an additional 22,000 AFY of supplemental water to meet the ultimate demand of 94,000 AFY by year 2045 (SGPWA Supplemental Water Supply Planning Study, October 2009).

The following table and chart reflects the anticipated imported water demands from the San Gorgonio Pass Water Agency.

SGPWA WHOLESALE SUPPLIES – EXISTING AND PLANNED SOURCES OF WATER (AF)

Imported Water Demands	2015	2020	2025	2030	2035	2040
Drinking Water Demands: Yucaipa Valley Water Filtration Facility	500	609	767	962	1,191	1,444
Conjunctive Use Demands: Local Water Banking	0	1,200	1,200	1,200	1,200	1,200
New Development Long-Term Supply Sustainability Program	1,200	2,504	3,040	3,596	4,344	3,407
Total	**1,700**	**4,313**	**5,007**	**5,758**	**6,735**	**6,051**

In 2000, imported water resources were not utilized to meet the water demands of the Yucaipa Valley Water District. By 2010, this resource supplied 28.2% of total water demands.

WHOLESALE SUPPLIES – EXISTING AND PLANNED SOURCES OF WATER IN A NORMAL YEAR (AF)

Wholesale source	2015	2020	2025	2030	2035	2040
Purchase from SBVMWD	8,100	10,587	10,868	10,738	10,982	10,338
Purchase from SGPWA	1,700	4,313	5,007	5,758	6,735	6,051

WHOLESALE SUPPLIES – SINGLE DRY AND MULTIPLE DRY YEARS (AF)

Wholesale source	2015	2020	2025	2030	2035	2040
Single-Dry Year	5,525	5,780	6,060	6,370	6,700	7,040
Multiple-Dry Year	5,850	6,120	6,410	6,740	7,095	7,455

The numbers presented above are very conservative. During a shortage, it is anticipated that direct deliveries are the first priority for any SWP water coupled with immediate reductions in drinking water use. With the aggressive use of recycled water for new homes, the critical nature of the direct deliveries will become more evident in the future since YVWD will only be using imported water for drinking water at new homes and not for irrigation of front and rear yards. To further bolster the imported water supplies, YVWD will continue to recharge groundwater basins and can use groundwater sources to back up imported water deliveries during a single-dry and multiple-dry years.

12.6.2 Groundwater

YVWD has traditionally met the bulk of service area customer needs from groundwater through the use of groundwater extraction wells. In 2010, over 75% of the groundwater used by the YVWD was extracted from the Wilson Creek Basin and the Calimesa Basin. The remaining groundwater production was from the Beaumont Basin, Chicken Hill Basin, Triple Falls Creek Basin, Oak Glen Basin and the Wildwood Basin.

Since about 1970 and especially during the 1990's, the wide-spread urbanization of southern California has extended into the Yucaipa area. Undeveloped land, agricultural land, and sparsely populated residential land has been converted into tracts of single family homes. The net effect of this change in land use has been an increase in the demand for water.

Since the local supply of surface water and groundwater is limited in this semiarid region, water purveyors in the Yucaipa Valley have explored several alternatives related to the development of water resources in the area. Most studies have identified groundwater resources at 200-300 feet below the surface elevation with a general basin-wide movement of both surface water and groundwater from the surrounding hills and mountains, to the south and west. After a

brief study of the area, it becomes apparent to most observers that on a localized scale, the movement of groundwater through the numerous faults is very complex.

The groundwater extractions by appropriators in the sphere of influence of the Yucaipa Valley Water District have decreased over the past five years. This is mainly attributed to the increased use of recycled water and imported water in the region. Overall, the three appropriators in the Yucaipa Valley are progressing towards a balanced safe yield of groundwater extractions at about 9,000 acre feet per year.

As discussed above, the overall water demand in the region has increased, but the amount of groundwater used to meet the demands has decreased. Technically, most of the groundwater basins in the Yucaipa Valley area considered in an overdraft situation, but significant efforts have been made by the YVWD to increase the amount of water in storage in the central part of the Yucaipa Valley.

Groundwater projection in the Yucaipa Valley generally is associated with three primary groundwater basins, the Yucaipa, San Timoteo and Beaumont Basins. The Yucaipa Basin is divided into a series of eight subbasins separated by faults and other physical barriers:

- Calimesa Basin
- Chicken Hill Basin
- Gateway Basin
- Oak Glen Basin
- Triple Falls Basin
- Western Heights Basin
- Wilson Basin
- Wildwood Basin

Other local groundwater basins operated and managed by the Yucaipa Valley Water District include: the San Timoteo Groundwater Basin; the Beaumont Groundwater Basin and the Singleton Groundwater Basin. The Department of Water Resources recognizes the Beaumont and San Timoteo Basin as one basin, the San Timoteo Subbasin.

YUCAIPA VALLEY WATER DISTRICT GROUNDWATER BASINS

Groundwater Basin	Acres	Square Miles
Beaumont	17,035.48	26.62
Calimesa	6,627.40	10.36
Chicken Hill	1,043.65	1.63
Edgar Canyon	5,187.77	8.11
Gateway	570.05	0.89
Oak Glen	5,193.71	8.12
Sand Canyon	3,849.26	6.01
San Timoteo	31,131.42	48.64
Singleton	2,033.47	3.18
Triple Falls	1,632.30	2.55
Western Heights	2,601.53	4.06
Wildwood	4,980.71	7.78
Wilson	1,846.08	2.88

SUMMARY OF GROUNDWATER BASIN HYDROGEOLOGIC CHARACTERISTICS

Parameter	Yucaipa Basin	Beaumont Basin	San Timoteo Basin
Basin Area	41 square miles[b]	26 square miles[a],[c]	49 square miles
Groundwater formations	Alluvium[a],[d]	Alluvium[a],[d]	Alluvium[a],[d]
Depth of water bearing sediments	700 - 1000 feet[a],[e]	700 - 1,000 feet[a],[e]	700 - 1,000 feet[a],[e]
Typical Specific Yields	4 - 22% [a],[f] (10% average)	3 - 35 %[a] (11% average)	3 - 35%[a] (11% AVERAGE)
Groundwater Storage Capacity	800,000 af[a],[g]	1,000,000 AF[a], [h]	1,000,000 AF[a], [h]
Estimated Long-term Natural Recharge	8,000 AFY[a], [i]	8,560 AFY[a], [j]	> 20,000 AFY[a], [k]
Current Approximate Extractions	14,000 AFY[a]	16,000 AFY[a], [l]	Not Available[m]
Dominant Recharge Source	Stream flow infiltration[a], [n]	Stream flow infiltration and artificial Recharge[a]	Stream flow infiltration, subsurface inflow, and deep percolation[a]
Artificial Recharge Potential	7000-14,000 AF[a]	200,000 AF[a], [o]	Not Available[m]
Typical Well Yields	200 gpm (average)[a]	200 gpm (average)[a]	Not Available[m]
Maximum Well Yields	2,800 gpm[a]	2,000 gpm[a], [p]	Not Available[m]
Typical Municipal Well Depths	500 feet[a]	500 feet[a]	500 feet[a]
Typical Range of TDS concentration	200 - 630 mg/l[a]	170 - 340 mg/l[a]	Not Available[m]
Average Groundwater TDS	320 mg/l[a]	250 mg/l[a]	Not Available[m]

Notes:

(a) From DWR Bulletin No. 118 (*California's Groundwater*, 2004).

(b) Water bearing sediments cover approximately 29 square miles (19,000 acres) within the Yucaipa Basin. The total watershed area of the basin is approximately 39 square miles (25,000 acres).

(c) Water bearing sediments cover approximately 26 square miles (16,000 acres) within the Beaumont Basin. The total combined watershed area of the Beaumont and San Timoteo Basins is approximately 114 square miles (73,000 acres).

(d) Includes recent alluvium from Holocene age, older Pleistocene age alluvium, and alluvial deposits within the eroded and folded Pliocene-Pleistocene age sediments of the San Timoteo Formation.

(e) San Timoteo Formation depths extend 1500 to 2000 ft, but water-bearing sediments limited to depths of 700 to 1000 ft.

(f) Lowest specific yields are reported northeast of Yucaipa. In the southern part of the basin, specific yields are estimated to range from 6 to 22 percent, with an average of 10 percent.

(g) Storage capacity estimates reported by DWR Bulletin No. 118 range from approximately 800,000 AF to 1.2 million AF.

(h) Total combined storage capacity of the Beaumont and San Timoteo Basins is estimated at 2,000,000 by DWR. Approximately one-half of this capacity is in the Beaumont Basin and one half is in the San Timoteo Basin.

(i) Approximate long-term yield presented in DWR Bulletin No. 118 on the basis of studies performed in 1980. A 1988 study performed for YVWD entitled Perennial Yield of the Yucaipa Groundwater Basin (David Keith Todd Consulting Engineers, 1988) estimated a long-term yield of approximately 7,900 AFY.

(j) Long-term yield estimated at 8,650 AFY, as reported in the FY2005-2006 annual Beaumont Basin Watermaster Report.

(k) Estimate not available. Recharge estimates for the combined San Timoteo/Beaumont Basins provided within DWR Bulletin No. 118 suggest that the total long-term recharge to the San Timoteo Basin is in excess of 20,000 AFY.

(l) Annual production has ranged from 14,100 AFY to 19,300 AFY during the period FY2003-04 and FY2006-07, as reported in the FY 2006-07 Beaumont Basin Watermaster report.

(m) Estimated value not available for the San Timoteo Basin.

(n) Infiltration from Yucaipa, Wilson, and Oak Glen Creeks, predominantly in the north and eastern portions of the basin.

(o) Estimated by Beaumont Basin Watermaster in annual report for FY2006-07.

(p) Based on pumping data presented in the Beaumont Basin Watermaster FY 2006-2007 Annual Report, adjusted by an assumed 70 percent operational factor.

YVWD's historical production for the past five years is shown in Table 12-9.

Table 12-9. DWR Table 6-1R. Groundwater Volume Pumped

Groundwater Type	Location or Basin Name	Water Quality	2010	2011	2012	2013	2014	2015
Alluvial Basin	Yucaipa Groundwater Basin	Drinking Water	6,627	5,733	6,125	6,212	7,828	4,785
Alluvial Basin	Beaumont Groundwater Basin	Drinking Water	672	534	700	1,031	1,198	119
Alluvial Basin	San Timoteo Groundwater Basin	Drinking Water	0	0	0	0	0	0
		Total	**7,299**	**6,267**	**6,825**	**7,243**	**9,027**	**4,904**
		Percentage of Drinking Water Supply	66%	54%	57%	60%	75%	50%

12.6.2.1 Yucaipa Groundwater Basin

The Yucaipa Groundwater Basin is located in the Santa Ana Subregion of the South Coast Hydrologic Region within the County of San Bernardino. The Yucaipa Basin has a surface area of 25,300 acres (DWR Bulletin 118) and a capacity of 800,000 AF (Groundwater Water Recharge/Recovery Project, 2009). The Basin is bounded on the north by the San Andreas fault, on the west by the Redlands fault and the Crafton Hills, on the south by the Banning fault, and on the east by the Yucaipa Hills.

Alluvial deposits in the subbasin are divided into older and younger units. The Holocene age younger alluvium consists of unconsolidated boulders, gravel, sand, silt, and clay (Moreland 1970). This unit forms a thin veneer and is mostly above the water table (Moreland 1970). The middle to late Pleistocene age older alluvium consists of boulders, gravel, sand, silt, and clay (Moreland 1970), and holds the primary source of groundwater in the subbasin. Clays present in this section are due to weathering and soil formation during accumulation of the deposits (DPW 1934).

The 2003 California Department of Water Resources Bulletin 118-2003 identifies the Basin in overdraft. Although the basin is defined in an overdraft state; water levels are at or near historic highs (California's Groundwater Bulletin 118, 2004). Moreover, the Yucaipa Valley Water District has decreased groundwater pumping dramatically since 2007 attributable to the supplemental supply of State Water Project Water and the use of recycled water. Prior to importing State Water Project water, YVWD pumped 3,585 million gallons per year (YVWD 2005 Production Report). Incorporating supplemental water has reduced pumping by 50% (YVWD 2010 Production Report).

The Yucaipa Groundwater Basin is subdivided into several subbasins including the: Calimesa, Chicken Hill, Gateway, Oak Glen, Singleton, Triple Falls Creek, Western Heights, Wildwood and Wilson Subbasin.

- Calimesa Subbasin - The Calimesa subbasin along with the Wilson Creek subbasin are the two largest subbasins within the Yucaipa Groundwater Basin. Total capacity of

the Calimesa subbasin is estimated at 175,000 acre-feet (Groundwater Water Recharge/Recovery Project, 2009). The safe yield of the basin is small compared to this storage capacity, and is estimated at 1,500 million gallons per year, or 4,600 Acre feet per year (Wildermuth, 2005). Groundwater is typically reached within 225-350 feet below the land surface (Wildermuth, 2005).

- Chicken Hill Subbasin - The Chicken Hill subbasin is located in the northwest portion of the Yucaipa Basin. The subbasin has a total of five wells with two of those wells being active as of December 2010.
- Gateway Subbasin - The Gateway subbasin is located in the northern portion of the Yucaipa Basin. Currently there are no active wells in use as of December 2010. The Gateway subbasin contains three abandoned wells and one monitoring well.
- Oak Glen Subbasin - The Oak Glen Subbasin is located in the Northeastern portion of the Yucaipa Basin while extending south between the Wilson and Wildwood Subbasins as it straddles the mountain range to the east. The subbasin represents one of the largest subbasins within the Yucaipa Basin. Five active wells, four monitoring wells and one inactive well are located within this subbasin.
- Singleton Subbasin - The Singleton Subbasin is located in the Southern most portion of the Yucaipa Valley Water District's service area within the City of Calimesa in Riverside County. The subbasin containing one monitoring well
- Triple Falls Creek Subbasin - The Triple Falls Creek subbasin is the northernmost subbasin within Yucaipa Valley Water District's service area. This subbasin contains one active well, two abandoned wells and two inactive wells just outside of the subbasin boundary.
- Western Heights Subbasin - The Western Heights Subbasin is located in the western portion of the Yucaipa Basin and extends into the City of Redlands. The basin contains no wells utilized by the Yucaipa Valley Water District. Groundwater extraction from this basin is generally from the Western Heights Mutual Water Company.
- Wildwood Subbasin - The Wildwood Subbasin is located in the eastern portion of the Yucaipa Basin and possesses the largest amount of active wells utilized by YVWD totaling 11 active wells. Additional well status results in three inactive wells, four standby and two abandoned wells.
- Wilson Subbasin - The Wilson subbasin is one of the largest subbasins within the Yucaipa Basin. The Wilson Subbasin has a large storage capacity (estimated at 125,000 acre-feet by Carollo, 1985). The safe yield of the subbasin is small (estimated at 1,500 AFY (Wildermuth, 2005) compared to the large storage capacity. Existing depth to groundwater in the Wilson basin average roughly 175 to 425 feet below ground surface (Wildermuth, 2005).
- The additional spreading of water in the Wilson Creek spreading grounds and utilization of the Oak Glen Creek stream channel for recharge has contributed to

increased groundwater levels. By maximizing the existing spreading grounds the capability exists to spread from 7,000 to 14,000 acre-feet of surface water annually into the Yucaipa Basin.

With ample storage, ability to recharge the basin through in-lieu use of surface water and by direct spreading surface waters and apparent flexibility in managing groundwater levels without subsidence problems, the Yucaipa Basin could be conjunctively managed both to meet normal annual demands and to meet water resource needs in the event of a drought and curtailment or loss of inconsistent surface water supplies, resulting in a highly reliable water supply. Current goals are to secure agreements to not pump beyond the long-term safe yield of the basin by utilizing the imported surface water supplemental supply.

YVWD has initiated an annual groundwater monitoring program that calculates the change in storage of the seven primary subbasins in the Yucaipa Groundwater Basin. Figure 12-3 illustrates that the groundwater levels have increased in the Crafton Subbasin, Gateway Subbasin, and Wilson Creek Subbasin by 32,280 acre feet when comparing groundwater conditions of 2005 to groundwater conditions in 2015. During the same period of time, the change in storage of the Calimesa Subbasin, Oak Glen Subbasin, Triple Falls Creek Subbasin and the Western Heights Subbasin have decreased by 9,349 acre feet. Comparing the groundwater conditions of 2005 to 2015, the subbasins of the Yucaipa Groundwater Basin have improved with a net increase in groundwater in storage by 22,931 acre feet.

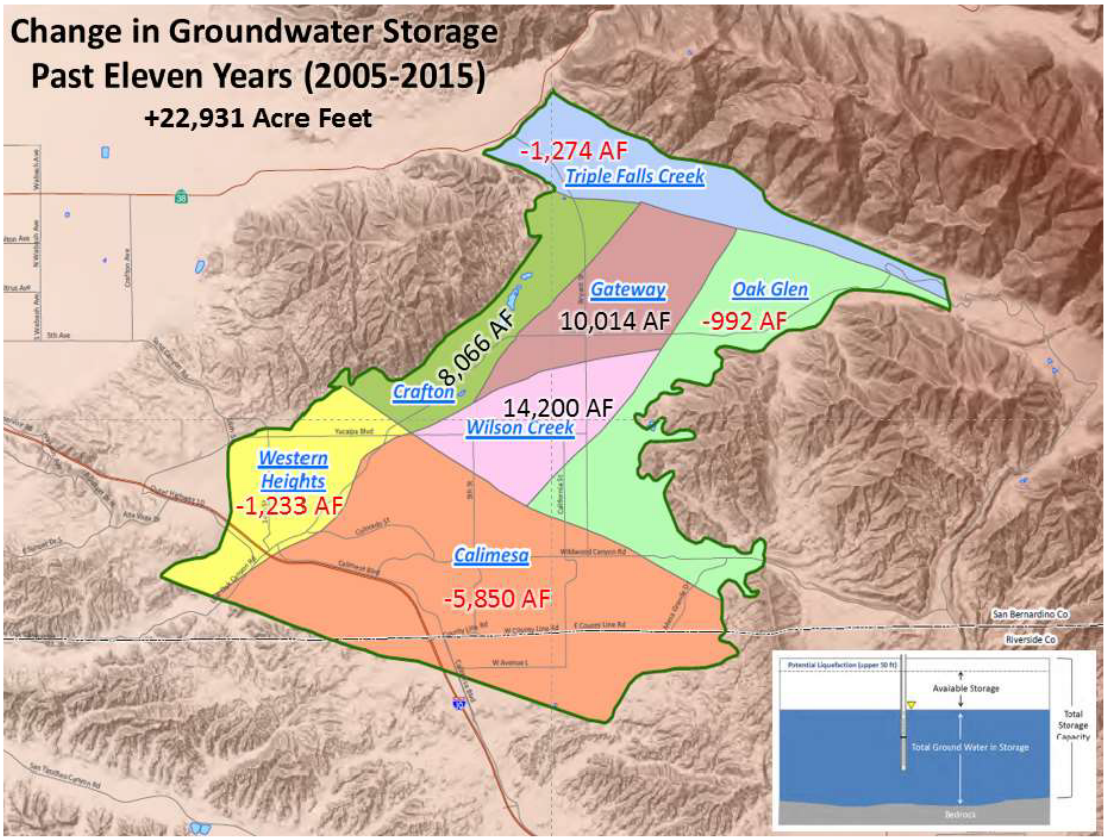


Figure 12-3 Yucaipa Groundwater Basin - Change in Groundwater Storage

YVWD has cooperated with the U.S. Geological Survey and the San Bernardino Valley Municipal Water District to construct real-time groundwater monitoring wells in the area. Groundwater level data indicates that the groundwater levels in the Wilson subbasin have increased in 2009 and 2010. This is attributed to the additional supplemental supply of State Water Project water (Groundwater Water Recharge/Recovery Project, 2009).

The Yucaipa Valley Water District is currently involved with development of a groundwater management plan (AB 3030 Plan) to proscribe collective management of the Yucaipa Groundwater Basin. With ample storage, ability to recharge the basin by spreading surface waters and apparent flexibility in managing groundwater levels without subsidence problems, the Yucaipa Basin could be conjunctively managed both to meet normal annual demands and to meet water resource needs in the event of a drought and curtailment or loss of inconsistent surface water supplies, resulting in a highly reliable water supply. Current goals are to secure agreements to not pump beyond the safe yield of the basin, supplementing supplies with imported surface.

12.6.2.2 San Timoteo Groundwater Basin

The San Timoteo Groundwater Basin is located downstream from the Yucaipa and Beaumont groundwater basins in northeastern Riverside County and Southeastern San Bernardino County. This groundwater basin covers approximately 29 square miles. Groundwater movement in the San Timoteo Groundwater Basin trends from the east to the west. Surface water in the area is drained by San Timoteo Creek.

As with the Yucaipa and Beaumont Basins, groundwater is found in alluvium and in the San Timoteo Formation to depths of 700 to 1000 feet. Estimates for total groundwater storage capacity within the basin vary. On the basis of information presented by DWR (2004), the total groundwater capacity in the basin appears to be approximately 1,000,000 AF.

On the basis of information presented in DWR Bulletin No. 118, it appears that long-term recharge to the San Timoteo Basin is significantly higher than recharge within either the Yucaipa or Beaumont Basins (estimated to be on the order of 20,000 AFY). No significant long-term decline in depths to groundwater is reported in the San Timoteo Basin.

The San Timoteo Basin is not adjudicated, and reliable estimates of total groundwater pumping within the San Timoteo basin are not available. Because water table elevations within the basin have not declined (and remain near the surface in some areas along San Timoteo Creek), it may be concluded that long-term pumping within the basin is less than the long-term average recharge.

12.6.2.3 Beaumont Groundwater Basin

The Beaumont Basin is located in northwestern Riverside County, south of the Yucaipa Basin. While this basin is located outside of San Bernardino Valley Municipal Water District's jurisdiction, the basin eventually drains to San Timoteo Creek, a tributary of the Santa Ana River and covers approximately 26 square miles. Groundwater elevations generally slope from the northeast to southwest in the basin.

Groundwater within the basin is predominantly found in Holocene age alluvium and in the San Timoteo Formation. While the San Timoteo Formation extends to depths in excess of 1500 feet, water bearing sediments within the Beaumont Basin exist to depths of 700 to 1000 feet. Estimates for total groundwater storage capacity within the basin vary. The Beaumont Basin storage capacity is estimated at approximately 1,000,000 AF. (Beaumont Basin Watermaster, 2007)

In February 2004 the San Timoteo Watershed Management Authority filed a judgment adjudicating the groundwater rights in the Beaumont Basin and assigned the Beaumont Basin Watermaster with the authority to manage the groundwater basin. The Beaumont Basin Watermaster is comprised of managers from the Beaumont Cherry Valley Water District, City of Banning, City of Beaumont, South Mesa Mutual Water Company and Yucaipa Valley Water District.

In February 2004 the San Timoteo Watershed Management Authority filed a judgment adjudicating the groundwater rights in the Beaumont Basin and assigned the Beaumont Basin Watermaster with the authority to manage the groundwater basin (Judgment Pursuant To Stipulation Adjudicating Groundwater Rights in the Beaumont Basin, 2004). The adjudication of the Beaumont Basin has defined overlying and appropriator pumping rights and also allows for supplemental water to be stored and recovered from the basin.

