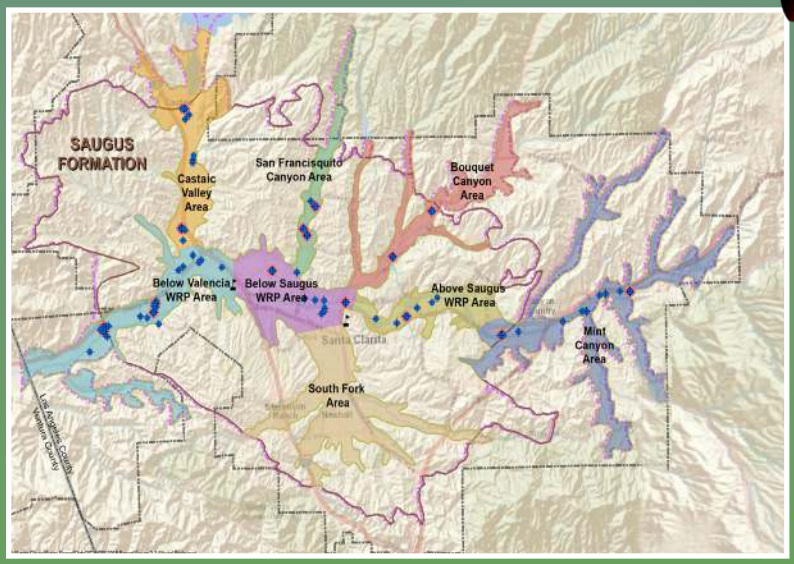
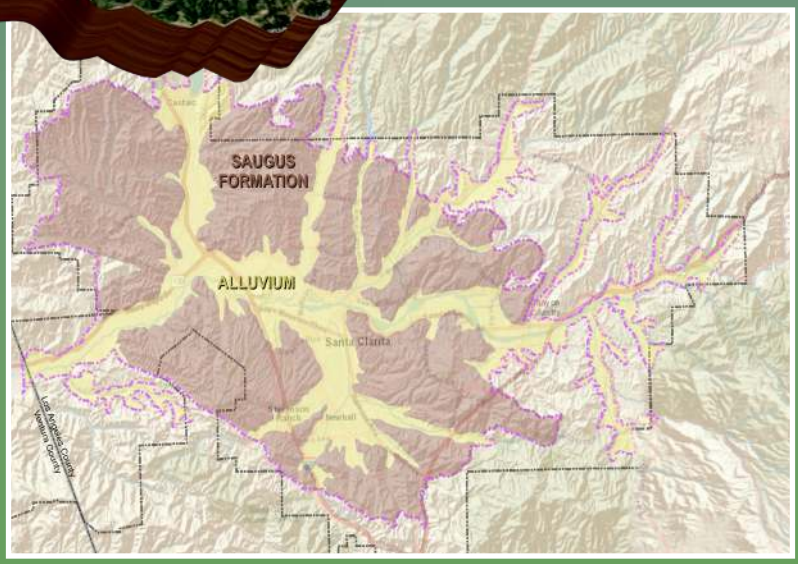
2018 Santa Clarita Valley Water Report

Santa Clarita Valley Water Agency
Los Angeles County Waterworks
District 36





Luhdorff & Scalmanini
Consulting Engineers

May 2019

2018
Santa Clarita Valley
Water Report

prepared for:

Santa Clarita Valley Water Agency
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List of Abbreviations and Acronyms

af	acre-feet
afy	acre-feet per year
Basin	Santa Clara River Valley Groundwater Basin
BMPs	Best Management Practices
BiOp	Biological Opinion
BV/RRB	Buena Vista/Rosedale-Rio Bravo
BVWSD	Buena Vista Water Storage District
CDPH	California Department of Public Health
CEQA	California Environmental Quality Act
CIMIS	California Irrigation Management Information System
CLWA	Castaic Lake Water Agency
County	Ventura County State Water Project Contractors
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project
DDW	Division of Drinking Water
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
EIR	Environmental Impact Report
GPCD	gallons per capita per day
GRR	Groundwater Replenishment Reuse
GSA	Groundwater Sustainability Agency
GSI	GSI Water Solutions, Inc.
GSP	Groundwater Sustainability Plan
GWMP	Groundwater Management Plan
HA	Hydrologic Area
JPA	Joint Power Authority
LACFCD	Los Angeles County Flood Control District

LACWD 36	Los Angeles County Waterworks District 36
LADPW	Los Angeles County Department of Public Works
LADWP	Los Angeles County Department of Water and Power
LSCE	Luhdorff and Scalmanini Consulting Engineers
MCL	Maximum Contaminant Level
mg/L	milligrams per liter
MOU	Memorandum of Understanding
NCEI	National Centers for Environmental Information
NCWD	Newhall County Water District
NWD	Newhall Water Division
NMFS	National Marine Fishery Service
OU	Operating Unit
PCE	Tetrachloroethylene
PTF	Perchlorate Treatment Facility
RAP	Remedial Action Plan
RD	Remedial Design
RRBWBP	Rosedale-Rio Bravo Water Banking Program
RRBWSD	Rosedale-Rio Bravo Water Storage District
RWMP	Recycled Water Master Plan
SCV-GSA	Santa Clarita Valley Groundwater Sustainability Agency
SCVSD	Santa Clarita Valley Sanitation District of Los Angeles County
SCV Water	Santa Clarita Valley Water Agency
SCWD	Castaic Lake Water Agency's Santa Clarita Water Division
Semitropic	Semitropic Water Storage District
SGMA	Sustainable Groundwater Management Act
SOC	Synthetic Organic Chemicals
SPTF	Saugus Perchlorate Treatment Facility
sq. ft.	square feet

SVE	Soil Vapor Extraction
SWP	State Water Project
SWRCB	State Water Resources Control Board
SWRU	Stored Water Recovery Unit
TCE	Trichloroethylene
TDS	Total Dissolved Solids
µg/L	micrograms per liter
USBR	United States Bureau of Reclamation
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
UWCD	United Water Conservation District
UWMP	Urban Water Management Plan
Valley	Santa Clarita Valley
VOC	Volatile Organic Compound
VWC	Valencia Water Company
VWD	Valencia Water Division
WUE SP	Water Use Efficiency Strategic Plan
WKWD	West Kern Water District
WRP	Water Reclamation Plant

EXECUTIVE SUMMARY

This annual report, which is the twenty-first in a series that began to describe water supply conditions in 1998, provides current information about the water requirements and water supplies of the Santa Clarita Valley (Valley). Historically, this report has been prepared for the Valley's water purveyors, currently composed of the Santa Clarita Valley Water Agency (SCV Water) and SCV Water's three water divisions that serve the Valley, Santa Clarita Water Division (SCWD), Newhall Water Division (NWD), and Valencia Water Division (VWD), along with Los Angeles County Waterworks District 36.

This report provides information about local groundwater resources, State Water Project (SWP) and other imported water supplies, treated and recycled water, and water conservation. The report reviews the sufficiency and reliability of supplies in the context of existing water demand, with focus on actual conditions in 2018, and it provides a short-term outlook of water supply and demand for 2019.

ES.1 2018 Water Requirements and Supplies

2018 was characterized by increased imported water supplies, continued dry-local conditions, and a continued rebound in the drought-depressed demands experienced in 2014 and 2015. In 2018, total water requirements in the Valley were approximately 78,300 acre-feet (af), of which approximately 65,200 af (83 percent) were for municipal use and the remainder (13,100 af) was for agricultural and other (miscellaneous) uses, including individual domestic uses. Total demand in 2018 was two percent higher than in 2017, two percent lower than the estimate in the 2017 Water Report (80,000 to 85,000 af), and approximately two percent higher than the interpolated projection in the 2015 Urban Water Management Plan (UWMP) (76,500 af). Total water requirements in 2018 were met by a combination of approximately 35,900 af from local groundwater resources (approximately 22,800 af for municipal and approximately 13,100 af for agricultural and other uses), approximately 42,000 af of SWP and other imported water, and approximately 400 af of recycled water.