12.6.2.4 Groundwater Basin Management

The two basins that have not been adjudicated within the Yucaipa Valley Water District's service area are the Yucaipa Basin and San Timoteo Basin. Under present management conditions the basins are expected to have controlled overdraft conditions. Prior to 2007, the Yucaipa Basin was considered in overdraft due to over extractions by the Yucaipa Valley Water District, South Mesa Water Company and Western Heights Mutual Water Company. In 2005, the Yucaipa Valley Water District began treating State Water Project water through a newly constructed Yucaipa Valley Regional Filtration Facility. This has provided an opportunity to alleviate pumping from local supplies increasing groundwater levels to 70 feet in one well location in the Wilson subbasin (USGS Groundwater Monitoring Levels).

During the peak temperature months, demands exceeded groundwater supply. It is unlikely the District could meet 100 percent of the full summer water demands solely with groundwater. Utilizing data from 2007 which represented a single-dry year, the monthly production exceeded the well capacity for four months. In a more realistic scenario, the available production during maximum day pumping would be 85% of the total well capacity.

12.6.3 Surface Water

The watershed of the Yucaipa Valley extends from the crest of the Crafton Hills in the northwest, to the crest of the Yucaipa Ridge of the San Bernardino Mountains to the north east, and the Yucaipa Hills in the south east to the Badlands of San Timoteo Canyon to the south west. Drainage in the area is by many small ephemeral creeks including: Yucaipa Creek, Oak Glen Creek, Wilson Creek, Birch Creek, and San Timoteo Creek. These creeks all begin in the upland areas to the northeast and drain down to the southwest through Live Oak Canyon to San Timoteo Creek which is a tributary of the Santa Ana River.

Stream gauge data and observations by District staff reveal that the creeks are generally dry during most of the year except along their upland reaches where small sustained year-round flows may occur. Irregular flows do occur occasionally along the entire reach of the creeks during both high intensity summer cloudbursts and long duration seasonal winter storms. In both cases, the stream flows generated from these conditions tend to be very flashy, with water levels changing rapidly over time and large amounts of unconsolidated sediments being scoured from the upper reaches and washed downstream. The largest volume of these flow events occur during the winter storm season from November through April.

The main tributaries in the sphere of influence of the YVWD are considered relatively small by comparison to the Santa Ana River and Mill Creek directly to the north of YVWD. Drainage courses in the boundary of YVWD include Wilson Creek, Oak Glen Creek, Yucaipa Creek, and San Timoteo Wash.

YVWD has operated and maintained a surface water resources from the Oak Glen area since the early 1900's. The existing Oak Glen Surface Water Filtration Facility continues to produce a steady flow of high quality drinking water for the Yucaipa Valley.

In 2015, local surface water supplies provided 2-3% of the total water demands of YVWD.

LOCAL SURFACE WATER SUPPLIES - NORMAL, SINGLE-DRY, AND MULTIPLE DRY YEARS (AF)

	2020	2025	2030	2035	2040
Normal Year					
Oak Glen	*350*	*350*	*350*	*350*	*350*
Single Dry Year					
Oak Glen	*175*	*175*	*175*	*175*	*175*
Multiple-Dry Year					
Oak Glen	*175*	*175*	*175*	*175*	*175*

12.6.4 Stormwater

YVWD is participating in regional planning efforts to capture additional stormwater for purposes of groundwater recharge with the City of Yucaipa and the City of Calimesa. Water captured in these facilities will be part of the conjunctive use project used to provide a more robust, enhanced and sustainable water supply to existing customers of the YVWD.

12.6.5 Wastewater and Recycled Water

12.6.5.1 Recycled Water Coordination

YVWD is a proactive advocate of recycled water use and implementation in the Inland Empire. The Board of Directors have adopted planning guidelines that require the use of recycled water for front and rear yard irrigation of new development throughout the YVWD service area.

Recycled water is currently used to provide 10-15 percent of Yucaipa Valley Water District's overall water demands. A significant portion of YVWD's projected future water demands will be met with the use of recycled water for irrigation of golf courses, parks, landscape areas and front-/rear-yard irrigation of residential dwellings.

To serve the projected water demands, YVWD has implemented an extensive dual water distribution system. The dual water system includes a drinking water conveyance system to

convey potable water to customers and a separate recycled water distribution system to convey recycled water to customers.

As water becomes an increasingly precious commodity, Yucaipa Valley Water District is stepping up its recycling efforts so that more water can be reused on golf courses, school grounds, roadside medians and for other landscaping purposes -- even the front and rear yards of new homes.

To achieve this objective, YVWD expanded and enhanced the sewer treatment plant, or water recycling facility, to a capacity of 8 million gallons per day. YVWD's water recycling facility is one of a relatively small number of sewer treatment facilities in the country to be equipped with microfiltration filters and ultraviolet light for disinfection. The treatment process used to transform our sewer water to recycled water is very similar to some drinking water treatment plants. This provides high quality recycled water that is also extremely safe.

The new microfiltration technology is important because it acts as pretreatment to a reverse osmosis system at the water recycling facility to further purify our recycled water. While the microfiltration system does not allow particles larger than 0.1 micrometer to pass through the filtration system and become part of the recycled water supply, the reverse osmosis system creates a physical barrier to stop salt molecules while allowing water molecules to pass through. The resulting water supply is very similar to the purity of rainwater.

This state-of-the-art technology commonly used by desalinization plants to convert ocean water to drinking water will soon be used by YVWD to meet strict water quality objectives set by the Regional Water Quality Control Board. With the requirement to produce such exceptionally high quality recycled water, YVWD has developed plans to use the recycled water for the direct benefit of the community.

With the completion of the reverse osmosis facility, YVWD has also extending a brineline to dispose of the salts removed by the treatment system. The Yucaipa Valley Brineline is a 15-mile pipeline that will connect to an existing brine disposal pipeline located in San Bernardino. The brine solution created by YVWD, which is about 1/10th as salty as sea water, will be conveyed to the Orange County Sanitation District to be added to their ocean outfall.

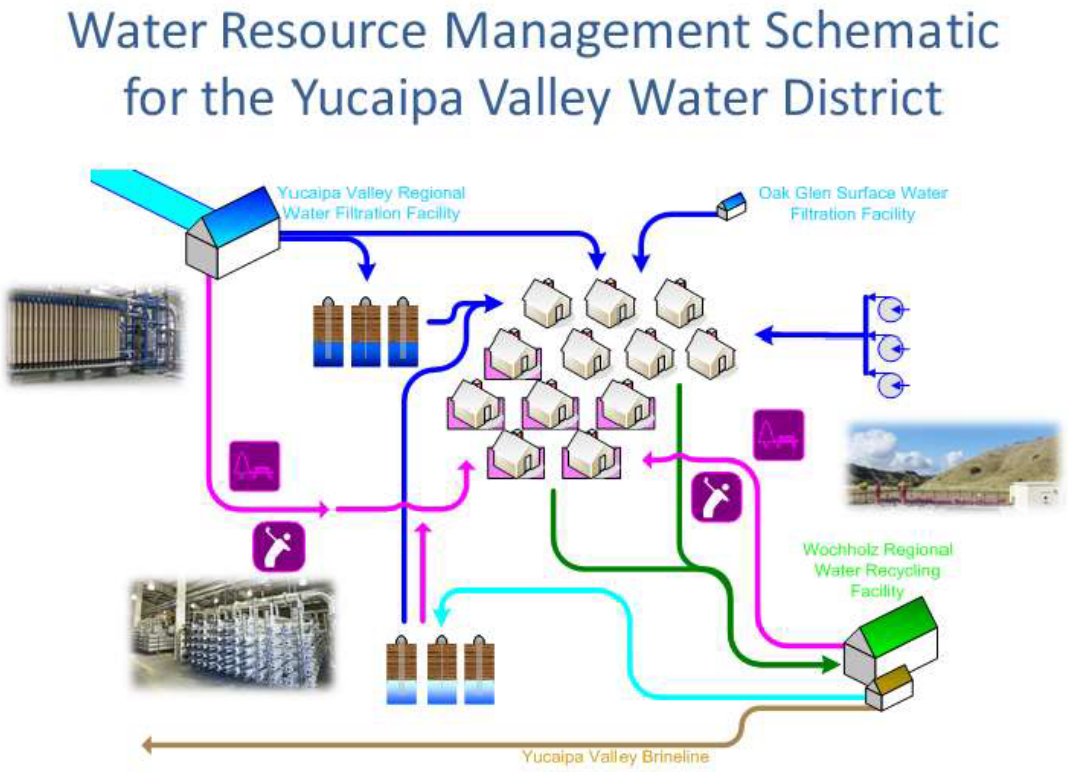


Figure 12-4. Yucaipa Valley Water District Water Resource Management Schematic

12.6.5.2 Wastewater Collection, Treatment, and Disposal

YVWD began treating wastewater in 1986. The sewer collection system has been expanded steadily over the years to provide additional recycled water supplies to the community. In the 2005 UWMP, YVWD projected delivering 1,900 AF of recycled water by year 2010; YVWD delivered 2,016 AF of recycled water in 2010.

The Wochholz Regional Water Recycling Facility was recently expanded to a 8.0 MGD wastewater treatment facility. The ultimate facility will be capable of treating up to 11 MGD of wastewater and includes the following major components:

- Septage Receiving Station - A septage receiving facility provides septage haulers an efficient location to discharge septage wastes for treatment at the plant.
- Headworks Grit Removal System - The grit removal system has been recently upgraded and enlarged to increase grit removal efficiency and reduce the impacts of grit on downstream treatment processes.

- Primary Equalization Tank - The primary equalization tank provides YVWD with the ability to stabilize daily flow variations and hold additional wastewater during peak periods for a steady-state treatment flow throughout the treatment facility.
- Secondary Treatment System - The secondary treatment system has been equipped with nitrogen removal technology that is used to provide compliance with the total inorganic nitrogen limits of 6 mg/l.
- Advanced Tertiary Treatment Facilities - Equalized flows are treated with microfiltration technology commonly used in the beverage and drinking water industry. The recycled water product from this treatment process is significantly more pure than the tertiary filters previously used by YVWD. This treatment technology is a precursor to the reverse osmosis treatment process.
- Reverse Osmosis System - YVWD currently operates a 2.5 MGD reverse osmosis treatment system to purify the recycled water produced at the Wochholz Regional Water Recycling Facility. The brine concentrate is delivered to the Inland Empire Brineline for disposal at Orange County Sanitation District pursuant to existing agreements with the San Bernardino Valley Municipal Water District and the Santa Ana Watershed Project Authority.
- Recycled Water Storage Reservoir - A 4.0-MG recycled water storage reservoir and pump station is used to store the recycled water prior to plant effluent.

Yucaipa Valley Water District (District) is continuing to expand its recycled water system to meet increasing demand in the system. The increasing demand is a result of additional golf courses, schools, community parks, and other non-potable water users, as well as increased residential development. The existing recycled water system went into operation in 2002.

YVWD will be constructing a Regional Recycled Water Conveyance System to the YVWD's southernmost service area boundary. This extension would involve the construction of a 24" recycled water pipeline, approximately 18,500 linear feet (3.5 miles) through the City of Calimesa. The purpose of the pipeline is to provide recycled water service to customers within YVWD and provide surplus recycled water to neighboring water agencies such as the Beaumont Cherry Valley Water District and the City of Banning.

Table 12-10. DWR Table 6-2R. Wastewater Collected within Service Area in 2015

Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected in 2015	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located within UWMP Area?	Is WWTP Operation Contracted to a Third Party?
Yucaipa Valley Water District	Metered	4,480	Yucaipa Valley Water District	Wochholz Regional Water Recycling Facility	Yes	No

12.6.5.3 Recycled Water Beneficial Uses

YVWD has already initiated a significant recycled water program within their service area for landscape irrigation. Future homes in the YVWD service area will be constructed with drinking water for interior use and recycled water for exterior use. These improvements will significantly reduce the GPCD for the community and provide the framework for a robust, sustainable and water conscientious community.

Table 12-11. DWR Table 6-4R. Current and Projected Recycled Water Direct Beneficial Uses within Service Area

Name of Agency Producing (Treating) the Recycled Water:			Yucaipa Valley Water District					
Name of Agency Operating the Recycled Water Distribution System:			Yucaipa Valley Water District					
Supplemental Water Added in 2015			665.05 Acre Feet					
Source of 2015 Supplemental Water			Untreated State Water Project, Filtered MF Backwash from the Yucaipa Valley Regional Water Filtration Facility.					
Beneficial Use Type	**General Description of 2015 Uses**	**Level of Treatment**	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**
Landscape Irrigation	Various Users	Advanced Tertiary Treatment with Salinity Control (RO)	1,213	1,651	2,177	2,792	3,490	4,282
Groundwater Recharge	Wilson Creek Spreading Basin	Advanced Tertiary with Salinity Control (RO)	0	2,828	2,861	2,806	2,668	2,436

12.6.5.4 Actions to Encourage and Optimize Future Recycled Water Use

In August 2008, YVWD adopted a strategic plan for a sustainable future and enhance water management. One of the most significant elements of the strategic plan is the requirement for new homes to be constructed with dual-plumbed infrastructure. This requirement coupled with new landscape design requirements will significantly improve the beneficial use of water throughout the community.

Table 12-12. DWR Table 6-6R. Methods to Expand Future Recycled Water Use

Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use
Dual-Plumbing of New Homes	YVWD Resolution requiring front yard and rear yard irrigation with recycled water adopted in 2008	Ongoing	2,000 AF

12.6.6 Desalinated Water Opportunities

The need for brackish groundwater desalting is somewhat limited in the Yucaipa Valley. While elevated salts are a concern in the groundwater basins, YVWD has already implemented programs to reduce the salinity in the Yucaipa Management Zone, Beaumont Management Zone and San Timoteo Management Zone pursuant to Basin Plan requirements adopted by the Santa Ana Regional Water Quality Control Board in 2004.

The development of (or financial participation in) a new seawater desalination project, while costly, is being investigated by other wholesale and retail water agencies in southern California. Because the Yucaipa Valley is an inland area, in order for desalination to work it would be necessary for agencies in the San Bernardino Valley to join with other water purveyors in the development of a coastal desalination facility and then receive water from the SWP supplies of other participants via an exchange. It is not cost-effective for the San Bernardino Valley to receive direct delivery of desalted ocean water.

Seawater desalination is an alternative that is technically viable. However, production and treatment costs have historically been several times higher than those of SWP costs and conventional treatment.

12.6.7 Exchanges or Transfers

YVWD is in the process of reviewing potential interties with the City of Redlands and the Beaumont Cherry Valley Water District to meet needs during periods of lowered groundwater levels. These connections would be short-term, as needed purchases and are not accounted for as additional water supply.

12.6.8 Future Water Projects

YVWD is currently enhancing its ability to utilize its existing water supply sources through several projects that are in various phases of implementation, from planning to preliminary design to construction. Specifically, YVWD is in the process of reviewing concept documents related to participation in the Bunker Hill Conjunctive Use Project. This program would provide

a water banking opportunity in the adjacent Bunker Hill Groundwater Basin during wet periods for extraction when imported supplies from the State Water Project are limited.

Table 12-13. DWR Table 6-7R. Expected Future Water Supply Projects or Programs

Name of Future Projects or Programs	Joint Project with Other Agencies?	Other Agency Names	Description	Planned Implementation Year	Planned for Use in Year Type	Expected Increase in Water Supply to Agency
Bunker Hill Conjunctive Use Project	Yes	SBVMWD	Implementation of regionally shared groundwater wells and spreading basins.	2019	2020	8,000 AF

12.6.9 Summary of Existing and Planned Sources of Water

Table 12-14 summarizes the water resources used by YVWD in 2015, and the projected future supplies are summarized in Table 12-15. The estimated amount of imported water supply shown in Table 12-15 has been estimated by YVWD and provided to Valley District.

Table 12-14. DWR Table 6-8R. Water Supplies - Actual

Water Supply	Additional Detail on Water Supply	2015 Actual Volume	2015 Water Quality
Groundwater	Groundwater Supplies	4,904	Drinking Water
Surface Water	Oak Glen Surface Water Filtration Facility	233	Drinking Water
Purchased or Imported Water	Yucaipa Valley Regional Water Filtration Facility	4,587	Drinking Water
	Total	**9,724**	

The projected water supplies anticipate the purchase of additional water rights by the San Gorgonio Pass Water Agency and/or the approval of an allocation plan for an even distribution of imported water from that state water contractor. Without these actions taken by the regional water provider, YVWD is prepared to implement the necessary restrictions to reduce the demand in future years if needed.

Table 12-15. DWR Table 6-9R. Water Supplies - Projected

Water Supply	Additional Detail on Water Supply	Water Quality	2020	2025	2030	2035	2040
Groundwater	Groundwater Supplies	Drinking Water	9,000	9,000	9,000	9,000	9,000
Surface Water	Oak Glen Surface Water Filtration Facility	Drinking Water	500	500	500	500	500
Purchased or Imported Water	Yucaipa Valley Regional Water Filtration Facility	Drinking Water	14,900	15,875	16,500	17,700	16,390
Recycled Water	Wochholz Regional Water Recycling Facility	Advanced Tertiary	4,479	5,038	5,598	6,158	6,718
		Total	**28,879**	**30,413**	**31,598**	**33,358**	**32,608**

12.7 Water Supply Reliability Assessment

12.7.1 Imported Water

During times of State-wide drought conditions, the availability of SWP may be reduced. These conditions are normally known in advance, providing YVWD with the opportunity to plan for the reduced supply. During a drought period, it is a priority to make direct deliveries to the water treatment plants operated by Redlands, WVWD, and YVWD and to maintain lake levels at Big Bear Lake (Big Bear Lake water also feeds the water treatment plants of Redlands and YVWD).

In the case of a shortage, YVWD would utilize additional groundwater through groundwater well production from the Bunker Hill Conjunctive Use Project and groundwater stored in the Yucaipa Groundwater Basin. In multiple dry years, Valley District expects between 44,858 AF and 45,910 AF of water to be available, meaning Valley District could fulfill normal direct deliveries to water treatment plants in a multiple-dry year, including the YVWD treatment plant. Table 12-21 and Table 12-22 estimate how imported water supplies available to YVWD may be reduced during drought conditions.

12.7.2 Groundwater

YVWD groundwater wells have not been impacted by water quality issues. YVWD continues to monitor for any indication of groundwater contamination.

12.7.3 Reliability by Type of Year

Based on the studies and information listed above it is anticipated that groundwater pumping by YVWD will not be reduced or curtailed during a single-dry or multi-dry year.

12.7.4 Regional Supply Reliability

YVWD currently supplements its local supply with SWP deliveries from Valley District and in the past this SWP has made up a fair amount of YVWD's water supply.

12.8 Water Shortage Contingency Planning

Water supplies may be interrupted or reduced significantly in a number of ways, such as drought which limits supplies, an earthquake which damages delivery or storage facilities, or a regional power outage. YVWD has a Water Shortage Contingency Plan for regional water supply sources (imported water and groundwater).

While water supply disruptions can occur for a variety of reasons, a weather related water shortage, or drought, is one category of particular importance to the Yucaipa Valley Water District for reasons described below. Droughts are naturally occurring but unpredictable weather events of varying frequency, duration and severity. In the Yucaipa Valley, historical data indicates a high probability of short term and/or multi-year drought conditions.

12.8.1 Stages of Action

Section 4 if the YVWD Water Shortage Contingency Plan sets forth the four stage water shortage contingency plan for the conservation of water. This plan includes voluntary and mandatory conservation measures; key elements are included herein.

The Water Shortage Contingency Plan provides four stages of response based of increasing severity, as progressively more serious conditions warrant. This type of response would be appropriate to apply to a summer drought or other water service disruption. The four stages include a variety of communications, internal operations, and supply and demand management strategies as appropriate, and are characterized as follows:

12.8.1.1 Normal Conditions

Normal conditions shall be in effect when YVWD is able to meet all the water demands of its customers in the immediate future. During normal conditions all water users should continue to use water wisely, to prevent the waste or unreasonable use of water, and to reduce water consumption to that necessary for ordinary domestic and commercial purposes.

12.8.1.2 Advisory Stage - Threatened Water Supply Condition

In the event of a threatened water supply shortage which could affect YVWD's ability to provide water for ordinary domestic and commercial uses, the public is informed as early as meaningful data are available that a possible shortage may occur.

Objectives - To prepare the cities, school district, developers and water users for potential water shortage thereby allowing all parties adequate planning and coordination time.

To undertake supply management actions that forestalls or minimizes the need later for more stringent demand or supply management actions.

Triggers - As presented earlier, there are a variety of weather and other conditions that may cause concern about water availability and a potential water shortage. The most fundamental weather condition that would trigger an "Advisory" would be when the winter season rainfall total is significantly less than the average annual rainfall of 18 inches per year for Yucaipa (as measured at the Mill Creek CDF Fire Station).

The Advisory would be withdrawn when projected water supplies such as State Water Project water and/or recycled water are in sufficient supply to provide normal water supply conditions to YVWD's customers.

Public Message - The potential exists for lower than normal supply; conditions may return to normal or, later on, we may need to reduce consumption. We'll keep you informed."

Advisory Stage Goal - Voluntary conservation measures resulting in a 5% - 10% reduction in water use, which can generally be achieved by reducing residential landscaping, and irrigation use.

Advisory Stage Action Plan:

- Brief elected officials
- District staff to issue a water conservation press release/newsletter during the summer months as a reminder to customers. See the sample press release as provided in Attachment "A".
- District adds text to monthly billing to remind customers of water conservation practices. An example would be:
- "During the summer months, please remember not to water between the hours of 10:00am and 8:00 pm. Thank you for conserving".
- District staff to regulate construction meter activity. This may include restricting quantity of water used and the issuance of new construction meters.
- District staff to monitor and record potable water irrigation practices at golf courses, parks and schools to effectively regulate the use of limited potable supplies.
- District staff to encourage the use of recycled water as a means to remain drought tolerant and promote continuous water conservation measures.
- Weekly planning meetings to include updates on water supply issues and alternatives to prepare for the next stage of the implementation plan.
- Intensify ongoing media education effort about the water system, particularly relationship of weather patterns to supply and demand; provide up to date data and implications for water use, if known.

YVWD Internal Operations for Advisory Stage:

- Prepare to establish purveyor "hotline", a frequently updated recording providing latest information and supply and demand data.
- Consult with other major customer groups, e.g., parks departments, landscape industry, forming a committee if needed, to assist the shortage advisory group to define message and provide feedback on utility actions.
- Initiate status report to entities with special interests, e.g., large water users especially landscape and nursery industry, parks, major water using industries.
- Prepare public information materials explaining the Water Conservation Implementation Plan stages and range of actions; prepare "Questions and Answers" for all customer groups, including those who may be planning new landscaping projects.
- Intensify coordination with other regional water suppliers to learn what conditions they are projecting for their systems.
- Evaluate ability, resources, plans to move into Voluntary stage; as appropriate, begin preparatory measures.
- Intensify data collection actions (storage reservoirs, wells and power supply) and monitoring weather forecasts.
- Intensify YVWD's computer modeling runs of projected supply, storage and demand scenarios.
- Intensify supply side management techniques to optimize existing sources.
- Assess current water main flushing and reservoir cleaning activities to determine whether they should be accelerated to be completed prior to the peak season or reduced to conserve supply.
- Assess water quality in reservoirs and distribution system to target for correction areas that may be predicted to experience problems.
- Initiate planning and preparation for Voluntary Stage actions, including an assessment of potential staffing impacts, training needs, and communications strategies including use of web-based information.

12.8.1.3 Voluntary Stage – Non-Mandatory Conservation Measures

If supply conditions worsen, the plan moves to the Voluntary Stage, which relies on voluntary cooperation and support of customers to meet target consumption goals. During this stage, specific voluntary actions are suggested for both residential and commercial customers.

Objectives

- To maintain or reduce demand to meet target consumption levels by customer voluntary actions.
- To forestall or minimize need later for more stringent demand or supply management actions.
- To minimize the disruption to customers' lives and businesses while meeting target consumption goals.
- To maintain the highest water quality standards throughout the shortage.

Triggers

- The "Voluntary Stage" is implemented when one or both of the following factors applies:
    - Supply conditions identified in the Advisory Stage have not improved.
    - Demand levels indicate the need for a more systematic response to manage the situation

- Heavy groundwater pumping coupled with higher summer temperatures means that there might be an increased likelihood that water quality problems may become an issue. Consideration will be given to potential water quality issues in defining the supply and demand management strategies.

Voluntary Stage Goal - At this stage, the goal would be to achieve a 10% - 15% reduction in water use. Customers can generally achieve this goal through constant water conservation practices.

Voluntary Stage Action Plan - YVWD staff shall meet frequently to re-evaluate the situation based on current and projected supply conditions and the season, and determine the appropriate actions and strategies. The staff will determine target consumption goals to be achieved on a voluntary basis which may be revised as necessary. (See attachment B) Based on the consumption goal, some or all of the following actions will be taken; those actions that are asterisked (*) will be considered initially for implementation if demand reductions more than 10 to 15 percent below normal are necessitated, or later if voluntary measures implemented fail to deliver targeted savings.

- Establish systematic communications with elected officials at the committee and Board level to communicate the nature and scope of voluntary measures and strategy
- District staff to evaluate whether targeted consumption levels and supply conditions warrant a rate surcharge to reinforce voluntary actions and/or to recover revenue losses*; the General Manager makes recommendation to Board members
- Prepare appropriate legislation regarding emergency surcharges, if required

- Consult with customer groups throughout the shortage to help develop public information messages and materials and to obtain feedback on utility actions
- Initiate major public information, media and advertising campaign:
    - In daily newspapers, publish and promote consumption graph that displays the goal and previous 24 hour consumption;
    - Promote consumption goals for typical households, and a percentage reduction goal for commercial customers (Attachment C contains a list of recommended actions for customers to take to reduce consumption)
    - Develop and implement a marketing plan, including paid advertising, to keep customers informed about supply and demand conditions; reinforces desired customer actions; recommends customer actions to reduce demand sufficiently; and, depending on conditions, reminds customers that if goals are not achieved, restrictions may be necessary
- Identify what potential next steps will be to reduce demand including timing, what type of restrictions and/or surcharges will be imposed.
- Establish routine timing for press releases (e.g., every Monday morning) that provide current status and outlook; present information in standardized format that becomes familiar to media and public.
- Include water quality information in public information so that if flushing is necessary, the public understands that it is essential for water quality maintenance.
- Publicize the water supply conditions web page, which is updated regularly. Ensure the information provided covers the needs of all key interests: the public, news media and purveyors.
- Meet with landscape industry representatives to inform them of current and projected conditions; develop partnership programs and informational materials on the shortage, consumption goals, etc. for distribution by industry and utilities.
- Establish and promote "hotlines" for customers to obtain additional conservation information.
- Contact largest customers to request percentage reduction. Contact City and other public agencies to inform them of conditions and request their cooperation.
- Prepare list of commercial car wash facilities that recycle water.
- Establish regular communication mechanism to keep Department employees, especially utility account representatives and water service consultants, up to date on goals, conditions, and actions.
- Print generic postcards to acknowledge receipt of customer correspondence regarding the shortage and to inform customer that specific response is being prepared.
- Initiate remaining planning and preparation for Mandatory Stage.

YVWD Internal Operations for Voluntary Stage

- Continue actions listed in the Advisory Stage.
- Eliminate all operating system water uses determined not to be essential to maintain water quality such as pipeline flushing, reservoir overflows; complete cleaning of any reservoirs known to be vulnerable to warm weather taste and odor concerns.
- Increase water quality monitoring actions.
- Implement staffing reassignments as needed, and plan staffing changes which may be needed for the Mandatory Stage, including staff to enforce mandatory restrictions.

Supply and Demand Management Actions

- Issue a request that non-recirculating fountains be turned off*
- Restrict construction meters to only essential purposes*
- Activate any existing interties to increase supply availability*
- Request that Fire Department limit training exercises that use water.
- Request that City agencies eliminate washing fleet vehicles unless recycling car washes are used.
- Request that hosing sidewalks, driveways, parking lots, etc. be limited to situations that require it for public health and safety.
- Have YVWD field personnel "tag" observed obvious water waste such as hoses without shutoff nozzles, gutter flooding, etc. with notice that informs customer about the supply conditions and need to conserve.
- Evaluate ability to accelerate or enhance or expand long term conservation programs; implement as appropriate.

12.8.1.4 Mandatory Stage – Water Shortage Emergency: Mandatory Conservation Measures

If the Voluntary Stage does not result in the reduction needed, the Mandatory Stage prohibits or limits certain actions. This stage would be accompanied by an enforcement plan, which could include fines for repeated violation.

Objectives

- To achieve targeted consumption reduction goals by restricting defined water uses.
- To ensure that adequate water supply will be available during the duration of the situation to protect public health and safety.
- To minimize the disruption to customers' lives and businesses while meeting target consumption goals.

- To maintain the highest water quality standards throughout the shortage.
- To promote equity amongst customers by establishing clear restrictions that affect all customers.

Triggers - The General Manager, with approval from the Board of Directors, would approve progression to this stage if goals established in the Advisory and Voluntary Stage have not been met, and additional action is needed. The specific restrictions imposed during the mandatory stage would be determined based on the season of the year, targeted demand levels, and other considerations previously mentioned. Variations of the specific restrictions may be applied based on water supply conditions. For example, lawn watering restrictions may simply consist of time of day restrictions; or, if conditions warrant, lawn watering could be restricted to certain times of day and allowed only once a week.

Public Message - "It is necessary to impose mandatory restrictions to reduce demand based on the current water shortage. We are continuing to rely on the support and cooperation of the public to comply with these restrictions but need the certainty and predictability of restricting certain water uses in order to ensure that throughout the duration of this shortage an adequate supply of water is maintained for public health and safety."

Mandatory Stage Goal - Mandatory conservation measures resulting in a 10% - 15% reduction in water use.

Mandatory Stage Action Plan

- YVWD staff will make recommendations regarding the nature, scope and timing of restrictions to the members of the Water Conservation Committee. YVWD staff will need to determine that the water supply and demand management strategies will not result in unacceptable water quality degradation.
- The General Manager recommends to the Board of Directors to implement the Mandatory Stage conservation measures and other appropriate actions.
- The Board adopts a resolution on mandatory restrictions and, if needed and not already in place, emergency surcharges.
- The public is informed about the nature and scope of the mandatory restrictions through a press conference, paid advertising and other means, including direct mail.
- The enforcement mechanisms, rate surcharges, target consumption goals, projections for how long restrictions will be in place and the reasons for imposing restrictions will also be identified, as will the possible consequences if goals are not met.
- Any exemptions from restrictions will be clearly identified.
- In communicating mandatory restrictions to the public, a clear distinction will be made between lawn/turf watering and watering gardens and ornamental plantings. The type and amount of watering allowed will be clearly defined.

- A "Customer Hotline" will be set up to report violations of restrictions.
- Customers who irrigate with private wells will be urged to install signs to let the public know that private well water is being used.
- Communication actions from the Advisory and Voluntary stages will be continued and enhanced.
- Plans will be made to move into the fourth stage - Emergency Curtailment - and to begin preparatory measures as appropriate

YVWD Internal Operation Plan for Mandatory Stage

- Continue appropriate actions from previous stages
- Finalize and implement procedures for exemptions from restrictions and/or emergency surcharges.
- Finalize and implement enforcement procedures for restrictions including highly visible "Water Watchers".
- Increase water quality monitoring actions at storage reservoirs.

Supply and Demand Management Actions

Overall supply conditions will be considered at regular meetings by District staff and the members of the water conservation committee in evaluating which restrictions to impose.

Watering Restrictions

The following are several possible approaches to watering restrictions. The nature of the restrictions used will depend on the situation, and may change as severity of the situation changes.

- Prohibit all watering during the day, for example between 6:00 a.m. and 9:00 p.m.
- Limit all watering to a specific number of days per week or per month. This choice will depend on target consumption goals, the time of year and the extent to which watering is occurring, and how much demands have already decreased.

Other Restrictions

- Prohibit use of any ornamental fountain using drinking water for operation or make-up.
- Prohibit car washing except at commercial car wash facilities that recycle water.
- Rescind water construction meter hydrant permits.
- Prohibit washing of sidewalks, streets, decks or driveways except as necessary for public health and safety.

- Limit pressure washing of buildings to situations that require it as part of scheduled building rehabilitation project (e.g., painting).
- Prohibit water waste including untended hoses without shut-off nozzles, obvious leaks and water running to waste such as gutter flooding and sprinklers/irrigation whose spray pattern unnecessarily and significantly hits paved areas

Exemptions from Water Use Restrictions

- Lawn Watering Ban Exemption - Newly installed lawns may be exempted from a ban if the procedures listed below are followed. Those wishing to use this exemption would need to contact YVWD office in advance of the exemption being granted, providing their name, address, phone number, size of lawn and type of watering system. This information would allow YVWD to quantify the amount of water used under this exemption and to spot check for compliance. The procedures relating to the exemption and the requirements of the exemption would be clearly outlined at the time of the ban. The following procedures are subject to change:
    - Each applicant would be mailed a packet stating the requirements.
    - Once the requirements are met, an authorization packet would be mailed to the customer including a sign to be posted indicating that YVWD's requirements are being complied with.
    - New lawns must be properly installed, meaning that two inches of organic soil amendment, such as composted yard waste or biosolids, is cultivated into the top six inches of existing soil, at a minimum.
    - New lawns must be watered according to guidelines to be provided in the packet mentioned above.
    - For purposes of this exemption, "new lawn" refers to a lawn newly installed during the current year only. Over seeded or otherwise renovated lawns would not be exempt.

- In the event that the shortage continues to worsen and the Emergency Curtailment Stage is invoked, this exemption would be revoked. It would also be revoked on a case-by-case basis if the rules stated above are not followed, or in the case of a water system emergency. Monitoring and enforcement are at the discretion of YVWD. The existence of an exemption to a watering ban would be announced early in the response process, for example when the Advisory Stage is invoked.
- Automatic Irrigation System Exemption - Users of automatic irrigation systems may be exempt from certain mandatory watering restrictions if proper procedures are followed - but not from a total watering ban. This approach allows an alternate path to achieving savings due to the precision with which such systems can be operated, but is not intended to be a loophole to avoid the need to curtail use. For example, if only 30 minutes of lawn watering is allowed per week, automatic irrigation systems which meet the criteria would be allowed to water based on a certain percentage of evapotranspiration (ET), such as 50%, instead of the time-limit based restriction. [Note:

ET is a factor calculated according to climatic data, which is commonly used for lawn watering in commercial applications; ET data would be made available on YVWD's web page and in alternate formats.] In the event of a total watering ban, these users would also be prohibited from watering (unless other safety-based criteria are met, as stipulated in the Water Conservation Implementation Plan).

- The procedures to be met include:
    - The area must be audited by an Irrigation Auditor as certified by the Irrigation Association (list from the IA to be available on request).
    - Irrigation efficiency of the system must be at least 62.5%, as defined by the Irrigation Association (includes both system distribution uniformity and management practices).
    - A baseline irrigation schedule based on historical ET must be provided to the system's owner/operator.
    - The owner/operator must evaluate actual ET on at least a weekly basis and change the irrigation schedule if warranted by the ET index.
    - The owner/operator must contact the utility to provide the name of the auditor, date of inspection and the efficiency rating, as well as the name, address and phone number of the contact person for the site being watered, prior to using the exemption
    - Time of day restrictions, such as watering prohibited between 6:00 am and 8:00 pm, would have to be met.
    - The system must have a functioning rain-shutoff device.
    - Watering limitations stipulated by YVWD would need to be followed. The limitations would be stated as a percent of ET, so that, for example, users who meet the above requirements would be able to water based on 50% of ET (the specific percent amount would be decided upon at the time the restriction is announced, depending on the supply outlook). YVWD's website (www.yvwd.dst.ca.us/conserve.htm) would be regularly updated to provide the information needed for those watering according to this exemption; the information would be available through other means as well.

- Other Exemptions - For purposes of dust control, water may be applied to construction areas or other areas needing to comply with air quality requirements. If recycled water is available, consider requiring or promoting that it be used for dust control, if feasible.
- Ball fields and play fields may be watered at the minimum rate necessary for dust control and safety purposes.
- YVWD will exempt customers with special medical needs such as home dialysis from any emergency surcharge provided individual customers notify YVWD of such a need

Water Supply Actions

- If not already implemented, activate interties and any other alternative sources of supply.

12.8.1.5 Emergency Curtailment Stage – Water Shortage Emergency: Extreme Conservation Measures

This addresses the most severe need for demand reduction and could include a combination of mandatory measures and rate surcharges. This could be used as the last stage of a progressive situation, such as a drought of increasing severity, or to address an immediate crisis, such as a facility failure.

At this stage, YVWD recognizes that a critical water situation exists. Without additional significant curtailment actions, a shortage of water for public health and safety will be imminent. No prior emergency in YVWD's history fits this description.

This stage is characterized by two basic approaches. First, increasingly stringent water use restrictions are established and enforced. Secondly, significant rate surcharges are used to encourage customer compliance. While a rate surcharge may be implemented in either the Voluntary or Mandatory stages, a surcharge is a key component to the success of this stage and previous surcharge may be increased if appropriate.

Emergency Curtailment Action Plan

- Continue all previous, applicable actions.
- Define the problem to the public as an emergency and institute formal procedures to declare an emergency.
- Inform customers of the rate surcharge and how it will affect them. Provide information on an appeal process.
- Coordinate with police and fire departments requesting their assistance in enforcing prohibition of water waste.
- Inform customers that taste and odor water quality problems may occur with system-wide reduced water consumption.
- Inform customers about possible pressure reductions and problems this may entail.
- Define and communicate exemptions for medical facilities and other public health situations.

YVWD Internal Operations for Emergency Curtailment Stage

- Continue and enhance "Water Watcher" patrols.
- Continue actions listed in prior stages.
- Curtail fire flow and pipeline testing unless it can be shown to be essential to protect the immediate public health and safety.

- Further enhance water quality monitoring actions

Supply and Demand Management Actions

Rate surcharges would be implemented to encourage customer compliance with the restrictions, as follows:

- Commercial Customers - Commercial, multifamily and industrial users would be asked to reduce water use by a set percentage of their consumption during the same period in the previous year. Emergency rate surcharges would be established to provide an additional incentive to reduce water use. It is YVWD's intention to establish a multi-tiered structure. This "variable block approach" would allow for different surcharge rates based on the individual customer's consumption during the same period in the previous year. For example, if YVWD were to target desired reduction of 85% from the previous year's consumption in that period, any consumption between 0 and 85% would be billed at one rate and any consumption over 85% would be billed at another, much higher rate. In this way, the targeted reduction amount and resulting surcharges would be customized around each customer's water use patterns, while still resulting in a steep surcharge for consumption in excess of the target amount for each block.
- A billing system modification would be needed to allow YVWD to accomplish this. If this has not been done by the time it may be needed, a simple across-the-board rate surcharge would be applied.
- Residential Customers - A multi-tiered, increasingly steep rate structure would be implemented for residential customers (includes single-family dwellings and duplexes). While there are differences in household size, there is more similarity in residential domestic water use than there is in commercial water use.
    - All lawn and turf irrigation would be prohibited
    - Make recycled water available for street cleaning, construction projects, landscape irrigation, dust control, etc.
    - Require that all fire fighting agencies discontinue the use of water in training exercises until emergency is over.
    - Rescind all construction meter or fire hydrant permits.

Short-Term Emergency Curtailment Plan

Although many of the demand reduction measures employed would be similar to those used during a progressive, weather-related shortage, short-term emergencies are unique because of a lack of preparation time and the urgency of immediate, large-scale demand reductions. Each emergency scenario is different, but most of them require major curtailment actions by customers. Also, unlike a drought, some emergencies would be localized, requiring demand reduction for only a limited geographic area.

Strategies for dealing with emergencies have been developed based on lessons learned from previous water utility events, other utility experiences, and a sorting of measures based on specific criteria.

Throughout water shortage events, consistent conservation messages and information on appropriate demand reduction measures should be delivered to water users through the media and by direct contact. Although exact demand reduction goals may not always be met by water users, the water demands during short-term emergencies must be curtailed enough to be beneficial and avoid more serious water shortages.

There are several criteria by which to decide which demand management measures are appropriate to initially reduce demand during an emergency:

- Timing can the measure(s) or action(s) deliver the necessary savings in the necessary timeframe, i.e., are immediate savings needed or can the system support a gradual reduction in demand;
- Magnitude of savings will the measure produce enough savings to make a meaningful difference i.e., reduce demand to the level the impaired water system can handle;
- Does the action make any impact at the time of year that the emergency occurs, i.e., banning lawn watering will have little impact in the winter months;
- How severe are the cost implications of the measure to the customer, including local business and industry.

The following table provides a summary of the Water Shortage Contingency Plan supply conditions.

Table 12-16. DWR Table 8-1R. Stages of WSCP

Stage	Percent Supply Reduction	Water Supply Condition
1	5-10	Normal Conditions
2	10-15	Up to 15% Voluntary Reduction
3	10-15	Up to 15% Mandatory Reduction
4	15+	Greater than 15% Emergency Reduction

12.8.2 Prohibitions on End Uses

The water use prohibitions for each stage are shown in Table 12-17.

Table 12-17. DWR Table 8-2R. Restrictions and Prohibitions on End Uses

Stage	Restrictions and Prohibitions on End Uses	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
3	CII - Restaurants may only serve water upon request	Restaurants are not to provide drinking water to patrons except by request.	Possibly

Stage	Restrictions and Prohibitions on End Uses	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
3	CII – Lodging establishment must offer opt out of linen service	Hotels and motels must offer their guests the option to not have their linens and towels laundered daily, and must prominently display this option in each room.	Possibly
3	Landscape - Limit landscape irrigation to specific days	Upon notice and public hearing, YVWD may determine that the irrigation of exterior vegetation shall be conducted only during specified hours and/or days, and may impose other restrictions on the use of water for such irrigation. The irrigation of exterior vegetation at other than these times shall be considered to be a waste of water.	Possibly
3	Landscape - Limit landscape irrigation to specific times	Exterior landscape plans for all new commercial and industrial development shall provide for timed irrigation and shall consider the use of drought resistance varieties of flora. Such plans shall be presented to and approved by YVWD prior to issuance of a water service letter.	Possibly
3	Landscape - Limit landscape irrigation to specific times	Public and private parks, golf courses, swimming pools and school grounds which use water provided by the District shall use water for irrigation and pool filling between the hours of 8:00 p.m. and 6:00 a.m.	Possibly
3	Landscape - Other landscape restriction or prohibition	Persons receiving water from YVWD who are engaged in commercial agricultural practices, whether for the purpose of crop production or growing of ornamental plants shall provide, maintain and use irrigation equipment and practices which are the most efficient possible. Upon the request of the General Manager, these persons may be required to prepare a plan describing their irrigation practices and equipment, including but not limited to, an estimate of the efficiency of the use of water on their properties.	Possibly
3	Landscape - Restrict or prohibit runoff from landscape irrigation	No water provided by the District shall be used for the purposes of wash-down of impervious areas, without specific written authorization of the General Manager. Any water used on premises that is allowed to escape the premises and run off into gutters or storm drains shall be considered a waste of water.	Possibly
3	Other - Prohibit use of potable water for washing hard surfaces	No water provided by YVWD shall be used for the purposes of wash-down of impervious areas, without specific written authorization of the General Manager. Any water used on premises that is allowed to escape the premises and run off into gutters or storm drains shall be considered a waste of water.	Possibly

Stage	Restrictions and Prohibitions on End Uses	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
3	Landscape – Other landscape restriction or prohibition	Medians and bordering parkways located within the right-of-way are prohibited from using potable water to irrigate turf or other high water use plant material as identified by the Water Use Classifications of Landscaping Species (WUCOLS) Guide. Bordering parkways are considered the strips of non-functional ornamental turf adjacent to the street. The continued irrigation and preservation of trees is encouraged.	Possibly
3	Other - Require automatic shut of hoses	The washing of cars, trucks or other vehicles is not permitted, except with a hose equipped with an automatic shut-off device, or a commercial facility so designated on YVWD's billing records.	Possibly
3	Pools and Spas - Require covers for pools and spas	All residential, public and recreational swimming pools, of all size, shall use evaporation resistant covers and shall re-circulate water. Any swimming pool which does not have a cover installed during periods of non-use shall be considered a waste of water.	Possibly
3	Other water feature or swimming pool restriction	Operating a water fountain or other decorative water feature that does not use re-circulated water is prohibited.	Possibly
3	CII – Other CII restriction or prohibition	Persons receiving water from the District who are engaged in commercial agricultural practices, whether for the purpose of crop production or growing of ornamental plants shall provide, maintain and use irrigation equipment and practices which are the most efficient possible. Upon the request of the General Manager, these persons may be required to prepare a plan describing their irrigation practices and equipment, including but not limited to, an estimate of the efficiency of the use of water on their properties. Commercial and industrial facilities shall, upon request of the General Manager, provide the District with a plan to conserve water at their facilities. The District will provide these facilities with information regarding the average monthly water use by the facility for the last two-year period, or the State of California approved conservation base year. The facility will be expected to provide the District with a plan to conserve or reduce the amount of water used by that percentage deemed by the Board of Directors to be necessary under the circumstances. After review and approval by the General Manager, the water conservation plan shall be considered subject to inspection and enforcement by the District.	Possibly
3	Landscape - Other landscape restriction or prohibition	Commercial nurseries shall discontinue all watering and irrigation. Watering of livestock is permitted as necessary.	Possibly
3	Landscape - Prohibit all landscape irrigation	Watering of parks, school grounds, golf courses, lawns, and landscape irrigation is prohibited.	Possibly

Stage	Restrictions and Prohibitions on End Uses	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
3	Other - Prohibit use of potable water for construction and dust control	No new construction meter permits shall be issued by YVWD. All existing construction meters shall be removed and/or locked.	Possibly
3	Other - Prohibit use of potable water for washing hard surfaces	Washing down of driveways, parking lots or other impervious surfaces is prohibited.	Possibly
3	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	Washing of vehicles, except when done by commercial car wash establishments using only recycled or reclaimed water is prohibited.	Possibly
3	Water Features - Restrict water use for decorative water features, such as fountains	Filling or adding water to swimming pools, wading pools, spas, ornamental ponds, fountains and artificial lakes are prohibited.	Possibly
3	Landscape – Other landscape restriction or prohibition	Commercial nurseries shall discontinue all watering and irrigation. Watering of livestock is permitted as necessary.	Possibly

12.8.3 Penalties, Charges, Other Enforcement of Prohibitions

In the implementation of the water shortage contingency plan, the California Water Code Section 31029 makes any violation of the YVWD's Water Shortage Contingency Plan a criminal misdemeanor and upon conviction thereof, the violator will be subject to punishment by fine, imprisonment, or both as may be allowed by law. In addition to criminal penalties, violators of the mandatory provisions of the ordinance will be subject to civil action initiated by YVWD.