Of the 35,900 af of total groundwater pumping in the Valley in 2018, approximately 26,450 af were pumped from the Alluvium and approximately 9,450 af were pumped from the underlying, deeper Saugus Formation. Alluvial pumping in 2018 was approximately 4,450 af more than in 2017, and Saugus pumping was higher than in 2017, by approximately 1,550 af. Neither pumping volume resulted in any notable long term, overall change in groundwater conditions (water levels and water quality) as discussed herein) in either aquifer system. Imported water use decreased by approximately 4,700 af from the previous year. Water uses and supplies in 2018 are summarized in the following Table ES-1.

Table ES-1: Santa Clarita Valley
Summary of 2018 Water Supplies and Uses (af)

Municipal		
SWP and other Imported Supplies		41,999
Groundwater (Total)		22,869
Alluvium	*14,030*	
Saugus	*8,839*	
Recycled Water		352
Subtotal		**65,220**
Agriculture/Miscellaneous		
SWP and other Imported		-
Groundwater (Total)		13,071
Alluvium	*12,437*	
Saugus	*634*	
Subtotal		**13,071**
Total		***78,291***

In accordance with the California Urban Water Management Planning Act, the current Valley-wide UWMP was finalized in 2015 and adopted in 2016. This plan extends projected water demands through 2050, and describes the combination of local groundwater, imported water supplies from the SWP and other sources, local recycled water supplies, and other water supplies planned to meet those projected water demands in the Valley. The 2015 UWMP describes the reliability of local groundwater resources and the adequacy of groundwater supplies to meet groundwater demand. It also describes the ongoing efforts leading to integrated control of perchlorate migration and restoration of perchlorate-impacted groundwater supply along with occurrence of other constituents of concern like volatile organic compounds (VOCs).

Notable details about each component of water supply in the Valley and the water supply outlook for 2019 are included in the following sections.

ES.2 Alluvium

Based on an updated evaluation of groundwater basin yield, completed in 2009, the groundwater operating plan in the 2015 UWMP includes pumping from the Alluvium in the range of 30,000 to 40,000 acre-feet per year (afy) following wet/normal years, and slightly reduced pumping (30,000 to 35,000 afy) following dry years. Groundwater pumping in 2018 was consistent with the Operating Plan dry year

ranges. Pumping from the Alluvium in 2018 was approximately 26,450 af, which is at the lower end of the operating plan range for the Alluvium following dry years. This reflects a management decision to increase the use of imported supplies when available. There were no adverse effects on groundwater levels and storage in the basin that have not normally occurred during previous dry periods in the basin. On average, pumping from the Alluvium has been approximately 32,700 afy since supplemental imported water became available in 1980. That average annual amount remains near the lower end of the range of operational yield for a wet/normal year and approximately mid-range for a dry period.

On a long-term basis (multi-decades), continuing through 2018, there is no evidence of any trend toward permanent water level or storage decline in the Alluvium or the Saugus Formation as discussed in detail in Chapter 3. In general, throughout a large part of the basin, groundwater levels in the Alluvium have generally varied within predictable ranges that are associated with climatic fluctuations during the last 35 years with short-term declines during dry periods followed by recoveries during wet periods. Above-average precipitation in late 2004 and 2005, and more recently in 2010 and early-2011, resulted in significant water level recovery in the eastern part of the basin despite the recent multi-year dry periods (2006-2009, 2011-2018), when water levels declined to the low end of the historic range. In 2018, water levels declined or remained stable during ongoing dry conditions and reduced pumping. This continues the overall trend of fluctuating groundwater levels within a generally constant range over the last 35 years. These ongoing data indicate that the Alluvium remains in good operating condition and can continue to support pumping in the operating range included in the 2015 UWMP, or slightly higher, without adverse results (e.g., long-term water level decline or degradation of groundwater quality).