No single strategy can be created which will meet the needs of the District for all emergency scenarios. The criteria established for the Water Shortage Contingency Plan provides the full latitude for the Board of Directors to implementation penalties, charges and other enforcement prohibitions based on the specific situation.

Emergencies initially require quick and immediate response. Once an assessment is made as to how long it will take to restore the system, the immediate response strategy may change if it appears that the repair process will be lengthy. The strategy for most emergencies can be narrowed to measures having the most immediate impact on water supply and consumption. All needed and available back up supplies would be activated during an emergency, including the use of interties and standby water production wells.

12.8.4 Consumption Reduction Methods

YVWD offers various rebates to encourage conservation. The reduction goal is to balance supply and demand.

Table 12-18. DWR Table 8-3R. Stages of WSCP - Consumption Reduction Methods

Stage	Consumption Reduction Methods by Water Supplier	Additional Explanation or Reference
Ongoing	Expand Public Information Campaign	YVWD will continue to provide information about the use of recycled water as an alternative to drinking water sources, if applicable. Additional water conservation measures will be provides that are designed to reduce consumption by various customer classes.

12.8.5 Determining Water Shortage Reductions

Under normal conditions, YVWD prepares monthly production reports which are reviewed and compared to production reports and pumping statistics from prior months and the same period of the prior year. The data gathered summarized in these production reports are automatically generated on a daily basis to assist with the determination of water shortage reductions.

12.8.6 Revenue and Expenditure Impacts

It is difficult to precisely gauge the revenue and expenditure impacts of water shortages. The drought contingency plan provides for both prohibitions, water use allotments, and penalty pricing for exceeding allotments, the ultimate revenue impacts will be based upon a mix of responses to these requirements. Additionally, weather can be a factor as well. Customers may find it more difficult to meet allocations during hot weather where a desire to maintain landscaping uses at a higher level exists, and therefore more customers may find themselves paying penalty rates.

For planning purposes, it is assumed that District conservation goals are met at each stage and that revenue losses are proportional to the commodity rate revenue not received, exclusive of penalty rates, plus revenue losses due to particular prohibitions. It is also assumed that additional District expenses for implementing the plan would be offset by excess use penalties.

Based upon YVWD's current fiscal situation, impacts during Stages I and II could be absorbed by District reserves without requiring a rate increase, provided the shortage condition did not persist for more than two years. Impacts beyond two years would need to be reassessed.

Stages III and beyond could require reductions in the pay-as-you-go portion of YVWD's Capital Improvement Program. Additionally, deferring non-critical maintenance items and filling some personnel vacancies would be considered. Should revenue loss impacts begin to affect essential

District operations, a temporary emergency surcharge on the base water rate could be imposed to fund District operations.

YVWD makes contributions to a rate stabilization fund contribution in accordance with a District Designated Fund Policy. Funds discussed in the policy include the Rate Stabilization Fund and the Capital Replacement Fund.

In the event of a water shortage, a two-point program will be utilized to meet the fiscal shortfall of reduced water revenues:

4. Reduce operation and maintenance expenses
5. Defer selected capital improvement projects until water shortage situation improves.
6. Rate Stabilization Funds, once accumulated, will serve as a third means of meeting fiscal shortfalls.

12.8.7 Resolution or Ordinance

The latest version of the YVWD Water Shortage Contingency Plan was adopted on June 15, 2011. With the recent emergency water conservation regulations adopted by the State Water Resources Control Board, the YVWD has been reviewing the Water Shortage Contingency Plan for proposed changes. Based on the final review, the YVWD will be presenting an updated document for the Board of Directors to review and evaluate to prepare for future shortages.

12.8.8 Catastrophic Supply Interruption

YVWD has identified system vulnerabilities due to fire, earthquake, and power outages. YVWD has developed an Emergency Response Plan. YVWD has in place back-up power supplies at critical locations within the distribution system. Due to South Coast Air Quality Management Board rules and economic restraints, a back-up power supply source at every plant within YVWD's system is not feasible. YVWD maintains portable pumps that can be used to transfer water internally, but cannot be used for production.

Currently, YVWD's water storage capacity would provide a potable supply for customers' non-irrigation uses (assumes implementation of Water Shortage Contingency Plan) for an estimated two to three days. As described above, YVWD participates in multiple mutual aid agreements and has agreements in place for the provision of water supply and/or manpower. In the event of a natural or man-made disaster that could affect the YVWD's ability to provide a potable water supply for up to thirty days, the following measures will be implemented as required:

6. The Boil Water notification program will be activated. The notice will be provided to local radio stations and newspapers. YVWD will contact the media and City and County agencies. Customers will be notified of supplemental sources of water for cooking and drinking (e.g. swimming pools, water heaters, and bottled water).
7. YVWD is a participant in Emergency Response Network of the Inland Empire (ERNIE), a water/wastewater mutual aid network within San Bernardino and Riverside counties.

During a Catastrophic Supply Interruption, the Mutual Aid Agreement with ERNIE will be implemented. The General Manager will contact general managers from surrounding agencies to obtain assistance in providing manpower for repairs and/or a supplemental supply of water.

8. A public information program will be initiated. The General Manager will appear on local television and provide daily reports to the local newspaper and radio stations. Members of the Board of Directors will speak to local service clubs and chambers of commerce.

12.8.9 Minimum Supply Next Three Years

The UWMP Act requires a retailer to quantify the minimum water supply available during the next three-year period, assuming 2016 to 2018 repeat the driest three-year historic sequence for each water supply source. As shown in Table 12-19, total supplies, given a repeat of historically low conditions on all water supplies, would be approximately 60,724 AFY. YVWD has adequate supplies available to meet projected demands should a multiple-dry year period occur during the next three years.

Table 12-19. DWR Table 8-4R. Minimum Supply Next Three Years

Available Water Supply	2016	2017	2018
Available Water Supply	14,500	14,500	14,500

12.9 Supply and Demand Assessment

The Normal/Average year is a year in the historical sequence that most closely represents median runoff levels and patterns. This section summarizes YVWD's water supplies available to meet demands over the planning period during an average/normal year and compares them to demands for the same period.

Table 12-20. DWR Table 7-2R. Normal Year Supply and Demand Comparison

Totals	2020	2025	2030	2035	2040
Supply Totals	28,879	30,413	31,598	33,358	32,608
Demand Totals	11,240	11,574	11,938	12,325	12,727
Difference	*17,639*	*18,839*	*19,660*	*21,033*	*19,881*

The single-dry year is generally the lowest annual runoff for a water source in the record. The single-dry year may differ for various sources. This section summarizes YVWD's water supplies available to meet demands over the planning period during a single-dry year and compares them to demands for the same period.

Table 12-21. DWR Table 7-3R. Single Dry Year Supply and Demand Comparison

Totals	2020	2025	2030	2035	2040
Supply Totals	22,379	23,913	25,098	26,858	26,108
Demand Totals	10,341	10,648	10,983	11,339	11,709
Difference	*12,038*	*13,265*	*14,115*	*15,519*	*14,399*

The multiple-dry year is generally the lowest annual runoff for a three year or more consecutive period. The multiple-dry year period may differ for various sources. This section summarizes YVWD's water supplies available to meet demands over the planning period during a multiple-dry year period and compares them to demands for the same time frame.

Table 12-22. DWR Table 7-4R. Multiple Dry Years Supply and Demand Comparison

Year	Totals	2020	2025	2030	2035	2040
First Year	Supply Totals	24,617	26,304	27,608	29,544	28,719
	Demand Totals	10,790	11,111	11,460	11,832	12,218
	Difference	*13,827*	*15,193*	*16,147*	*17,712*	*16,501*
Second Year	Supply Totals	24,617	26,304	27,608	29,544	28,719
	Demand Totals	10,790	11,111	11,460	11,832	12,218
	Difference	*13,827*	*15,193*	*16,147*	*17,712*	*16,501*
Third Year	Supply Totals	24,617	26,304	27,608	29,544	28,719
	Demand Totals	10,790	11,111	11,460	11,832	12,218
	Difference	*13,827*	*15,193*	*16,147*	*17,712*	*16,501*

Capital Improvement Projects

Yucaipa Valley Water District

Yucaipa Valley Water District

Workshop Memorandum 16-087

Date: **May 24, 2016**

Subject: **Status Report on the Construction of a 6.0 Million Gallon Drinking Water Reservoir R-12.4 - Calimesa**

At the regular meeting on July 16, 2014, the Board authorized the solicitation of bids for the construction of a 6.0 Million Gallon R-12.4 Reservoir located on Singleton Road in Calimesa [Director Memorandum No. 14-060]. On November 19, 2014, the Board of Directors awarded the construction contract for the reservoir facility to Gateway Pacific Contractors [Director Memorandum No. 14-091].

The purpose of this agenda item is to provide an update on the progress of the reservoir construction project.

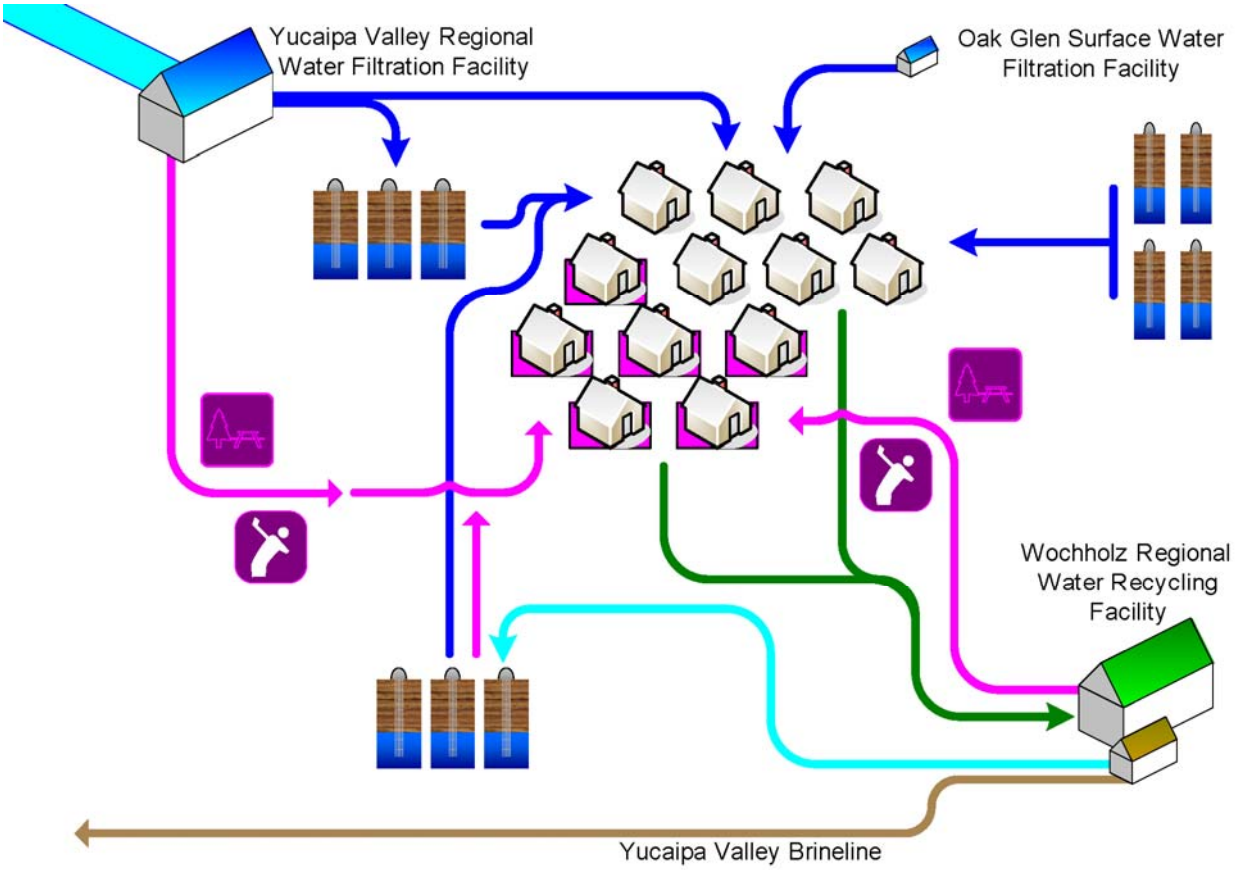
Yucaipa Valley Water District

Workshop Memorandum 16-088

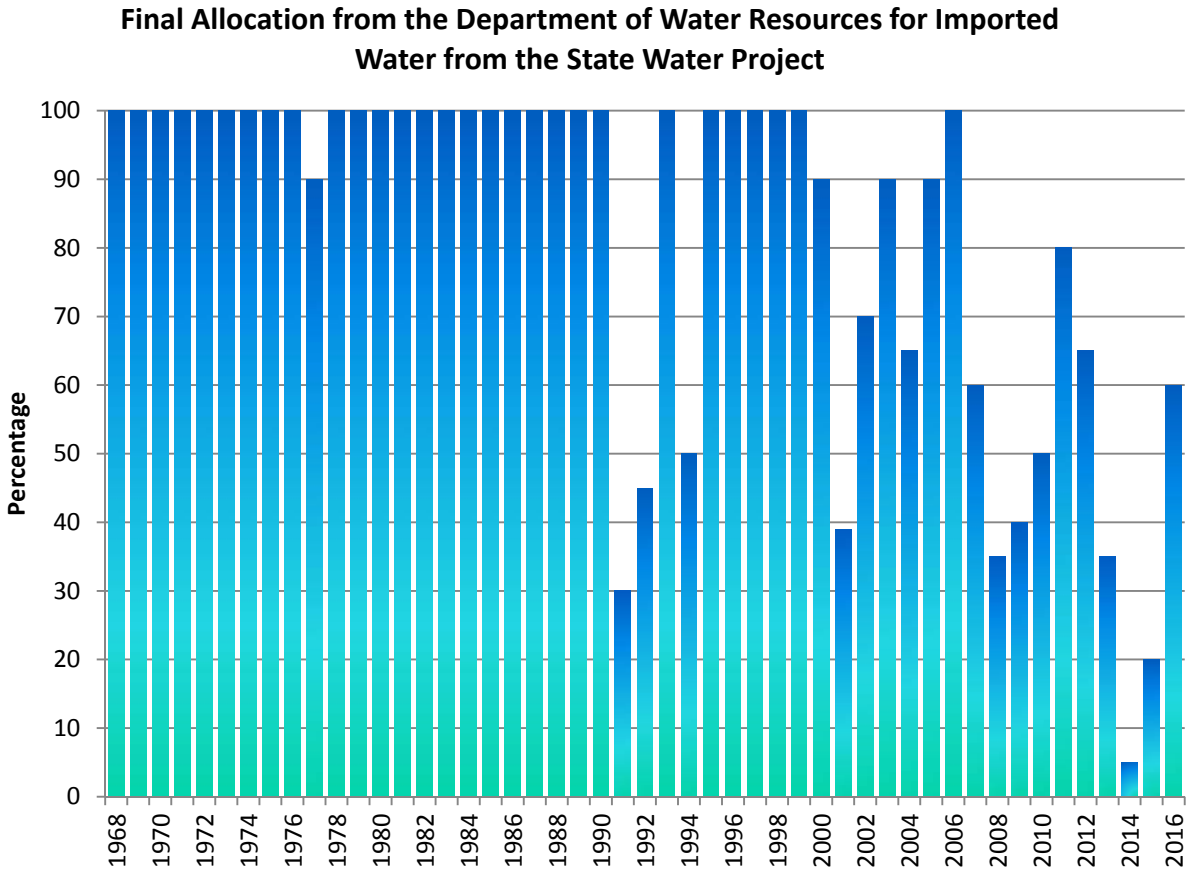
Date: **May 24, 2016**

Subject: **Status Report on the Construction of Future Recycled Water Pipelines Throughout the Service Area of the Yucaipa Valley Water District**

On August 20, 2008, the Board of Directors adopted Resolution No. 11-2008 establishing a strategic plan for the management, integration and preservation of water resources. This Plan embodied the concepts of water resource management and the full integration of services offered by the Yucaipa Valley Water District. One key component of the strategic plan is the reliance on recycled water being put to beneficial use throughout the sphere of influence of the Yucaipa Valley Water District.



One of the main reasons associated with the District's decision to rely heavily upon recycled water supplies is the lack of certainty associated with the State Water Project. As shown below, the allocation of water from the State Water Project has decreased significantly over the past two decades.



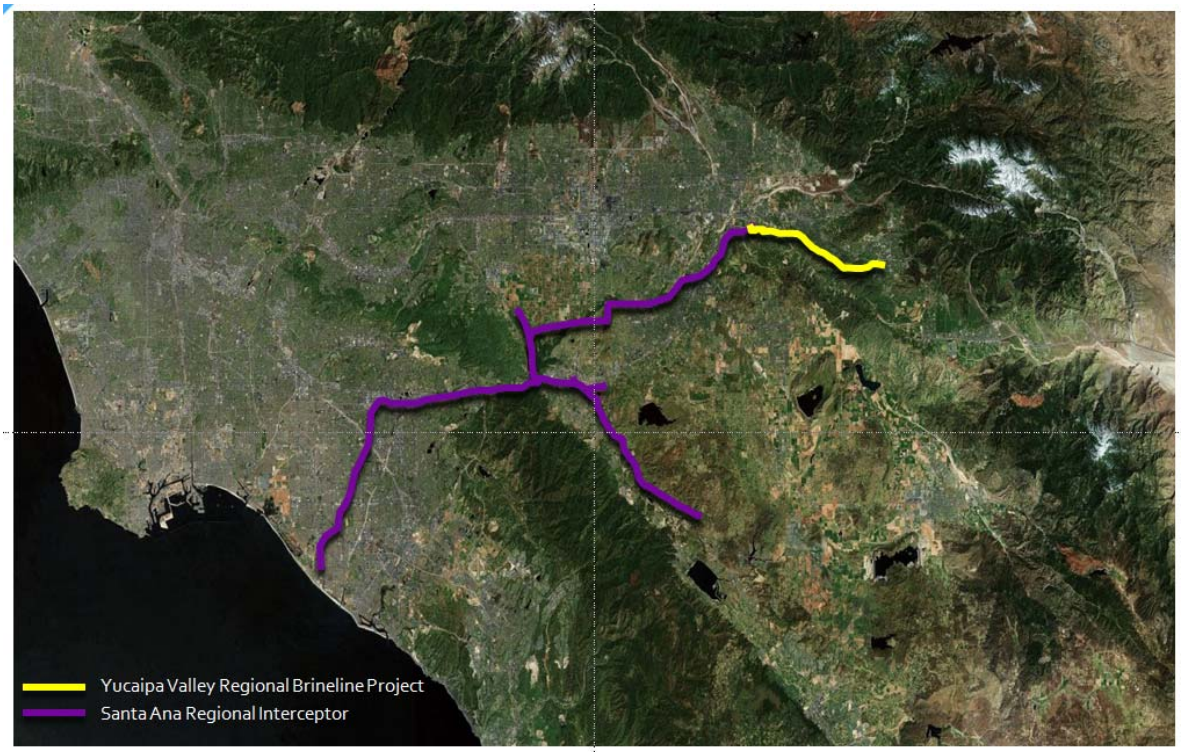
While the Department of Water Resources and State Water Contractors typically publish a 60% reliability factor for the State Water Project, the final allocation of imported water over the past decade has only been 45%. As the State water system continues to become more unstable and more unreliable, the Yucaipa Valley Water District must pursue alternative sources of water to meet the needs of our community.

Maximization of the Use of Recycled Water

Sewer treatment plants are required to provide a level of treatment to protect beneficial uses downstream of discharge points. These requirements dictate that a sewer treatment plant located in Yucaipa, Calimesa or Beaumont discharge extremely high quality recycled water to protect downstream uses throughout the Santa Ana Watershed.

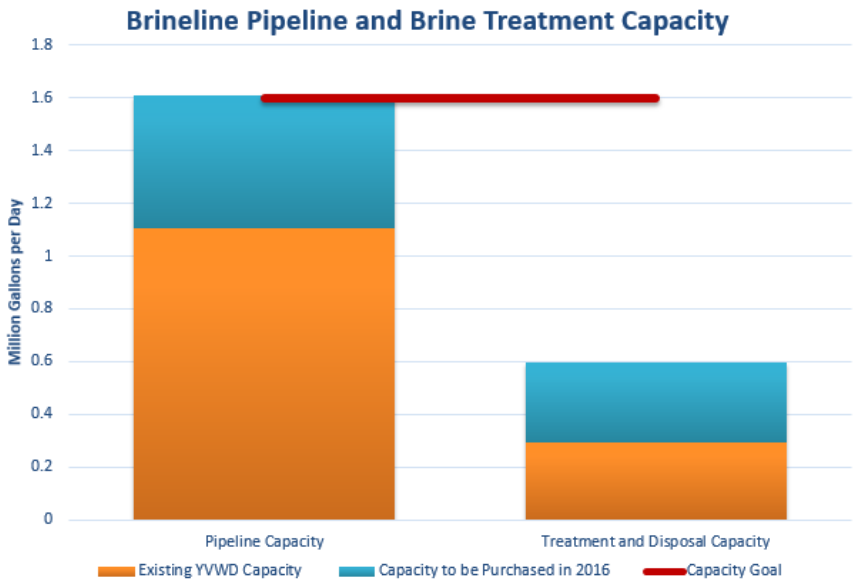
Over the past decade, the Regional Water Quality Control Board has implemented stringent regulatory requirements that have significantly increased the cost of treatment processes that are needed to reduce minerals (salinity) and nitrogen in the recycled water supplies. This level of treatment requires equipment and purification processes that are similar to those commonly found in drinking water filtration facilities. The net effect is that the Yucaipa Valley Water District has to discharge extremely high quality recycled water, comparable to drinking water, without any compensation from water retailers downstream who receive a direct benefit from the pure water resources produced from the sewer treatment plant.

On April 20, 2016, the Board of Directors approved the purchase of additional brine disposal pipeline and treatment capacity from the San Bernardino Valley Municipal Water District [Director Memorandum No. 16-040]. This additional capacity is critically important to maintain the high quality of recycled water used in our service area.