Based on an integration of water quality records from multiple wells completed in the Alluvium, there have been historical fluctuations in groundwater quality, typically associated with variations in precipitation and streamflow. However, like groundwater levels, there has been no long-term trend toward groundwater quality degradation; groundwater produced from the Alluvium remains a viable municipal and agricultural water supply.

In 2002, as part of ongoing monitoring of wells for perchlorate contamination, perchlorate was detected in one Alluvial well (the SCWD Stadium Well) located near the former Whittaker-Bermite facility. The detected concentration was slightly below the then-applicable Notification Level for perchlorate (6 micrograms per liter (µg/L), which was subsequently established as the Maximum Contaminant Level for perchlorate in October 2007). The Stadium Well was destroyed and the well was replaced (in a different location) to restore that component of municipal water supply that was impacted by perchlorate. In early 2005, perchlorate was detected in a second Alluvial well, VWD's Well Q2. After an interim period of wellhead treatment, that well has now been returned to regular water supply service. All other Alluvial wells operated by SCV Water continue to be used for municipal water supply service. All Alluvial municipal wells are sampled in accordance with drinking water regulations and perchlorate has not been detected. As summarized in the 2015 UWMP, the replacement and reactivation of the formerly impacted wells adds to the overall ability to meet the groundwater component of total water supply in the Valley. The ongoing characterization and plan for containment and cleanup of perchlorate in the

Valley has focused on the Saugus Formation along with soil and groundwater cleanup on the Whittaker-Bermite site that began in 2006.

ES.3 Saugus Formation

The groundwater operating plan in the 2015 UWMP includes pumping from the Saugus Formation in the range of 7,500 to 15,000 afy in normal years; it also includes planned dry-year pumping from the Saugus of 15,000 to 35,000 afy for one to three consecutive dry years. Similar to the operating plan for the Alluvium, the ranges of pumping from the Saugus Formation are based on the updated evaluation of groundwater basin yield, completed in 2009, which found those ranges of pumping to be sustainable on a long-term basis.

Pumping from the Saugus Formation was approximately 9,450 af in 2018; this included approximately 2,900 af that were pumped from the Saugus 1 and Saugus 2 Wells as part of the perchlorate pump and treat program. On average, pumping from the Saugus Formation has been approximately 7,400 afy since 1980. Both the 2018 amount and the long-term average rates remain near the mid to lower end of the ranges included in the groundwater operating plan. As a result of long-term relatively low pumping from the Saugus Formation, groundwater levels in that aquifer have remained generally constant to slightly increasing over the last 40 to 45-year time horizon. On a short-term time frame, there have been declining trends in groundwater elevations in the Saugus Formation since 2006 that likely reflect the generally dry climatic conditions, and increased pumping from storage that have existed during that time with the exception of 2010 and the early part of 2011 which were generally wet.

In 1997, ammonium perchlorate was discovered in four wells (Saugus 1, Saugus 2, VWD-157 and NWD-11) completed in the Saugus Formation in the vicinity of the former Whittaker-Bermite facility located generally toward the east, on the south side of the Valley. In 2006, a very low level of perchlorate was detected in another Saugus municipal well (NWD-13). And in 2010, it was detected further downgradient in a sixth Saugus well (VWD-201), and more recently, in VWD-205. To date, one of the impacted wells has been destroyed (VWD-157) and replaced, three have remained in or been returned to service with treatment as required (NWD-13, Saugus 1, and Saugus 2), one remains out of service with its capacity replaced by an alternate source (NWD-11), and the most recently impacted wells (VWD-201 and VWD-205) are in varying stages of returning to service. In 2017, a Perchlorate Treatment Facility (PTF) was constructed at VWD-201 and came online in November. The water being pumped through the PTF is being discharged to the river in accordance with a National Pollutant Discharge Elimination System permit until the PTF is permitted through the State Water Resources Control Board (SWRCB) Division of Drinking Water (DDW). It is anticipated that draft permitting for the PTF at VWD-201 will be issued by DDW by 2020. Treatment plans for VWD-205 are under consideration and will mostly likely be similar to those employed at VWD-201. As part of regular operation, those wells that remain in service are sampled in accordance with California drinking water regulations. All other Saugus Formation wells owned and operated by the Agency remain available for municipal water supply service.

Long-term work toward the remediation of perchlorate contamination, including the restoration of impacted groundwater supply, was continued in 2018. The focus of the work was developing a perchlorate restoration and containment plan to continue to pump and treat contaminated water from two of the originally impacted wells (Saugus 1 and 2) and initiate pump and treat operations at VWD-201 (and VWD-205) to contain the migration of the contaminant plume, and to deliver treated water for municipal supply to partially replace impacted well capacity. Beginning with the restoration of Saugus 1 and 2, SCV Water's Saugus Perchlorate Treatment Facility (SPTF) has been online since 2011 and numerous monitoring tests are performed each week in order to ensure the water leaving the SPTF meets drinking water standards. In 2018, 2,918 af of groundwater were pumped from Saugus 1 and 2, which brings the total amount of groundwater extracted and treated to more than 23,600 af since 2011. After treatment for perchlorate removal, the groundwater is blended with treated imported water and delivered to the Water Divisions through the SCV Water distribution system. With the production at Saugus 1 and 2, the Agency continues to have sufficient pumping capacity to meet the planned normal range of Saugus pumping as described in the 2015 UWMP. Restoration of VWD Well 201 to service, along with the resumption to service of VWC Well 205 with treatment will also increase available production capacity from the Saugus Formation.

Additionally, low concentrations of volatile organic compounds (VOCs), Trichloroethylene (TCE) and Tetrachloroethylene (PCE), have been detected at Saugus 1 and Saugus 2, and TCE has been detected at VWD's Wells 201 and 205 that are substantially below the State's drinking water limit. Although the concentrations have always been below the Maximum Contaminant Level (MCL), DDW has set an operational goal in SCV Water's Saugus 1 and 2 Operating Permit of no VOCs above the detection limit for reporting in its distribution system and is working with the Agency and the California Department of Toxic Substances Control (DTSC) to address the VOC impacts to groundwater. It is believed that treatment, or a blending strategy, for VOCs at Wells 201 and 205 will be required. The low TCE detections in VWD-201 will be addressed as part of this well's DDW PTF permit.

ES.4 Imported Water Supplies

Historically consisting of only its SWP Table A Amount, SCV Water's imported water supplies now consist of a combination of SWP water, water acquired from the Buena Vista Water Storage District (BVWSD) and Rosedale-Rio Bravo Water Storage District (RRBWSD) in Kern County, and Yuba County Water Agency purchases and banked water. SCV Water's contractual Table A amount is 95,200 af of water from the SWP. Under the 2007 Water Acquisition Agreement with the BVWSD and the RRBWSD, BVWSD's high flow Kern River entitlements (and other acquired waters that may become available) are captured and recharged within the RRBWSD service area on an ongoing basis. SCV Water receives 11,000 af of these supplies annually through either exchange of BVWSD's and RRBWSD's SWP supplies or through direct delivery of water to the California Aqueduct via the Cross Valley Canal. In 2008, Castaic Lake Water Agency (now SCV Water) entered into the Yuba Accord Agreement, which allows for the purchase of water from the Yuba County Water Agency through the Department of Water Resources (DWR). This non-SWP supply is available in certain years depending on hydrology. Also, in addition to these available supplies, SCV Water has access to 6,060 af of "flexible storage" in Castaic Lake.