Yucaipa Valley Regional Water Supply Renewal Project

Ultimately, the Yucaipa Valley Water District will need about 1.6 million gallons per day of both brineline pipeline and brine treatment/disposal capacity for use by our customers in the City of Yucaipa and the City of Calimesa. The Yucaipa Valley Water District executed a contract with the San Bernardino Valley Municipal Water District for the purchase of an additional 500,000 gallons per day of brineline pipeline capacity and 300,000 of brine treatment and disposal capacity. This purchase is expected to complete the brineline pipeline capacity needs of the Yucaipa Valley Water District. However, as treatment technology

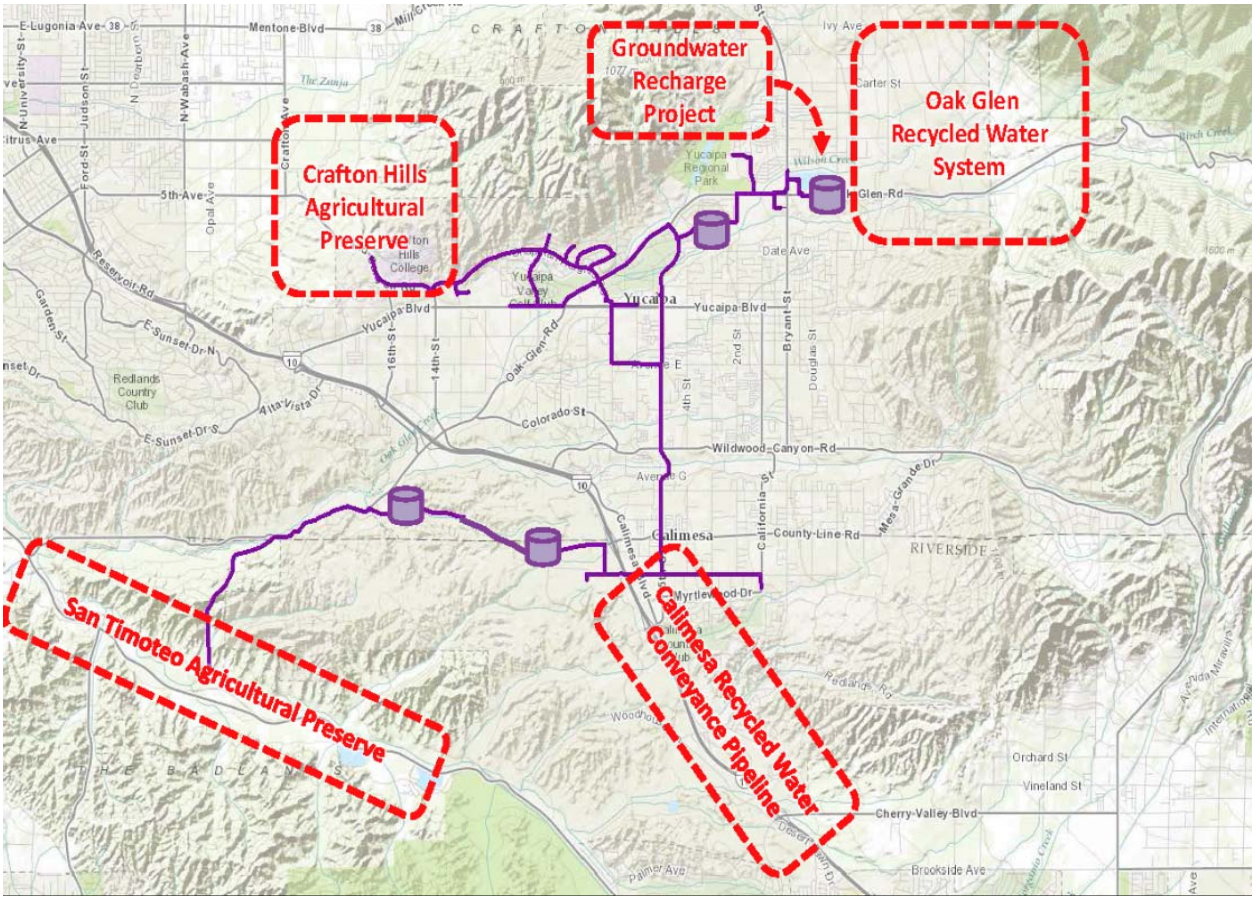


changes the Board of Directors might find that it is more economical to purchase additional capacity rather than reduce the volume of brine by concentrating the discharge.

Recognizing that recycled water is a highly pure and reliable source of water, the Board of Directors approved the construction of several projects designed to maximize the use of recycled water throughout the Yucaipa Valley Water District's sphere of influence. These facilities are now largely completed.

On June 11, 2013, the District staff provided an overview of our existing recycled water system and proposed recycled water pipelines to further expand the use of recycled water [Workshop Memorandum No. 13-119]. The discussion focused primarily on the following five project areas:

- The Oak Glen Recycled Water System;
- The Wilson Creek Groundwater Recharge Project;
- The Crafton Hills Agricultural Preserve;
- The Calimesa Recycled Water Conveyance Pipeline; and
- The San Timoteo Agricultural Preserve.



At the regular board meeting on December 3, 2014, the Board of Directors adopted Resolution No. 2014-20 regarding the expansion of the recycled water system to indicate support of the five proposed projects [Director Memorandum No. 14-098]. At the regular board meeting on June 3, 2015, the Board of Directors adopted resolution No. 2015-10 supporting specific projects in the Oak Glen and Wildwood areas [Director Memorandum No. 15-052]. On March 2, 2016, the

District staff recommended adoption of Resolution No. 2016-11 as a refinement of Resolution No. 2015-10 to focus specifically on the expansion of the recycled water system in the North Bench, Oak Glen and Wildwood areas. The goal of this project would be to reduce the use of groundwater for irrigation purposes by utilizing recycled water produced by the Wochholz Regional Water Recycling Facility.

Also included in this resolution is authorization for a representative from the District to support state and federal legislation that provides financial support for the proposed project. This broad authorization allows the District staff to work directly with legislative staff members at the federal and state level to bring this project to fruition.

The purpose of this workshop agenda item is to provide an update on the next steps associated with the recycled water project.

Administrative Issues

Yucaipa Valley Water District

Yucaipa Valley Water District

Workshop Memorandum 16-089

Date: **May 26, 2016**

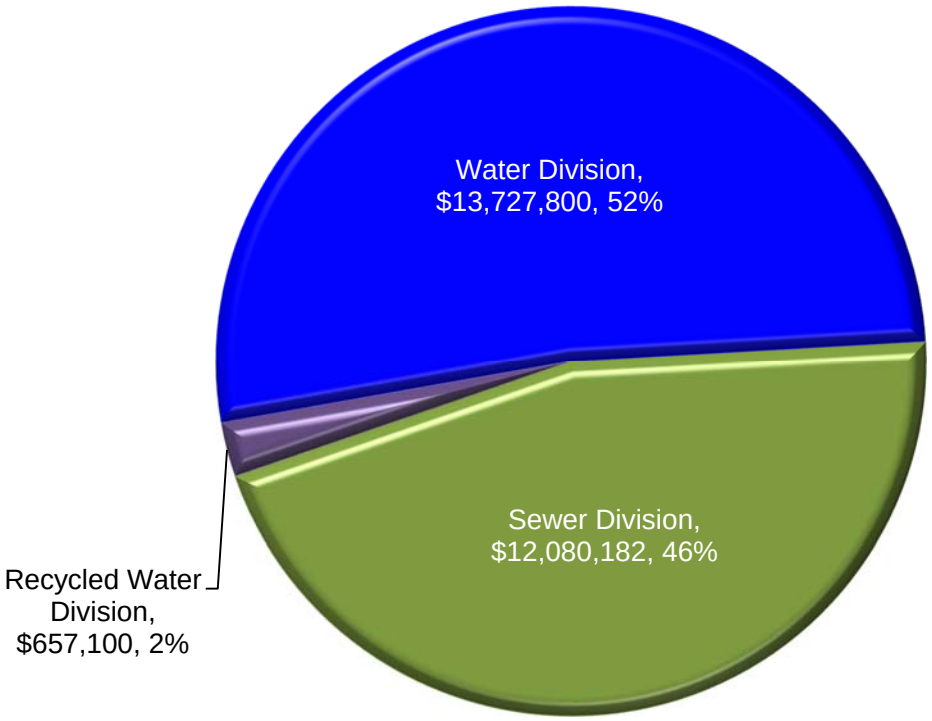
Subject: **Overview of the Operating Budget and Capital Improvement Plan for Fiscal Year 2017**

The Fiscal Year 2017 Operating and Capital Improvement Budget has been developed based on projections of recovering from a long-term drought which is expected to significantly reduce anticipated revenues in the Water Division. The Board of Directors should consider implementing revenue adjustments in a manner that is consistent with San Juan Capistrano's tiered water rate case that requires the structure of municipal water rates to be based on the actual cost of service.

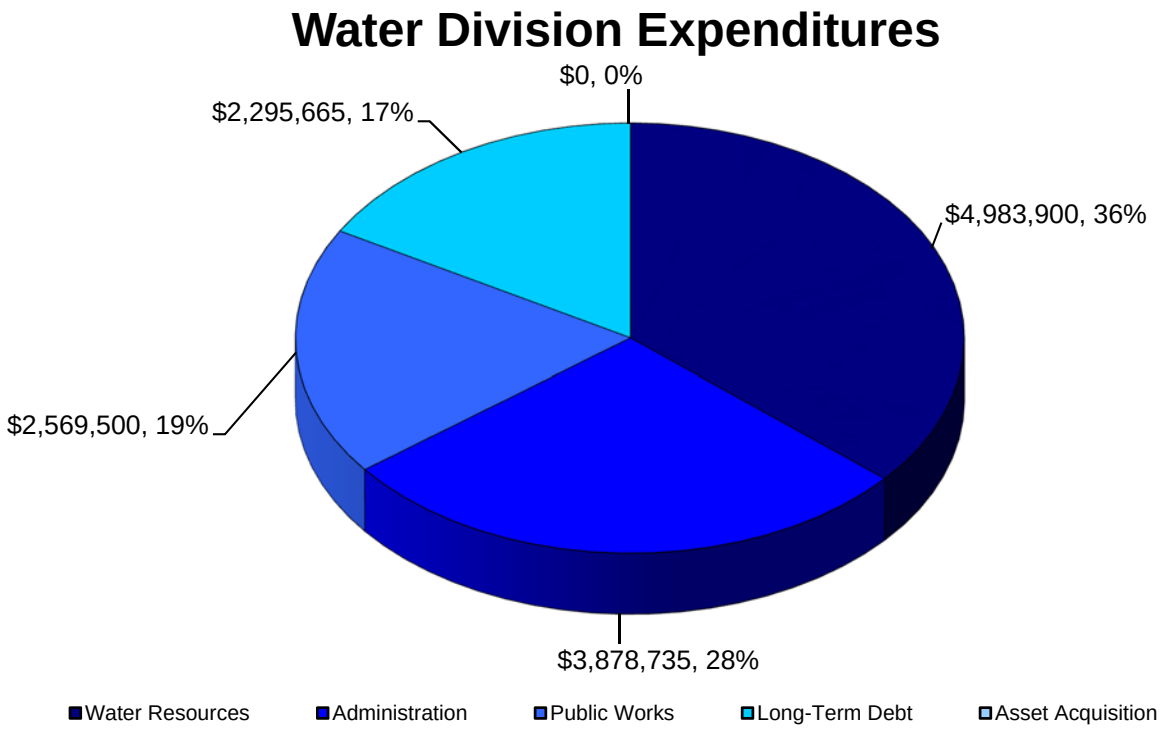
During the budget workshop, the District staff will be providing a detailed overview for each individual line item of the drinking water, sewer and recycled water enterprises of the District.

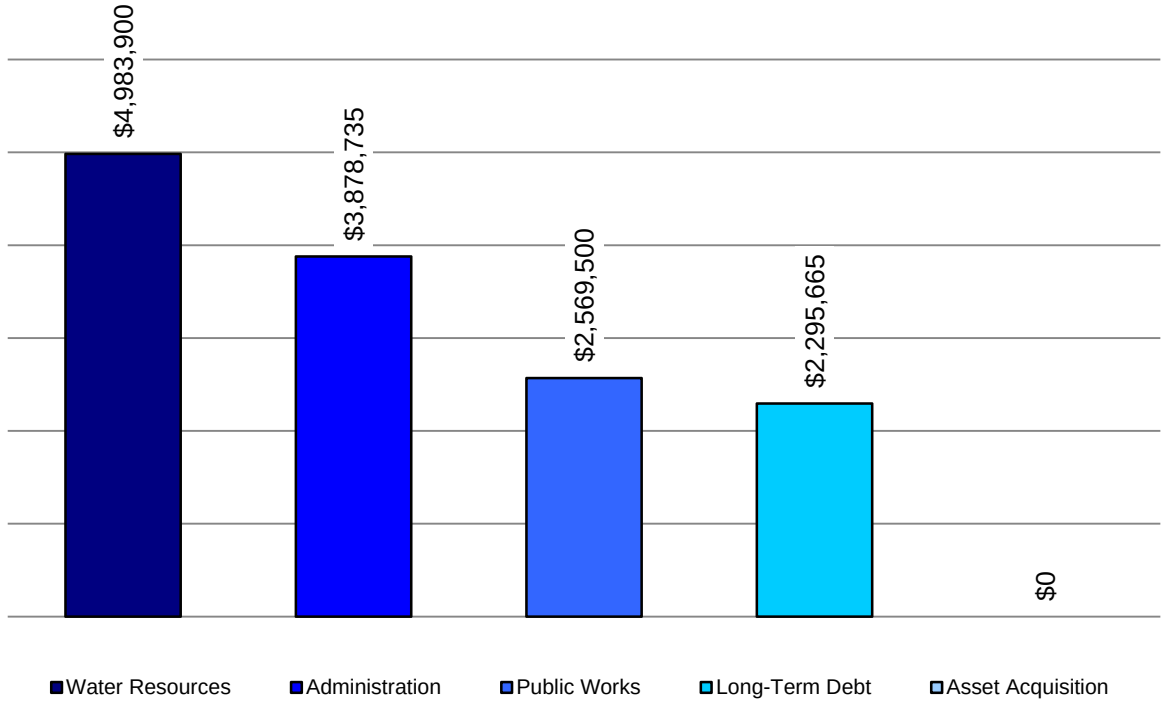
Budget Overview

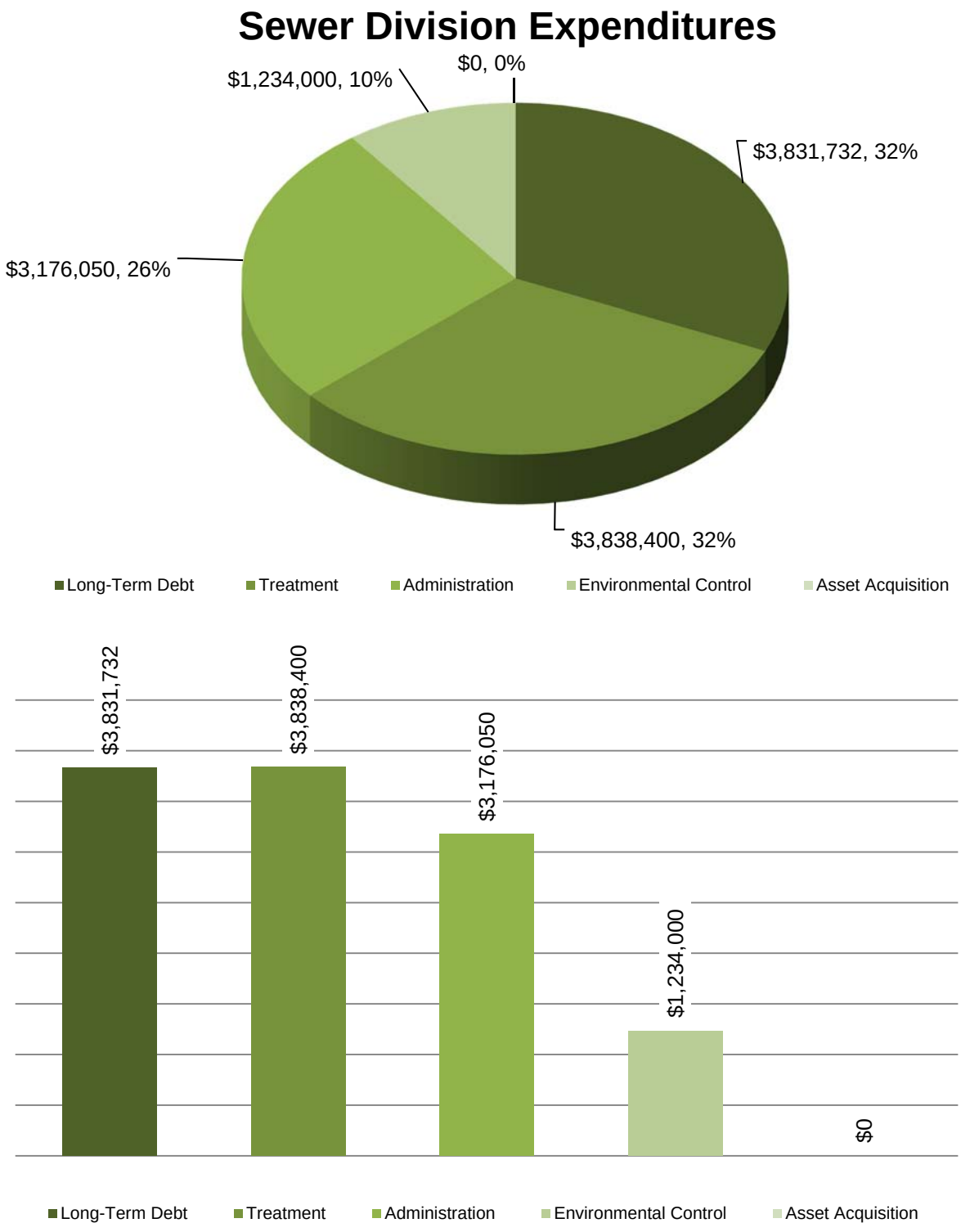
The Fiscal Year 2017 operating budget totals $26,465,082 (excluding capital improvement projects) distinguished by the following three enterprise funds.

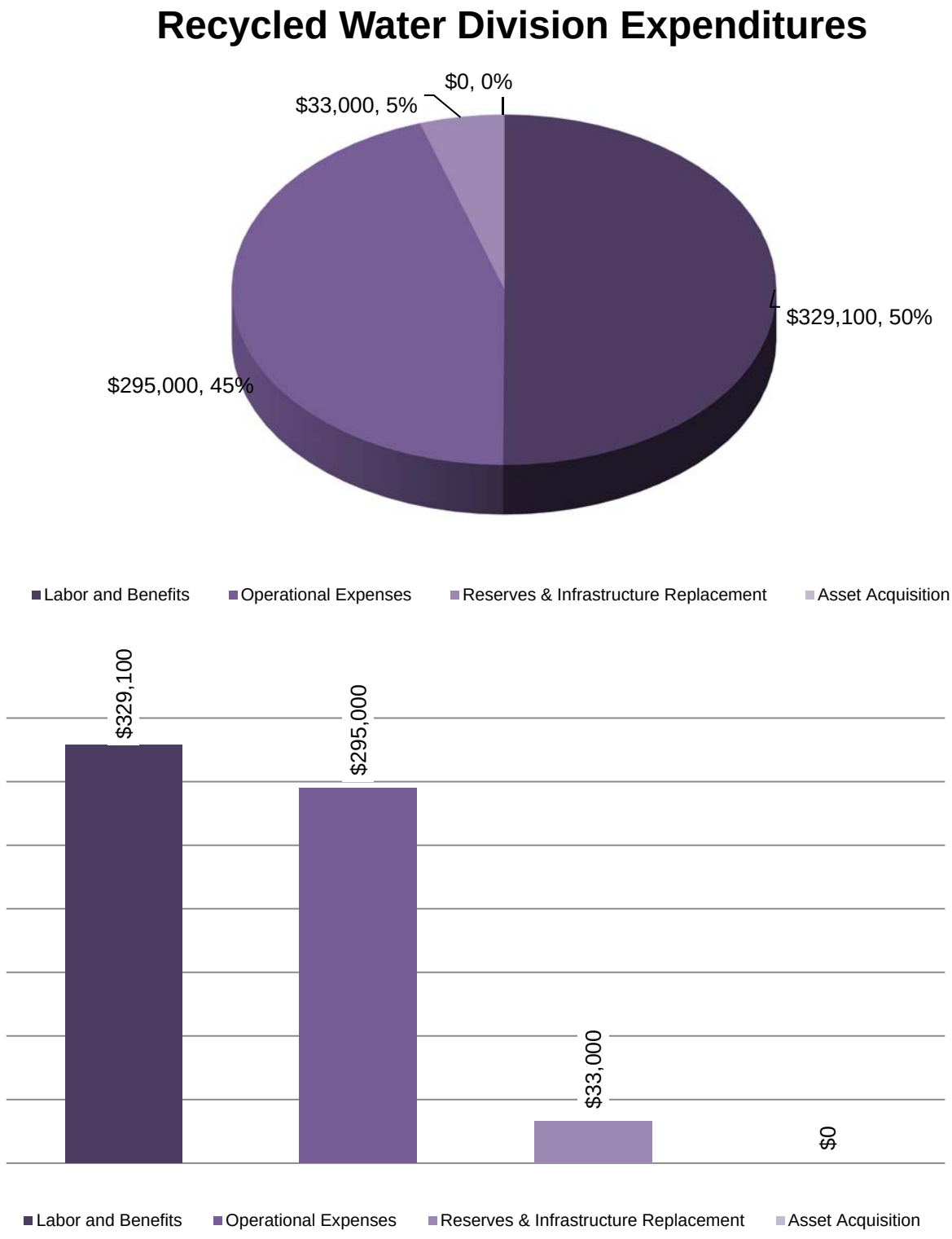


The departmental expenses for each of the enterprise funds are also provided below:






Sewer Division Expenditures
$0, 0%
$1,234,000, 10%
$3,831,732, 32%
$3,176,050, 26%
$3,838,400, 32%
Long-Term Debt
Treatment
Administration
Environmental Control
Asset Acquisition
$3,831,732
$3,838,400
$3,176,050
$1,234,000
$0
Long-Term Debt
Treatment
Administration
Environmental Control
Asset Acquisition


Recycled Water Division Expenditures
$0, 0%
$33,000, 5%
$329,100, 50%
$295,000, 45%
Labor and Benefits
Operational Expenses
Reserves & Infrastructure Replacement
Asset Acquisition
$329,100
$295,000
$33,000
$0
Labor and Benefits
Operational Expenses
Reserves & Infrastructure Replacement
Asset Acquisition

WATER DIVISION BUDGET

Fiscal Year 2017

OPERATING REVENUE:	G/L Number	Adopted Budget Fiscal Year 2016	Adopted Budget Fiscal Year 2017
Potable Water - Commodity Charge	02-40010	6,165,000	6,000,000
Construction Water - Commodity Charge	02-40011	20,000	20,000
Imported Water - San Gorgonio Pass W.A.	02-40012	250,000	250,000
Imported Water - San Bernardino Valley M.W.D.	02-40013	850,000	850,000
Potable Water - Commodity Multi-Unit Discount	02-40014	(130,000)	(105,000)
Water Wholesale Revenue	02-40015	70,000	237,600
Water Service Establishment Fee	02-40016	3,000	5,000
Potable Water - Service Demand Charge	02-41000	3,000,000	3,173,000
Fire Service Standby Fee	02-41001	25,000	30,000
Construction Water - Service Charge	02-41003	14,000	15,000
Potable Water - Service Charge Multi-Unit Discount	02-41005	(120,000)	(135,000)
Unauthorized Use of Water Charges	02-41010	2,000	2,000
Water Meter & Service Installation Charges	02-41110	35,000	65,000
Fire Flow Measurements & Reports	02-41112	3,500	3,500
Disconnection and Reconnection Charges	02-41113	130,000	125,000
Delinquent Payment Charges	02-41121	150,000	125,000
Management & Accounting Services	02-42123	160,000	160,000
Bad Debt Write-Off & Recovery	02-42124	(20,000)	(20,000)
Total Operating Revenue		10,607,500	10,801,100
NON-OPERATING REVENUE:			
Transfer - Reserve Fund to Asset Acquisition		-	-
Transfer - Dev. Impact Fees to 2004A Debt Service		-	-
Transfer - Rate Stabilization Fund to Water Division		-	-
Interest Earned	02-43010	15,000	30,000
Property Tax-Unsecured	02-43110	110,000	115,000
Property Tax-Secured	02-43120	2,400,000	2,500,000
Tax Collection-Prior	02-43130	15,000	20,000
Other Taxes	02-43140	185,000	160,000
Rental Income - Water Stock	02-49110	-	1,700
Miscellaneous Non-Operating Revenue	02-49150	80,000	100,000
Total Non-Operating Revenue		2,805,000	2,926,700
TOTAL WATER REVENUE		**13,412,500**	**13,727,800**
OPERATING EXPENSE			
Water Resource Department		5,050,200	4,983,900
Public Works Department		2,385,800	2,569,500
Administration Department		3,682,486	3,878,735
Long-Term Debt Obligations		2,294,014	2,295,665
Asset Acquisition		-	-
Total Operating Expense		13,412,500	13,727,800
TOTAL WATER EXPENSES		**13,412,500**	**13,727,800**

WATER DIVISION BUDGET

Fiscal Year 2017

WATER RESOURCE DEPARTMENT	G/L Number	Adopted Budget Fiscal Year 2016	Adopted Budget Fiscal Year 2017
Labor	02-5-01-50010	884,000	935,000
Benefits	02-5-01-500xx	424,200	460,150
Repair & Maintenance - Structures	02-5-01-51003	275,000	200,000
Repair & Maintenance - Valves	02-5-01-51011	10,000	7,500
General Supplies & Expenses	02-5-01-51140	2,000	1,250
Power Purchases	02-5-01-51210	1,650,000	1,400,000
Electricity and Fuel	02-5-01-51211	5,000	5,000
Imported Water Purchases	02-5-01-51316	1,100,000	1,100,000
Licenses & Permits	02-5-01-54019	25,000	25,000
Laboratory Services	02-5-01-54110	75,000	75,000
Operation, Repair & Maintenance - YVRWFF	02-5-01-57040	600,000	775,000
Sub-Total Water Resource Department		**5,050,200**	**4,983,900**
PUBLIC WORKS DEPARTMENT			
Labor	02-5-03-50010	1,042,800	1,200,000
Benefits	02-5-03-500xx	707,000	683,500
Repair & Maintenance - Vehicles & Equipment	02-5-03-51001	150,000	160,000
Repair & Maintenance - Valves	02-5-03-51011	10,000	10,000
Repair & Maintenance - Pipelines	02-5-03-51010	275,000	225,000
Repair & Maintenance - Service Lines	02-5-03-51021	100,000	175,000
Repair & Maintenance - Fire Hydrants	02-5-03-51022	25,000	40,000
Repair & Maintenance - Water Meters	02-5-03-51030	75,000	75,000
General Supplies & Expenses	02-5-03-51140	1,000	1,000
Sub-Total Utility Services Department		**2,385,800**	**2,569,500**

WATER DIVISION BUDGET

Fiscal Year 2017

ADMINISTRATIVE SERVICES DEPARTMENT	G/L Number	Adopted Budget Fiscal Year 2016	Adopted Budget Fiscal Year 2017
Labor	02-5-06-50010	705,000	750,000
Director Fees	02-5-06-50012	19,000	20,000
Benefits	02-5-06-500xx	377,236	381,000
Repair & Maintenance - Structures	02-5-06-51003	20,000	40,000
Safety Equipment & Supplies	02-5-06-51120	25,000	25,000
Petroleum Products	02-5-06-51125	125,000	100,000
Office Supplies	02-5-06-51130	30,000	30,000
General Supplies & Expenses	02-5-06-51140	30,000	30,000
Electricity	02-5-06-51211	28,000	30,000
Natural Gas	02-5-06-51213	3,000	3,000
Dues & Subscriptions	02-5-06-54002	10,000	16,500
Computer Expenses	02-5-06-54005	65,000	100,000
Postage	02-5-06-54010	6,000	5,000
Printing & Publications	02-5-06-54011	7,500	7,500
Education & Training	02-5-06-54012	15,000	15,000
Utility Billing Expenses	02-5-06-54013	180,000	150,000
Public Relations	02-5-06-54014	9,000	50,000
Travel Related Expenses	02-5-06-54016	10,000	10,000
Certifications & Renewals	02-5-06-54017	6,000	7,000
Meeting Related Expenses	02-5-06-54020	6,000	6,000
Waste Disposal	02-5-06-54024	2,750	2,500
Telephone	02-5-06-54025	42,000	60,000
Conservatin & Rebates	02-5-06-54099	-	250,000
Contractual Services	02-5-06-54104	65,000	80,000
Legal	02-5-06-54107	45,000	40,000
Audit & Accounting	02-5-06-54108	16,000	16,000
Professional Fees	02-5-06-54109	150,000	250,000
Reserve Funds	02-5-06-55500	200,000	209,235
Water Infrastructure Replacement	02-5-06-xxxxx	1,265,000	1,000,000
Insurance	02-5-06-56001	105,000	100,000
Regulatory Compliance	02-5-06-57030	55,000	25,000
Election Related Expenses	02-5-06-57090	-	10,000
Beaumont Basin Watermaster	02-5-06-57096	60,000	60,000
Sub-Total Administration Department		**3,682,486**	**3,878,735**

LONG-TERM DEBT	G/L Number	Adopted Budget Fiscal Year 2016	Adopted Budget Fiscal Year 2017
Debt Service - Series 2004A Principal	02-5-40-57201	980,000	1,030,000
Debt Service - Series 2004A Interest	02-5-40-57402	1,314,014	1,265,665
Rate Stabilization Fund	02-5-40-57806	-	-
Sub-Total Long-Term Debt		**2,294,014**	**2,295,665**
ASSET ACQUISITION			
Water Department	02-5-40-57001	-	-
Utility Services Department	02-5-40-57003	-	-
Administration	02-5-40-57006	-	-
Sub-Total Asset Acquisition		**-**	**-**

SEWER DIVISION BUDGET

Fiscal Year 2017

OPERATING REVENUE:	G/L Number	Adopted Budget Fiscal Year 2016	Adopted Budget Fiscal Year 2017
Sewer Service Establishment Fee	03-40016	500	500
Sewer Service Demand Charge	03-41000	11,675,000	11,830,000
Sewer Service Demand - Multi-User Discount	03-41005	(200,000)	(200,000)
Sewer Lateral Installation	03-41110	1,000	2,500
Septage Pumping	03-41116	-	-
Penalty Late Charges	03-41121	150,000	150,000
Revenue-Other, Operating	03-42122	2,000	5,682
Bad Debt Write-Off & Recovery	03-41124	(20,000)	(20,000)
Total Operating Revenue		**11,608,500**	**11,768,682**
NON-OPERATING REVENUE:			
Reserve Fund Transfer - Asset Acquisition		-	-
Reserve Fund Transfer - Operational Expenses		-	-
Rate Stabilization Fund Transfer In		-	-
Interest Earned	03-43010	15,000	35,000
Property Tax-Unsecured	03-43110	10,000	10,000
Property Tax-Secured	03-43120	125,000	50,000
Tax Collection-Prior	03-43130	10,000	175,000
Other Taxes	03-43140	1,500	1,500
Misc. Non-Operating Revenue	03-49150	50,000	40,000
Total Non-Operating Revenue		**211,500**	**311,500**
TOTAL SEWER REVENUE		**11,820,000**	**12,080,182**
OPERATING EXPENSE			
Treatment		3,789,816	3,838,400
Administration		3,151,840	3,176,050
Environmental Control		982,300	1,234,000
Debt Service		3,896,044	3,831,732
Asset Acquisition		-	-
Total Operating Expense		**11,820,000**	**12,080,182**
TOTAL SEWER EXPENSES		**11,820,000**	**12,080,182**

SEWER DIVISION BUDGET

Fiscal Year 2017

TREATMENT	G/L Number	Adopted Budget Fiscal Year 2016	Adopted Budget Fiscal Year 2017
Labor	03-5-02-50010	985,300	895,000
Benefits	03-5-02-500xx	541,900	542,400
Repair and Maintenance - Structures	03-5-02-51003	225,000	325,000
Automation Control	03-5-02-51010	65,000	65,000
Chemicals	03-5-02-51106	490,000	450,000
Propane	03-5-02-51111	5,000	5,000
Laboratory Supplies	03-5-02-51115	30,000	30,000
General Supplies & Expenses	03-5-02-51140	1,000	1,000
Utilities-Power Purchases	03-5-02-51210	830,000	850,000
Laboratory Services	03-5-02-54110	115,000	120,000
Sludge Disposal	03-5-02-57031	300,000	300,000
Brineline Operating Expenses	03-5-02-57034	201,616	255,000
	Sub-total Treatment	**3,789,816**	**3,838,400**

ADMINISTRATION			
Labor	03-5-06-50010	660,000	600,000
Directors Fees	03-5-06-50012	19,000	20,000
Benefits	03-5-06-500xx	351,340	349,250
Safety Equipment	03-5-06-51120	10,000	10,000
Petroleum Products	03-5-06-51125	22,500	20,000
Office Supplies	03-5-06-51130	4,000	4,000
General Supplies & Expenses	03-5-06-51140	17,500	20,000
Dues & Subscriptions	03-5-06-54002	10,000	10,000
Management & Accounting Services	03-5-06-54003	160,000	160,000
Computer Expenses	03-5-06-54005	95,000	95,000
Printing & Publications	03-5-06-54011	1,500	5,500
Education & Training	03-5-06-54012	7,000	7,000
Public Relations	03-5-06-54014	7,500	7,500
Travel Related Expenses	03-5-06-54016	5,000	7,500
Certifications & Renewals	03-5-06-54017	5,000	7,000
Licenses & Permits	03-5-06-54019	50,000	60,000
Meeting Related Expenses	03-5-06-54020	5,000	5,000
Waste Disposal	03-5-06-54024	12,500	13,000
Telephone	03-5-06-54025	20,000	30,000
Drinking Water	03-5-06-54030	1,000	1,000
Contractual Services	03-5-06-54104	30,000	35,000
Legal	03-5-06-54107	45,000	45,000
Audit & Accounting	03-5-06-54108	16,000	16,000
Professional Fees	03-5-06-54109	150,000	150,000
Reserve Funds	03-5-06-55500	500,000	563,300
Sewer Infrastructure Replacement	03-5-06-xxxxx	800,000	800,000
Insurance	03-5-06-56001	105,000	100,000
Regulatory Compliance	03-5-06-57030	42,000	35,000
	Sub-Total Administration	**3,151,840**	**3,176,050**

SEWER DIVISION BUDGET

Fiscal Year 2017

ENVIRONMENTAL CONTROL	G/L Number	Adopted Budget Fiscal Year 2016	Adopted Budget Fiscal Year 2017
Labor	03-5-07-50011	310,000	465,000
Benefits	03-5-07-500xx	209,300	243,000
Repair and Maintenance - Structures	03-5-07-51003	270,000	270,000
General Supplies & Expenses	03-5-07-51140	1,000	1,000
Lift Station No. 1	03-5-07-51241	85,000	125,000
Lift Station No. 2	03-5-07-51242	15,000	16,000
Lift Station No. 3	03-5-07-51243	5,000	5,000
Lift Station No. 4	03-5-07-51244	20,000	40,000
Lift Station No. 8	03-5-07-51248	3,000	3,000
Professional Fees	03-5-07-54109	60,000	60,000
Laboratory Services	03-5-07-54110	4,000	6,000
Sub-Total Environmental Control		**982,300**	**1,234,000**
LONG-TERM DEBT			
Debt Service - Principal WRWRF Project	03-5-40-57202	2,097,629	2,147,975
Debt Service - Principal Brineline Project	03-5-40-57203	401,939	412,790
Debt Service - Principal WISE Project	03-5-40-57204	125,600	127,970
Debt Service - Principal R-10.3 Project	03-5-40-57205	36,663	37,495
Debt Service - Principal Crow Street & B-12.1	03-5-40-57206	18,357	13,795
Debt Service - Interest	03-5-40-57403	1,215,856	1,091,707
Debt Service - Rate Stabilization Fund	57006.03.06	-	-
Sub-Total Long-Term Debt		**3,896,044**	**3,831,732**
ASSET ACQUISITION			
Sewer Treatment Department	03-5-40-57002	-	-
Sewer Administration Department	03-5-40-57006	-	-
Environmental Control Department	03-5-40-57007	-	-
Sub-Total Asset Acquisition		**-**	**-**

RECYCLED WATER DIVISION

Fiscal Year 2017

OPERATING REVENUE:	G/L Number	Adopted Budget Fiscal Year 2016	Adopted Budget Fiscal Year 2017
Recycled Water - Commodity Charge	04-40010	450,000	552,850
Construction Recycled Water - Commodity Chrg	04-40011	10,000	20,000
Recycled Water - Service Demand Charge	04-41000	42,500	50,000
Construction Recycled Water - Service Charge	04-41003	5,000	5,000
Meter/Lateral Installation	04-41110	1,500	2,000
Delinquent Payment Charges	04-41121	500	500
Revenue-Other, Operating	04-41122	250	250
Total Operating Revenue		**509,750**	**630,600**
NON-OPERATING REVENUE:			
Transfer - Reserve Fund	- -	-	-
Interest Earned	04-43010	8,000	7,500
Property Tax-Unsecured	04-43110	1,000	1,000
Property Tax-Secured	04-43120	15,000	15,000
Tax Collection-Prior	04-43130	1,000	1,000
Other Taxes	04-43140	1,000	1,000
Misc. Non-Operating Revenue	04-49150	1,500	1,000
Total Non-Operating Revenue		**27,500**	**26,500**
TOTAL RECYCLED WATER REVENUE		**537,250**	**657,100**

RECYCLED WATER DIVISION

Fiscal Year 2017

OPERATING EXPENSES	G/L Number	Adopted Budget Fiscal Year 2016	Adopted Budget Fiscal Year 2017
Labor - Recycled Water	04-5-06-50010	226,630	275,000
Director Fees	04-5-06-50012	2,500	2,500
Benefits - Recycled Water	04-5-06-500xx	31,900	51,600
R&M - Structures	04-5-06-51003	50,000	20,000
R&M - Pipelines	04-5-06-51020	7,500	5,000
R&M - Service Lines	04-5-06-51021	15,000	5,000
R&M - Fire Hydrants	04-5-06-51022	5,000	2,500
R&M - Meters	04-5-06-51030	1,500	25,000
General Supplies and Expenses	04-5-06-51140	250	2,000
Utilities - Power Purchases	04-5-06-51210	77,720	85,000
Dues & Subscriptions	04-5-06-54002	4,000	6,500
Computer Expense	04-5-06-54005	5,000	7,500
Printing & Publications	04-5-06-54011	1,000	1,000
Education & Training	04-5-06-54012	3,500	4,000
Public Relations	04-5-06-54014	3,500	2,500
Travel & Meeting Related Expenses	04-5-06-54016	2,000	5,000
Certifications & Renewals	04-5-06-54017	250	1,000
Licenses & Permits	04-5-06-54019	2,500	35,000
Meeting Related Expenses	04-5-06-54020	250	1,000
Telephone	04-5-06-54025	750	1,000
Contractual Services	04-5-06-54104	1,500	3,500
Legal	04-5-06-54107	1,000	4,000
Audit & Accounting	04-5-06-54108	-	2,500
Professional Services	04-5-06-54109	25,000	25,000
Laboratory Services	04-5-06-54110	1,000	1,000
Reserve Funds	04-5-06-55500	8,000	8,000
Recycled Water Infrastructure Replacement	04-5-06-xxxxx	25,000	25,000
Regulatory Compliance	04-5-06-57030	25,000	40,000
Environmental Compliance	04-5-06-57040	10,000	10,000
	Total Operating Expense	**537,250**	**657,100**
TOTAL RECYCLED WATER EXPENSES		**537,250**	**657,100**

Yucaipa Valley Water District

Workshop Memorandum 16-090

Date: **May 24, 2016**

Subject: **Identification and Declaration of Bad Debt for Calendar Year 2014**

The District actively pursues delinquent accounts, and in most cases is able to collect delinquent fees through a combination of shutting off the services provided, sending accounts to a collection agency, placing a lien on the property involved, and/or pursuing the claims through legal actions such as small claims court. In some cases, the District is unable to collect the money owed the District.

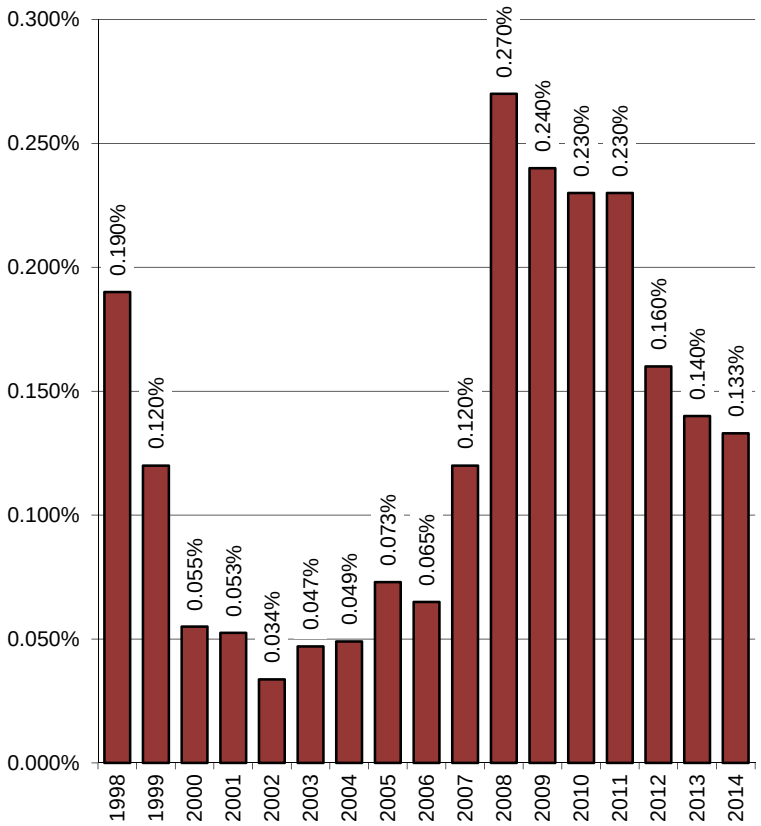
During the calendar year 2014, we did see a continued drop in foreclosures. The amount of bad debt due to foreclosures is $8,407.61, which includes $2,172.47 sewer only customers and $6,235.14 water/sewer customers. This leaves account balances of $18,513.16 that was not collected in the normal collection process.

As a proper accounting procedure, this bad debt must be accounted for on our financial statements; otherwise the debt remains as a liability on the District's annual audit.

District staff has compiled the list of uncollectible accounts for calendar year 2014, which amounts to $26,920.77. Of this total, 31% of the bad debts are due to home foreclosures. This trend will hopefully continue to decline for calendar year 2015.

Overall, the total amount of bad debt represents a loss of 0.133% for calendar year 2014 based on total water and sewer revenues.

Bad Debt as a Percentage of Annual Water and Sewer Revenues



Yucaipa Valley Water District

Workshop Memorandum 16-091

Date: **May 24, 2016**

Subject: **Review of Draft Resolution No. 2016-xx Establishing the Appropriation Limit for Fiscal Year 2016-17**

In 1979, Proposition 4 (the Gann Initiative) was approved adding Article XIII B to the State Constitution. The provisions of this article place limits on the amount of revenue that can be appropriated by al entities of government. This initiative was designed to constrain government expenditures by placing an annual limit on revenue and appropriation growth.

In June 1990, Proposition 111 amended Article XIII B, making changes in the base year upon which the appropriations limit is based, establishing new cost of living factors and new population factors for use by local governments, and increasing appropriations not subject to the limit (primarily qualified capital outlay projects). The financial constraints of Article XIII B apply to State, all cities, counties, special districts and all other political subdivisions.

The Yucaipa Valley Water District has completed the computation associated with the appropriation limitation for fiscal year 2016-2017 ("FY 2017"). Based on the attached calculation, the proposed adjustment to the District's appropriation limit includes an increase of 0.89% for the increase in non-residential assessed valuation of new construction and a weighted average increase of 1.34% for population change. These percentages have been used to calculate an increase in the appropriation limit from $65,883,838 in FY 2016 to $70,350,762 in FY 2017. This represents an overall increase of 6.78% to the appropriation limit. The District's annual appropriations are well below this limit.

RESOLUTION NO. 2016-xx

RESOLUTION OF THE YUCAIPA VALLEY WATER DISTRICT ESTABLISHING THE APPROPRIATION LIMIT FOR FISCAL YEAR 2016-17

WHEREAS, Article XIII-B of the California Constitution provides that the State and each local government shall be subject to an appropriations limit, to govern the maximum amount of each entity's appropriations subject to limitation, in any fiscal year, as the same are defined in Article XIII-B; and

WHEREAS, California Government Code Section 7910 provides for the annual establishment by local jurisdictions of their appropriations limit for each fiscal year, and further provides that upon establishment of such appropriations limit any judicial action or proceeding to attack, review, set aside, void, or annul such action by the District must be commenced within forty-five (45) days of the effective date of the resolution establishing the appropriations limit; and

WHEREAS, documentation used in determining the appropriations limit has been made available to the public for a period of not less than fifteen (15) days prior to Board consideration of this resolution.

NOW THEREFORE, the Board of Directors of the Yucaipa Valley Water District does hereby resolve, determine and order as follows:

Section 1. That in accordance with Article XIIIB of the California Constitution and Section 7910 of the Government Code of the State of California, the appropriation limit for the Fiscal Year 2016-17 for the Yucaipa Valley Water District is established as $70,350,762.

Section 2. The adjustment factors for computation of the FY 2016-17 appropriation limitation have been identified in the calculation of the appropriation limit.

Section 3. That documentation used in the determination of such appropriation limit has been available to the public at least fifteen days prior to this meeting of the Board of Directors.

This Resolution is effective immediately upon adoption.

PASSED AND ADOPTED this 1st day of June 2016.

YUCAIPA VALLEY WATER DISTRICT ATTEST:

Lonni Granlund, President Board of Directors

Joseph B. Zoba, General Manager

Yucaipa Valley Water District

12770 Second Street, Yucaipa, California 92399

Appropriation Limit for the Yucaipa Valley Water District

Fiscal Year 2016-2017

Prepared by: Vicky Elisalda, Controller

Overview of Appropriation Limit

Introduction

In the 1970s soaring property values in California led to dramatic increases in property taxes, prompting a tax revolt that resulted in the passage of Proposition 13 in the June 1978 California primary. Proposition 13 reduced local property taxes by 57% and thereby slashed the revenue base for local governments and schools. Over the years the revenue loss has been made up by a varying mix of state funds and new revenue from specialized local fees and taxes, as well as by outright local budget cuts.

The California tax revolt did not end with Proposition 13. Seventeen months later, in November 1979, voters passed the Proposition 4, known as the Gann Amendment. Proposition 4 imposed a limit on most state and local government expenditures from tax sources. The limit is calculated annually according to a formula based on population and the cost of living. Under Proposition 4, excess revenues must be returned to the taxpayers.

Both Propositions 13 and 4 have been modified in the years since their passage. While weakened by the changes, Propositions 13 and 4 remain constraints on California state and local budgeting, and continue to be focal points in the public policy debate about California taxing and spending.

Summary of Proposition 4 and Related Voter Initiatives

Modern spending limits in California began in 1979 with the passage of Proposition 4 (Article XIII B of the California Constitution). Also called the Gann Initiative after its chief sponsor, Paul Gann, Proposition 4 places an appropriations limit on most spending from tax proceeds. The limit for each year is equal to the prior year's spending with upward adjustments allowed for changes in population and the cost of living. Most state and local government appropriations are subject to the limit. However, the law exempts certain appropriations from the limit including capital outlay, debt service and local government subventions. When the limit is exceeded, Proposition 4 requires the surplus to be returned to the taxpayers within two years. Appropriations in the two year period can be averaged before becoming subject to the excess revenue provisions of the Gann limit.

Voters approved the Gann limit in a November 1979 special election by a 74% margin. The late 1970s were a time of surplus state revenues in California, and voter exasperation at the inability of the legislature and the governor to agree on a plan to return the surplus to the taxpayers in the form of refunds or property tax relief helped fuel the tax revolt that led first to Proposition 13 and then to Proposition 4. With the Gann limit, voters took the matter of spending limits into their own hands, and ignored objections that spending limit formulas are an artificial constraint on policy making and hamper the government's ability to address citizen needs.

During the early 1980s, increases in population and the consumer price index outpaced the growth in state revenue, and the Gann limit was not reached. However, a surge in state revenues in 1987 caused the limit to be breached, and led to the first refund to taxpayers.

Voters have modified the Gann limit in a series of initiative measures. Proposition 99 (1988) and Proposition 10 (1998) exempted new tobacco taxes from the Gann limit. Proposition 98 (1988) required public schools to receive a share of revenues exceeding the Gann limit. That share was changed to a flat 50% by Proposition 111 (1990). Proposition 111 also added three exemptions to the Gann limit: capital outlay spending, appropriations supported by increased gas taxes, and appropriations resulting from national disasters. Most significantly, Proposition 111 changed the formula used for calculating annual adjustments to the Gann limit. Under Proposition 111, the population factor is based on a weighted average of population and K-14 school enrollment growth (instead of population only), and the cost of living factor is based solely on California per-capita personal income growth (and no longer takes into account the Consumer Price Index).

The changes to the Gann limit formula under Proposition 111 substantially raised the Gann limit, making it less likely that the limit will be reached in the future. Many observers believe that in its current weakened state the Gann limit has ceased to be a meaningful constraint on state spending.

How the Appropriations Limit Works

Which Revenues Are Subject to Limit?

Article XIII B places a limit on appropriations from most, but not all, government revenue sources. The limit applies to appropriations from proceeds of taxes from both the general fund and special funds of government entities. Proceeds of taxes include tax revenues, interest earnings on invested tax revenues, and any revenues collected by a regulatory license fee or user charge in excess of the amount needed to cover the cost of providing the regulation, product, or service.

Which Appropriations Are Subject to Limit?

Appropriations for almost all government functions are subject to limitation under Article XIII B. However, there are some important exceptions. The original Proposition 4 provided that the following appropriations are not limited, even if made from proceeds of taxes:

- Subventions from the state to local governments and schools, the use of which is unrestricted (these subventions are not subject to the state's limit, but instead are counted as subject to the local entity's limit);
- Appropriations to pay for costs of complying with federal laws and court mandates;
- Payments for interest and redemption charges on pre-existing (i.e., pre-Proposition 4) or voter-approved bonded indebtedness;
- Withdrawals from previously appropriated reserve funds; and
- Refunds of taxes.

Proposition 111 excluded capital outlay from the appropriations limit. This change reflects the fact that while capital outlay appropriations are made during a single budget year, they reflect long-term investments that are utilized over a number of years. Appropriations directly related to an emergency, such as a fire, earthquake, or other natural disaster, were also excluded from the limit by Proposition 111. No reduction in future limits is required for appropriations made for these emergency purposes.

The "Base Year" Limit.

The first year that limits were in effect was FY 1980-81. The base year for determining the appropriations limit in FY 1980-81 was FY 1978-79. Actual appropriations in the FY 1978-79 fiscal year that had been financed by the proceeds of taxes were the starting point. Appropriations not subject to limitation were subtracted from that figure and this became the "base year" level of appropriations for computing all subsequent years' limits. Proposition 111 updated the base year for calculating the limit for each government entity to FY 1986-87. For fiscal years beginning with FY 1990-91, the limit for each entity is the FY 1986-87 limit adjusted annually as specified by Article XIII B as amended by Proposition 111.

Annual Adjustments to the Limit.

The appropriations limit for each year since FY 1980-81 is calculated by adjusting the base year limit for changes in the cost-of-living and population. Proposition 111, passed by the voters in June 1990, and revised each of the adjustment factors. Specifically, annual adjustments to limits, either upward or downward, are made as follows:

- Cost-of-Living.
  - State and schools are adjusted by the change in California per capita personal income.
  - Local agencies are adjusted by the change in California per capita personal income or the change in the local property tax roll due to the addition of new nonresidential construction.
- Population.
  - The State uses a population factor calculated by adding: (a) the change in the state's total population weighted by the percent of the budget spent on non-educational programs, and (b) the change in average daily attendance (ADA) for K-14 education weighted by the percentage of the budget spent on K-14 education.
  - Local agencies use a population factor that is the percentage change in the jurisdiction or in the county in which the jurisdiction is located. Special districts located in two or more counties may use the change in the county in which the district has the highest assessed valuation.
  - Counties. The population change for counties can be calculated by using one of three methods: (a) the percentage change in population within the county; (b) the percentage change in population for both the county itself and contiguous counties; or (c) the percentage change in population within the incorporated portion of the county.
  - K-14 Schools use the change in population is the percentage change in average daily attendance.
- Program Transfers. Limits of governmental entities are modified to reflect transfers of financial responsibility from one level of government to another. The limit of the new service provider is increased by the amount the former service provider's limit is reduced.
- Funding Transfers. Adjustments either upward or downward are made to account for transfers of program funding sources, for example from tax revenues (subject to limit) to fees (not subject to limit).

The level of appropriations actually made by a government entity in any year does not have any bearing on the calculation of the appropriations limit for the subsequent years. Each year's limit is computed based on the prior year's limit, not the prior year's appropriations.

If the governing body actually appropriates less money than what would be permitted by the limit, it has "room" under its limit, and the limit will be further adjusted the following year for cost-of-

living and population changes. A government entity does not "lose" room under its limit for the future by appropriating less than the maximum permitted in any year.

Appropriations Permitted in Excess of the Limit.

Article XIII B sets forth two circumstances under which governments may make appropriations in excess of their limits:

- Emergency. Appropriations for declared emergencies do not count towards and may be made in excess of the limit. Proposition 111 removed the requirement that the limits for future years must be reduced over a three-year period so that there would be no total increase in allowable appropriations.
- Voter Approval. Article XIII B permits voters of a jurisdiction to authorize an increase in the appropriations limit. However, no voter-approved increase may be in effect for more than four years. At the end of the four-year period, either the voters must approve another increase or the limit must return to the level it would otherwise have been.

When Revenues Exceed the Appropriations Limit.

A government entity may receive revenues during a fiscal year that exceed its appropriations limit. Proposition 111 allows governments to average appropriations over a two year period before becoming subject to the excess revenue provisions of Article XIII B. In other words, a government entity can offset appropriations that exceeds its appropriations limit in one year of a two-year period by appropriating less than the limit in the other year. If, after taking this two year averaging into account, authority to appropriate is not provided by either an emergency declaration or voter approval, Article XIII B as amended by Propositions 98 and 111 sets forth a process for disposing of the excess State revenues:

- Education Programs. After the two-year averaging period, 50% of any excess revenues are transferred to the State School Fund for elementary, secondary and community college education. A portion of this excess revenue (25%) may effectively be built into the base used to calculate future funding required by Proposition 98 if the excess funds are used for a specified purpose. The transfer to education is not required if the state's average expenditure per student and average class size is equal to or exceeds that of the ten states with the best performance in these areas.
- Return of Excess. The 50% of excess revenues remaining after the transfer to education must be returned to taxpayers within the following two years. The return can be made through a reduction in the tax rate or as a fee reduction.

Sources:

- "Government Appropriations Limit: Article XIII B of the Constitution." In: *Revenue and Taxation Reference Book 2003*. Sacramento: Assembly Revenue and Taxation Committee, Chapter 5, January 2004, pp. 150-7.
- "Tax and Expenditure Limitation in California: Proposition 13 & Proposition 4", Institute of Governmental Studies, University of California at Berkeley (http://www.igs.berkeley.edu/library/htTaxSpendLimits2003.html)

Calculation of Appropriation Limitation

Appropriation Limit Calculation – Part I

Greater of California per capita income or increase in non-residential assessed valuation of new construction		1.0537
Population percentage change factor	x	1.0134
Ratio of change		1.0678

Appropriation Limit Calculation – Part II

Ratio of change		1.0678
Prior year appropriation limit (2015-2016)	x	$65,883,838
Current year appropriation (2016-2017)		$70,350,762

Computation of Appropriation Limitation

Adjustment Factors

Cost of Living Price Factor: The computation of the appropriation limitation involves the greater of the two cost of living factors:

Percentage change in per capita income[1]		Percentage change in local assessment roll due to addition of non-residential new construction[2]
5.37%	or	0.89%

Population: The computation of the appropriation limitation involves the greater of the following factors for each county:

Growth within San Bernardino County[3]		Growth within the City of Yucaipa
0.93%	or	**1.26%**

Growth within Riverside County[4]		Growth within the City of Calimesa
1.26%	or	**1.86%**

The underlined factors above were used in calculating the District's appropriation limit for the fiscal year 2016-2017. The resolution adopted by the Board of Directors will specify these factors.

[1] State of California, Department of Finance correspondence dated May 2016 (Attachment A)
[2] Ms. Linda Santillano, Auditor-Controller Office, Property Tax Section, July 2015 (909) 382-3189
[3] State of California, Department of Finance correspondence dated May 2016 (Attachment B-SB)
[4] State of California, Department of Finance correspondence dated May 2016 (Attachment B-RIV)

Procedure for Administering Revenue and Taxation Code Section 2228(a)

The Revenue and Taxation Code, Section 2228(a) requires the following:

If a special district is located within a single county or within more than one city or any combination of cities and incorporated area within a single county, the annual percentage change in population for the district shall be that established for the county or the weighted average of the percentage change of each city and the unincorporated area.

If a special district is located within more than one county, the annual percentage change in population for the district shall be the weighted average of the percentage change of each county or city or unincorporated area within the district or any combination provided that the areas selected are mutually exclusive.

The State of California, Department of Finance has specified that the weights applied shall be the relative share of the assessed valuation (A.V.) of the district in each local agency.

Population Percentage Change Factor:

Local Agency	Percentage Population Change		Assessed Valuation	=	Percentage Change x A.V.
San Bernardino County	1.26%	x	5,755,111,674	=	72,514,407
Riverside County	1.86%	x	939,536,512	=	17,475,379
Total District			6,694,648,186		89,989,786

Weighted Average Percent Change:

$$\frac{\text{Total District (Percentage Change x A.V.)}}{\text{Total District Assessed Valuation}} = \frac{89,989,786}{6,694,648,186} = 0.013442$$

Attachments

DEPARTMENT OF FINANCE
OFFICE OF THE DIRECTOR
EDMUND G. BROWN JR. ▪ GOVERNOR
STATE CAPITOL ■ ROOM 1145 ■ SACRAMENTO CA ■ 95814-4998 ■ WWW.DOF.CA.GOV

May 2016

Dear Fiscal Officer:

Subject: Price Factor and Population Information

Appropriations Limit
The California Revenue and Taxation Code, section 2227, requires the Department of Finance (Finance) to transmit an estimate of the percentage change in population to local governments. Each local jurisdiction must use their percentage change in population factor for January 1, 2016, in conjunction with a change in the cost of living, or price factor, to calculate their appropriations limit for fiscal year 2016-17. Attachment A provides the change in California's per capita personal income and an example for utilizing the price factor and population percentage change factor to calculate the 2016-17 appropriations limit. Attachment B provides the city and unincorporated county population percentage change. Attachment C provides the population percentage change for counties and their summed incorporated areas. The population percentage change data excludes federal and state institutionalized populations and military populations.

Population Percent Change for Special Districts
Some special districts must establish an annual appropriations limit. The Revenue and Taxation Code, section 2228 provides additional information regarding the appropriations limit. Article XIII B, section 9(C) of the California Constitution exempts certain special districts from the appropriations limit calculation mandate. The Code and the California Constitution can be accessed at the following website: http://leginfo.legislature.ca.gov/faces/codes.xhtml.

Special districts required by law to calculate their appropriations limit must present the calculation as part of their annual audit. Any questions special districts have on this requirement should be directed to their county, district legal counsel, or the law itself. No state agency reviews the local appropriations limits.

Population Certification
The population certification program applies only to cities and counties. Revenue and Taxation Code section 11005.6 mandates Finance to automatically certify any population estimate that exceeds the current certified population with the State Controller's Office. **Finance will certify the higher estimate to the State Controller by June 1, 2016.**

Please Note: Prior year's city population estimates may be revised.

If you have any questions regarding this data, please contact the Demographic Research Unit at (916) 323-4086.

MICHAEL COHEN
Director
By:

AMY COSTA
Chief Deputy Director

Attachment

May 2016

Attachment A

A. **Price Factor**: Article XIII B specifies that local jurisdictions select their cost of living factor to compute their appropriation limit by a vote of their governing body. The cost of living factor provided here is per capita personal income. If the percentage change in per capita personal income is selected, the percentage change to be used in setting the fiscal year 2016-17 appropriation limit is:

Per Capita Personal Income

Fiscal Year (FY)	Percentage change over prior year
2016-17	5.37

B. Following is an example using sample population change and the change in California per capita personal income as growth factors in computing a 2016-17 appropriation limit.

2016-17:

Per Capita Cost of Living Change = 5.37 percent
Population Change = 0.90 percent

Per Capita Cost of Living converted to a ratio: $\frac{5.37 + 100}{100} = 1.0537$

Population converted to a ratio: $\frac{0.90 + 100}{100} = 1.0090$

Calculation of factor for FY 2016-17:

$1.0537 \times 1.0090 = 1.0632$

Fiscal Year 2016-17

Attachment B
Annual Percent Change in Population Minus Exclusions*
January 1, 2015 to January 1, 2016 and Total Population, January 1, 2016

County City	Percent Change 2015-2016	--- Population Minus Exclusions --- 1-1-15	 1-1-16	Total Population 1-1-2016
San Bernardino				
Adelanto	1.13	32,489	32,856	33,497
Apple Valley	1.14	73,811	74,656	74,656
Barstow	0.73	23,777	23,950	24,360
Big Bear Lake	0.66	4,873	4,905	4,905
Chino	1.58	79,405	80,657	85,934
Chino Hills	1.08	78,022	78,866	78,866
Colton	0.66	53,000	53,351	53,351
Fontana	1.40	206,996	209,895	209,895
Grand Terrace	0.65	12,236	12,315	12,315
Hesperia	0.90	92,394	93,226	93,226
Highland	0.57	53,340	53,645	53,645
Loma Linda	0.73	24,405	24,582	24,649
Montclair	0.92	38,332	38,686	38,686
Needles	0.62	5,004	5,035	5,035
Ontario	1.01	168,177	169,869	169,869
Rancho Cucamonga	1.18	173,202	175,251	175,251
Redlands	0.48	68,040	68,368	68,368
Rialto	0.85	106,425	107,330	107,330
San Bernardino	0.76	212,305	213,922	215,491
Twentynine Palms	-0.15	18,039	18,012	26,138
Upland	0.68	75,265	75,774	75,774
Victorville	0.84	118,126	119,120	123,510
Yucaipa	1.26	53,109	53,779	53,779
Yucca Valley	0.65	21,144	21,281	21,281
Unincorporated	0.68	299,430	301,464	309,759
County Total	0.93	2,091,346	2,110,795	2,139,570

*Exclusions include residents on federal military installations and group quarters residents in state mental institutions, state and federal correctional institutions and veteran homes.

Fiscal Year 2016-17

Attachment B
Annual Percent Change in Population Minus Exclusions*
January 1, 2015 to January 1, 2016 and Total Population, January 1, 2016

County City	Percent Change 2015-2016	--- Population Minus Exclusions --- 1-1-15	 1-1-16	Total Population 1-1-2016
Riverside				
Banning	0.57	30,659	30,834	30,834
Beaumont	3.48	43,601	45,118	45,118
Blythe	0.70	13,937	14,034	19,813
Calimesa	1.86	8,138	8,289	8,289
Canyon Lake	0.69	10,608	10,681	10,681
Cathedral City	0.75	53,810	54,212	54,261
Coachella	0.90	45,001	45,407	45,407
Corona	0.82	163,317	164,659	164,659
Desert Hot Springs	0.88	28,794	29,048	29,048
Eastvale	3.84	60,825	63,162	63,162
Hemet	0.66	79,548	80,070	80,070
Indian Wells	1.42	5,336	5,412	5,412
Indio	1.59	86,683	88,058	88,058
Jurupa Valley	1.32	96,898	98,177	98,177
Lake Elsinore	3.16	58,997	60,861	61,006
La Quinta	1.69	39,311	39,977	39,977
Menifee	1.97	87,286	89,004	89,004
Moreno Valley	0.83	203,696	205,383	205,383
Murrieta	1.08	112,576	113,795	113,795
Norco	0.69	23,919	24,085	26,896
Palm Desert	1.02	48,835	49,335	49,335
Palm Springs	0.97	46,204	46,654	46,654
Perris	1.72	72,476	73,722	73,722
Rancho Mirage	0.84	17,920	18,070	18,070
Riverside	0.95	321,596	324,637	324,696
San Jacinto	1.21	47,087	47,656	47,656
Temecula	1.18	107,794	109,064	109,064
Wildomar	1.18	34,758	35,168	35,168
Unincorporated	1.16	359,889	364,054	364,413
County Total	1.26	2,309,499	2,338,626	2,347,828

*Exclusions include residents on federal military installations and group quarters residents in state mental institutions, state and federal correctional institutions and veteran homes.

PIP1112

COUNTY OF SAN BERNARDINO
PROPERTY INFORMATION SYSTEM
AGENCY PERCENTAGE CHANGE REPORT

DATE 07/23/2015
PAGE 7

AGENCY	NEW CONST INCREASE	TOTAL INCREASE	PERCENTAGE CHANGE
VICTOR VALLEY RDA - 1993	3,745,487.00	470,041,793.00	0.7968
VICTOR VALLEY UNION HIGH SCH DIST	7,460,832.00	631,623,385.00	1.1812
VICTORVILLE OLD/MIDTOWN RDA	77,429.00	367,736.00	21.0555
VICTORVILLE RDA BEAR VALLEY ROAD	2,098,913.00	17,460,222.00	12.0211
VICTORVILLE STREET LIGHT DISTRICT	2,009,621.00	201,943,028.00	0.9951
VICTORVILLE WATER DISTRICT	5,499,812.00	511,355,065.00	1.0755
WEST VALLEY MVCD	206,225,521.00	1,542,819,677.00	13.3667
WEST VALLEY WATER DISTRICT	21,340,247.00	420,766,886.00	5.0717
YERMO COMMUNITY SERVICES DISTRICT	906.00	2,151,614.00	0.0421
YUCAIPA RDA	296,848.00	4,639,528.00	6.3982
YUCAIPA VALLEY WATER DISTRICT	1,544,471.00	174,415,915.00	0.8855
YUCAIPA-CALIMESA JOINT UNIFIED	1,573,504.00	180,754,550.00	0.8705
YUCCA VALLEY RDA	12,289,730.00	31,745,763.00	38.7129
29 PALMS CEMETERY DISTRICT	4,466,051.00	22,239,995.00	20.0811

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SAN BERNARDINO COUNTY AUDITOR-CONTROLLER
PROPERTY TAX DIVISION

11/06/15
PAGE 298

AGENCY NET VALUATIONS

ROLL YEAR: 2015

AGENCY: WW29 YUCAIPA VALLEY WATER DISTRICT

ADDRESS: P.O. BOX 730
YUCAIPA, CA 923990730

	ACCT CODE	ACCT NAME	NET VALUE BEFORE RDA	RDA INCREMENT	NET VALUE AFTER RDA	HOME OWNERS EXEMPTION	TAX ROLL VALUE
	DA01	DEBT SERVICE IMP 2					
LOCAL SECURED			806,268,685	69,475,566	736,793,119	9,552,200	727,240,919
SECURED UTILITY			0	0	0	0	0
UNSECURED			15,505,213	7,298,991	8,206,222	0	8,206,222
TOTAL			821,773,898	76,774,557	744,999,341	9,552,200	735,447,141
	GA01	GENERAL TAX LEVY					
LOCAL SECURED			3,830,322,260	161,630,788	3,668,691,472	56,687,721	3,612,003,751
SECURED UTILITY			0	0	0	0	0
UNSECURED			62,518,127	16,647,960	45,870,167	0	45,870,167
TOTAL			3,892,840,387	178,278,748	3,714,561,639	56,687,721	3,657,873,918
	GA02	GENERAL TAX LEVY IMP DIST A					
LOCAL SECURED			2,258,590,210	79,108,061	2,179,482,149	36,374,226	2,143,107,923
SECURED UTILITY			0	0	0	0	0
UNSECURED			30,913,276	7,113,076	23,800,200	0	23,800,200
TOTAL			2,289,503,486	86,221,137	2,203,282,349	36,374,226	2,166,908,123

04-4849	CVWD IMP DIST 50		14,475,146	14,475,146	14,344	14,489,490
04-4850	MISSION SPRINGS WTR IMP 101		680,689,080	680,689,080	6,179,702	686,868,782
04-4851	MISSION SPRINGS WTR DIST		1,941,909,673	1,941,909,673	278,982,647	2,220,892,320
04-4852	MISSION SPRINGS WTR IMP A		12,562,944	12,562,944	2,340,040	14,902,984
04-4853	MISSION SPRINGS WTR IMP B		136,295,753	136,295,753	90,021,809	226,317,562
04-4854	MISSION SPRINGS WTR IMP C		903,022	903,022	23,495,613	24,398,635
04-4855	MISSION SPRINGS WTR IMP 1		690,754,789	690,754,789	2,948,260	693,703,049
04-4856	MISSION SPRINGS WTR IMP 2		3,852,683	3,852,683	3,090,208	6,942,891
04-4857	DESERT HOT SPRGS CO WATER IMP DC					
04-4860	DESERT HOT SPRINGS CO WTR IMP D					
04-4861	EAST BLYTHE COUNTY WATER		36,652,434	36,652,434	447,253	37,099,687
04-4866	MISSION SPRINGS WTR IMP G		1,278,469,115	1,278,469,115	9,272,630	1,287,741,745
04-4867	MISSION SPRINGS WTR IMP E		41,953,806	41,953,806	79,881	42,033,687
04-4868	MISSION SPRINGS WTR IMP F		123,933,568	123,933,568	40,246,730	164,180,298

JUN 25, 2015 DISTRICT VALUATIONS - AUDITOR FY15-16 PRPCA050 PAGE 32

DIST. NO.	DISTRICT NAME	SBE	LOCAL SECURED	TOTAL SECURED	UNSECURED	TOTAL VALUE
04-4869	MISSION SPRINGS WTR IMP S		1,233,102,576	1,233,102,576	24,050,197	1,257,152,773
04-4871	IDYLLWILD CO WATER		349,008,680	349,008,680	2,441,985	351,450,665
04-4872	IDYLLWILD CO WATER IMP 1		133,352,699	133,352,699	2,315,090	135,667,789
04-4873	IDYLLWILD CO WTR IMP 1 ANX					
04-4875	HOME GARDENS CO WATER		117,482,490	117,482,490	899,839	118,382,329
04-4877	MURRIETA COUNTY WATER					
04-4882	CHIRIACO SUMMIT CO WATER		3,287,642	3,287,642	171,348	3,458,990
04-4888	COACHELLA VAL IMP DST 16 ANX 3					
04-4889	CVWD WATER ASMT 65		71,020,836	71,020,836	10,204,190	81,225,026
04-4891	PINE COVE CO WATER		204,507,676	204,507,676	130,068	204,637,744
04-4892	PINYON PINES CO WATER		9,811,217	9,811,217		9,811,217
04-4893	WEST VALLEY WATER		120,376,547	120,376,547	23,813,065	144,189,612
04-4895	YUCAIPA VALLEY CO WATER ANX					
04-4896	YUCAIPA VALLEY CO WTR		690,734,206	690,734,206	11,850,526	702,584,732
04-4897	YUCAIPA VALLEY CO WTR IMP 1		248,802,306	248,802,306	7,715,331	256,517,637
04-4898	YUCAIPA VALLEY CO WTR IMP 2		124,905,126	124,905,126	239,144	125,144,270
04-4899	YUCAIPA VAL CO WTR IMP#1 ANX					
04-4905	EDGEMONT COMM SERV DEBT SERVICE					
04-4904	JURUPA COMMUNITY SRV IMP 2 DS		1,146,111,779	1,146,111,779	39,323,653	1,185,435,432
04-4907	LA SIERRA COMMUNITY SRV DS		1,181,463,286	1,181,463,286	51,729,509	1,233,192,795
04-4913	NORCO COMMUNITY SRV DS		2,930,964,041	2,930,964,041	57,836,319	2,988,800,360
04-4917	RUBIDOUX COMMUNITY SRV DS		1,308,422,129	1,308,422,129	69,776,052	1,378,198,181
04-4923	MURRIETA FIRE PROT DEBT SERVICE					
04-4933	DESERT HOSPITAL DEBT SERVICE					
04-4935	HEMET VAL HOSPITAL DEBT SERVICE					
04-4936	HEMET VAL HOSPITAL DEBT SERV 2					
04-4963	COACHELLA SANITARY DEBT SERVICE					

JUN 25, 2015 DISTRICT VALUATIONS - AUDITOR FY15-16 PRPCA050 PAGE 33

DIST. NO.	DISTRICT NAME	SBE	LOCAL SECURED	TOTAL SECURED	UNSECURED	TOTAL VALUE
04-4965	HOME GARDENS SANI DEBT SERVICE					
04-4966	VALLEY SANITARY DEBT SERVICE					
04-4971	IDYLLWILD CO WTR DEBT SER					
04-4972	IDYLLWILD CO WATER IMP 1 DS		143,794,758	143,794,758	2,397,410	146,192,168
04-4981	CABAZON CO WATER IMP DIST 1 DS		269,517	269,517		269,517
04-4983	EAST BLYTHE CO WATER DEBT SERV					
04-5121	DESERT WATER AG		12,879,105,591	12,879,105,591	374,894,619	13,254,000,210
04-5122	DESERT WTR AG RSFUDO		17,076,915	17,076,915		17,076,915

Yucaipa Valley Water District

Workshop Memorandum 16-092

Date: **May 24, 2016**

Subject: **Renewal of Insurance Policies for Fiscal Year 2017**

On June 3, 2015, the Board of Directors approved the renewal of insurance policies with Alteris for a sum not to exceed $199,870 for property, liability, automobile, and equipment breakdown insurance. These insurance policies expire on June 30, 2015.

The District staff will be meeting with our insurance broker prior to the board workshop. Based on the result of this meeting, information may be provided at the board workshop for recommended insurance policy renewals for Fiscal Year 2017.

Director Comments

Yucaipa Valley Water District

Adjournment

Yucaipa Valley Water District

Yucaipa Valley Water District

FACTS ABOUT THE YUCAIPA VALLEY WATER DISTRICT

Service Area Size: 40 square miles (sphere of influence is 68 square miles)

Elevation Change: 3,140 foot elevation change (from 2,044 to 5,184 feet)

Number of Employees:
5 elected board members
62 full time employees

Operating Budget:
Water Division - $13,397,500
Sewer Division - $11,820,000
Recycled Water Division - $537,250
Total Annual Budget - $25,754,750

Number of Services:
12,434 water connections serving 17,179 units
13,559 sewer connections serving 20,519 units
64 recycled water connections

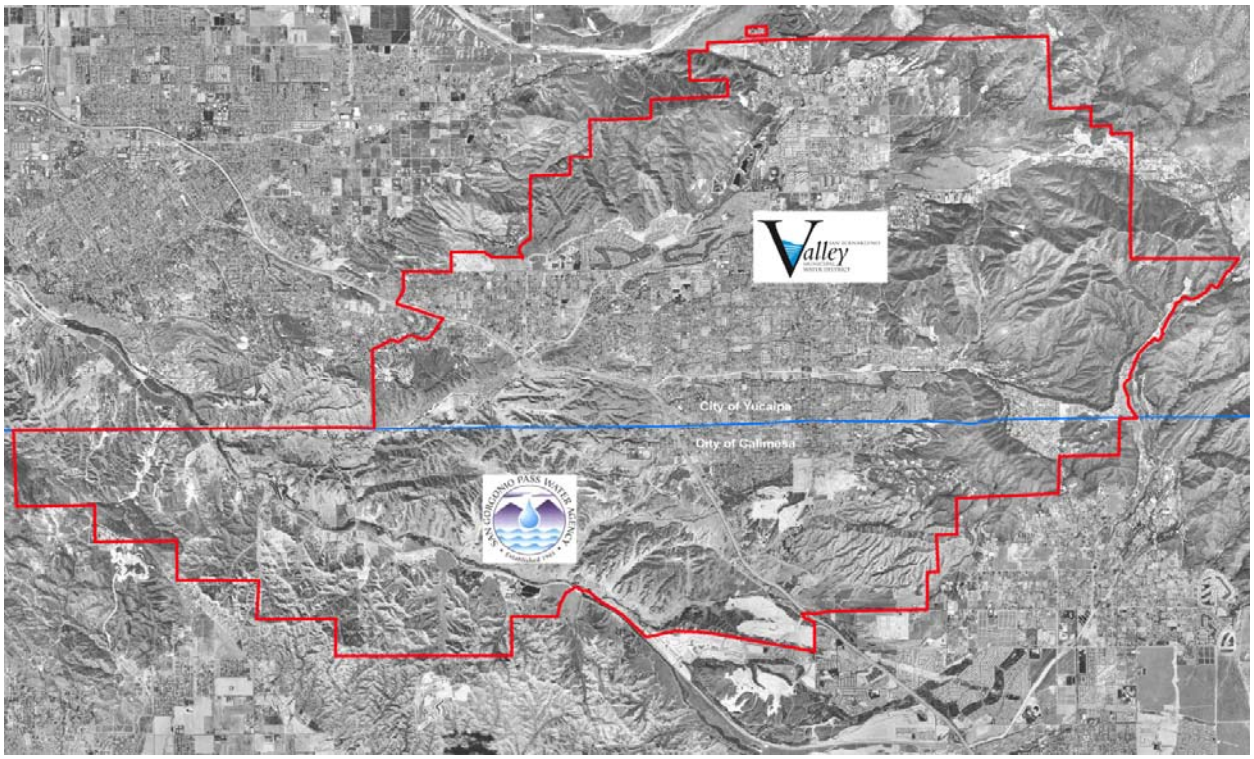
Water System:
215 miles of drinking water pipelines
27 reservoirs - 34 million gallons of storage capacity
18 pressure zones
12,000 ac-ft annual water demand (3.9 billion gallons)
Two water filtration facilities:
- 1 mgd at Oak Glen Surface Water Filtration Facility
- 12 mgd at Yucaipa Valley Regional Water Filtration Facility

Sewer System:
8.0 million gallon treatment capacity - current flow at 4.0 mgd
205 miles of sewer mainlines
5 sewer lift stations
4,500 ac-ft annual recycled water prod. (1.46 billion gallons)

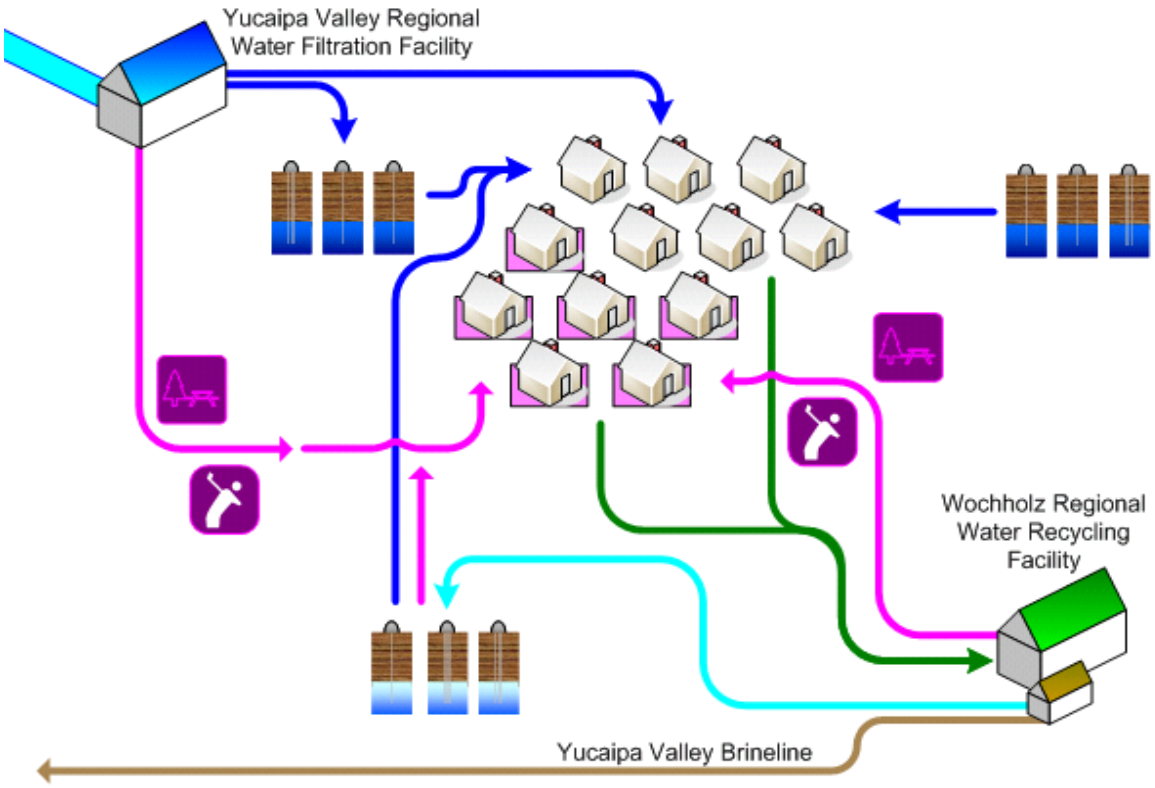
Recycled Water:
22 miles of recycled water pipelines
5 reservoirs - 12 million gallons of storage
1,200 ac-ft annual recycled demand (0.4 billion gallons)

Brine Disposal:
2.2 million gallon desalination facility at sewer treatment plant
1.108 million gallons of Inland Empire Brine Line capacity
0.295 million gallons of treatment capacity in Orange County

State Water Contractors: San Bernardino Valley Municipal Water District
San Gorgonio Pass Water Agency



Sustainability Plan: A Strategic Plan for a Sustainable Future: The Integration and Preservation of Resources, adopted on August 20, 2008.



Yucaipa Valley Water District

THE MEASUREMENT OF WATER PURITY

One part per hundred is generally represented by the percent (%).
This is equivalent to about fifteen minutes out of one day.

One part per thousand denotes one part per 1000 parts.
This is equivalent to about one and a half minutes out of one day.

One part per million (**ppm**) denotes one part per 1,000,000 parts.
This is equivalent to about 32 seconds out of a year.

One part per billion (**ppb**) denotes one part per 1,000,000,000 parts.
This is equivalent to about three seconds out of a century.

One part per trillion (**ppt**) denotes one part per 1,000,000,000,000 parts.
This is equivalent to about three seconds out of every hundred thousand years.

One part per quadrillion (**ppq**) denotes one part per 1,000,000,000,000,000 parts.
This is equivalent to about two and a half minutes out of the age of the Earth (4.5 billion years).

Yucaipa Valley Water District

GLOSSARY OF COMMONLY USED TERMS

Every profession has specialized terms which generally evolve to facilitate communication between individuals. The routine use of these terms tends to exclude those who are unfamiliar with the particular specialized language of the group. Sometimes jargon can create communication cause difficulties where professionals in related fields use different terms for the same phenomena.

Below are commonly used water terms and abbreviations with commonly used definitions. If there is any discrepancy in definitions, the District's Regulations Governing Water Service is the final and binding definition.

Acre Foot of Water - The volume of water (325,850 gallons, or 43,560 cubic feet) that would cover an area of one acre to a depth of 1 foot.

Activated Sludge Process – A secondary biological sewer treatment process where bacteria reproduce at a high rate with the introduction of excess air or oxygen, and consume dissolved nutrients in the wastewater.

Annual Water Quality Report - The document is prepared annually and provides information on water quality, constituents in the water, compliance with drinking water standards and educational material on tap water. It is also referred to as a Consumer Confidence Report (CCR).

Aquifer - The natural underground area with layers of porous, water-bearing materials (sand, gravel) capable of yielding a supply of water; see Groundwater basin.

Backflow - The reversal of water's normal direction of flow. When water passes through a water meter into a home or business it should not reverse flow back into the water mainline.

Best Management Practices (BMPs) - Methods or techniques found to be the most effective and practical means in achieving an objective. Often used in the context of water conservation.

Biochemical Oxygen Demand (BOD) – The amount of oxygen used when organic matter undergoes decomposition by microorganisms. Testing for BOD is done to assess the amount of organic matter in water.

Biosolids – Biosolids are nutrient rich organic and highly treated solid materials produced by the sewer treatment process. This high-quality product can be used as a soil amendment on farm land or further processed as an earth-like product for commercial and home gardens to improve and maintain fertile soil and stimulate plant growth.

Catch Basin – A chamber usually built at the curb line of a street, which conveys surface water for discharge into a storm sewer.

Capital Improvement Program (CIP) – Projects for repair, rehabilitation, and replacement of assets. Also includes treatment improvements, additional capacity, and projects for the support facilities.

Collector Sewer – The first element of a wastewater collection system used to collect and carry wastewater from one or more building sewer laterals to a main sewer.

Coliform Bacteria – A group of bacteria found in the intestines of humans and other animals, but also occasionally found elsewhere and is generally used as an indicator of sewage pollution.

Combined Sewer Overflow – The portion of flow from a combined sewer system, which discharges into a water body from an outfall located upstream of a wastewater treatment plant, usually during wet weather conditions.

Combined Sewer System– Generally older sewer systems designed to convey both sewage and storm water into one pipe to a wastewater treatment plant.

Conjunctive Use - The coordinated management of surface water and groundwater supplies to maximize the yield of the overall water resource. Active conjunctive use uses artificial recharge, where surface water is intentionally percolated or injected into aquifers for later use. Passive conjunctive use is to simply rely on surface water in wet years and use groundwater in dry years.

Consumer Confidence Report (CCR) - see Annual Water Quality Report.

Cross-Connection - The actual or potential connection between a potable water supply and a non-potable source, where it is possible for a contaminant to enter the drinking water supply.

Disinfection By-Products (DBPs) - The category of compounds formed when disinfectants in water systems react with natural organic matter present in the source water supplies. Different disinfectants produce different types or amounts of disinfection byproducts. Disinfection byproducts for which regulations have been established have been identified in drinking water, including trihalomethanes, haloacetic acids, bromate, and chlorite

Drought - a period of below average rainfall causing water supply shortages.

Dry Weather Flow – Flow in a sanitary sewer during periods of dry weather in which the sanitary sewer is under minimum influence of inflow and infiltration.

Fire Flow - The ability to have a sufficient quantity of water available to the distribution system to be delivered through fire hydrants or private fire sprinkler systems.

Gallons per Capita per Day (GPCD) - A measurement of the average number of gallons of water use by the number of people served each day in a water system. The calculation is made by dividing the total gallons of water used each day by the total number of people using the water system.

Groundwater Basin - An underground body of water or aquifer defined by physical boundaries.

Groundwater Recharge - The process of placing water in an aquifer. Can be a naturally occurring process or artificially enhanced.

Hard Water - Water having a high concentration of minerals, typically calcium and magnesium ions.

Hydrologic Cycle - The process of evaporation of water into the air and its return to earth in the form of precipitation (rain or snow). This process also includes transpiration from plants, percolation into the ground, groundwater movement, and runoff into rivers, streams and the ocean; see Water cycle.

Infiltration – Water other than sewage that enters a sewer system and/or building laterals from the ground through defective pipes, pipe joints, connections, or manholes. Infiltration does not include inflow. See *Inflow.*

Inflow - Water other than sewage that enters a sewer system and building sewer from sources such as roof vents, yard drains, area drains, foundation drains, drains from springs and swampy areas, manhole covers, cross connections between storm drains and sanitary sewers, catch basins, cooling towers, storm waters, surface runoff, street wash waters, or drainage. Inflow does not include infiltration. See *Infiltration*.

Inflow / Infiltration (I/I) – The total quantity of water from both inflow and infiltration.

Mains, Distribution - A network of pipelines that delivers water (drinking water or recycled water) from transmission mains to residential and commercial properties, usually pipe diameters of 4" to 16".

Mains, Transmission - A system of pipelines that deliver water (drinking water or recycled water) from a source of supply the distribution mains, usually pipe diameters of greater than 16".

Meter - A device capable of measuring, in either gallons or cubic feet, a quantity of water delivered by the District to a service connection.

Overdraft - The pumping of water from a groundwater basin or aquifer in excess of the supply flowing into the basin. This pumping results in a depletion of the groundwater in the basin which has a net effect of lowering the levels of water in the aquifer.

Peak Flow – The maximum flow that occurs over a specific length of time (e.g., daily, hourly, instantaneously).

Pipeline - Connected piping that carries water, oil or other liquids. See Mains, Distribution and Mains, Transmission.

Point of Responsibility, Metered Service - The connection point at the outlet side of a water meter where a landowner's responsibility for all conditions, maintenance, repairs, use and replacement of water service facilities begins, and the District's responsibility ends.

Potable Water - Water that is used for human consumption and regulated by the California Department of Public Health.

Pressure Reducing Valve - A device used to reduce the pressure in a domestic water system when the water pressure exceeds desirable levels.

Pump Station - A drinking water or recycled water facility where pumps are used to push water up to a higher elevation or different location.

Reservoir - A water storage facility where water is stored to be used at a later time for peak demands or emergencies such as fire suppression. Drinking water and recycled water systems will typically use concrete or steel reservoirs. The State Water Project system considers lakes, such as Shasta Lake and Folsom Lake to be water storage reservoirs.

Runoff - Water that travels downward over the earth's surface due to the force of gravity. It includes water running in streams as well as over land.

Sanitary Sewer System - Sewer collection system designed to carry sewage, consisting of domestic, commercial, and industrial wastewater. This type of system is not designed nor intended to carry water from rainfall, snowmelt, or groundwater sources. See *Combined Sewer System*.

Sanitary Sewer Overflow – Overflow from a sanitary sewer system caused when total wastewater flow exceeds the capacity of the system. See *Combined Sewer Overflow*.

Santa Ana River Interceptor (SARI) Line – A regional brine line designed to convey 30 million gallons per day of non-reclaimable wastewater from the upper Santa Ana River basin to the sewer treatment plant operated by Orange County Sanitation District.

Secondary Treatment – Biological sewer treatment, particularly the activated-sludge process, where bacteria and other microorganisms consume dissolved nutrients in wastewater.

Supervisory Control and Data Acquisition (SCADA) - A computerized system which provides the ability to remotely monitor and control water system facilities such as reservoirs, pumps and other elements of water delivery.

Service Connection - The water piping system connecting a customer's system with a District water main beginning at the outlet side of the point of responsibility, including all plumbing and equipment located on a parcel required for the District's provision of water service to that parcel.

Sludge – Untreated solid material created by the treatment of sewage.

Smart Irrigation Controller - A device that automatically adjusts the time and frequency which water is applied to landscaping based on real-time weather such as rainfall, wind, temperature and humidity.

Special District - A political subdivision of a state established to provide a public services, such as water supply or sanitation, within a specific geographic area.

Surface Water - Water found in lakes, streams, rivers, oceans or reservoirs behind dams.

Total Suspended Solids (TSS) – The amount of solids floating and in suspension in water or sewage.

Transpiration - The process by which water vapor is released into the atmosphere by living plants.

Trickling Filter – A biological secondary treatment process in which bacteria and other microorganisms, growing as slime on the surface of rocks or plastic media, consume nutrients in primary treated sewage as it trickles over them.

Underground Service Alert (USA) - A free service that notifies utilities such as water, telephone, cable and sewer companies of pending excavations within the area (dial 8-1-1 at least 2 working days before you dig).

Urban Runoff - Water from city streets and domestic properties that typically carries pollutants into the storm drains, rivers, lakes, and oceans.

Valve - A device that regulates, directs or controls the flow of water by opening, closing or partially obstructing various passageways.

Wastewater – Any water that enters the sanitary sewer.

Water Banking - The practice of actively storing or exchanging in-lieu surface water supplies in available groundwater basin storage space for later extraction and use by the storing party or for sale or exchange to a third party. Water may be banked as an independent operation or as part of a conjunctive use program.

Water cycle - The continuous movement water from the earth's surface to the atmosphere and back again; see Hydrologic cycle.

Water Pressure - Pressure created by the weight and elevation of water and/or generated by pumps that deliver water to the tap.

Water Service Line - The pipeline that delivers potable water to a residence or business from the District's water system. Typically the water service line is a 1" to 1½" diameter pipe for residential properties.

Watershed - A region or land area that contributes to the drainage or catchment area above a specific point on a stream or river.

Water Table - The upper surface of the zone of saturation of groundwater in an unconfined aquifer.

Water Transfer - A transaction, in which a holder of a water right or entitlement voluntarily sells/exchanges to a willing buyer the right to use all or a portion of the water under that water right or entitlement.

Water Well - A hole drilled into the ground to tap an underground water aquifer.

Wetlands - Lands which are fully saturated or under water at least part of the year, like seasonal vernal pools or swamps.

Wet Weather Flow – Dry weather flow combined with stormwater introduced into a combined sewer system, and dry weather flow combined with infiltration/inflow into a separate sewer system.

Yucaipa Valley Water District

COMMONLY USED ABBREVIATIONS

AQMD	Air Quality Management District
BOD	Biochemical Oxygen Demand
CARB	California Air Resources Board
CCTV	Closed Circuit Television
CWA	Clean Water Act
EIR	Environmental Impact Report
EPA	U.S. Environmental Protection Agency
FOG	Fats, Oils, and Grease
GPD	Gallons per day
MGD	Million gallons per day
O & M	Operations and Maintenance
OSHA	Occupational Safety and Health Administration
POTW	Publicly Owned Treatment Works
PPM	Parts per million
RWQCB	Regional Water Quality Control Board
SARI	Santa Ana River Inceptor
SAWPA	Santa Ana Watershed Project Authority
SBVMWD	San Bernardino Valley Municipal Water District
SCADA	Supervisory Control and Data Acquisition system
SSMP	Sanitary Sewer Management Plan
SSO	Sanitary Sewer Overflow
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
WDR	Waste Discharge Requirements
YVWD	Yucaipa Valley Water District