SCV Water has entered into five long-term groundwater banking and water exchange programs and has, in aggregate, more than 151,000 af of recoverable water outside the local groundwater basin at the end of 2018. The first component of SCV Water's overall groundwater banking program is with Semitropic Water Storage District, now called the Stored Water Recovery Unit (SWRU) whereby, SCV Water can withdraw up to 5,000 afy from the current balance of 40,776 af of water that was stored in the SWRU to meet Valley demands when needed in dry years. The second component, the Rosedale-Rio Bravo Water Banking Program (RRBWBP) in Kern County, has a recoverable total of approximately 100,000 af in storage with an existing withdrawal capacity of 3,000 afy. Efforts are currently underway to increase the withdrawal capacity by approximately 7,000 afy for a total withdrawal capacity of approximately 10,000 afy by mid-2019. The third and fourth components are the Two-For-One Exchange Programs that SCV Water initiated with RRBWSD and West Kern Water District (WKWD) that now have almost 10,000 af of recoverable water. Additionally, in 2016, an additional 1,500 af of water supply were transferred to Central Coast Water Authority, whereby 750 af must be returned to SCV Water by 2026.

SCV Water's final allocation of SWP water for 2018 was 35 percent of its Table A Amount, or 33,320 af. The total available imported water supply in 2018 was 87,108 af, including the 33,320 af of Table A supply, 11,000 af purchased from BVWSD and RRBWSD, and 42,788 af of 2017 SWP carryover water available in 2018. SCV Water deliveries to the Water Divisions and LACWD 36 were 41,999 af. Additionally, 62 af were delivered to Devil's Den and another 5,000 af were sold to Kern County westside water districts. Following disposition of available water supplies in 2018 (with 836 af associated with use by SCV Water's Water Conservation Garden and differences in meter readings), there was a carryover of 39,211 af into 2019 from 2018.

ES.5 Recycled Water

Recycled water service was initiated in July 2003 in accordance with SCV Water's Draft Reclaimed Water System Master Plan (2002). The amount of recycled water used for irrigation purposes, at a golf course and in roadway median strips and other non-potable uses, was approximately 400 af in 2018, generally consistent with recycled water deliveries that have ranged between 300-500 afy over the past fifteen years. In 2017, SCV Water prepared an updated draft of the Recycled Water Master Plan containing revised estimates of projected recycled water use and outlined near-term, mid-term, and long-term objectives for increasing the use of recycled water where it is economically feasible.

ES.6 2019 Water Supply Outlook

In 2019, total Valley-wide water demand is projected to be approximately 80,000 af, about the same as the water demand projection in the 2015 UWMP. It is expected that water demands in 2019 will continue to be met with a mix of water supplies that primarily includes local groundwater, SWP Table A with carryover and other imported supplies, and recycled water. Ongoing conservation programs are expected to continue to reduce demands on water supplies in 2019 although some increase in demands is anticipated with the easing of the SWRCB mandatory reductions and continued growth within the service area.

Announced on March 20, 2019, the latest allocation of water from the SWP in 2019 was 70 percent of SCV Water's Table A Amount, or 66,640 af. Combined with the total available water supplies from local groundwater from the two aquifer systems (40,000 af), actual carryover of SWP Table A allocation from 2018 (3,608 af), annual acquisition through the Buena Vista Water/Rosedale Rio-Bravo Water Acquisition Agreement (11,000 af), available 6,060 af of Flexible Storage, Yuba Accord Water (709 af), and recycled water (500 af), the total available water supplies for 2019 is approximately 128,517 af. As a result, SCV Water anticipates having more than adequate supplies to meet all water demands in 2019.

The SWP Draft Delivery Capability Report 2017 considers the impacts on SWP delivery capability due to climate change, sea level rise, and multiple Delta-specific concerns. Further, consideration is also given to the major Delta policy planning efforts currently underway; the Delta Plan and the Bay Delta conservation Plan (in 2018 called California Water Fix). With these factors, the Capability Report projects under existing conditions, the average annual delivery of Table A water is estimated at 62 percent. SCV Water staff has assessed the impact of the current SWP Delivery Capability Report on the SCV Water analysis of projected water supplies contained in the Valley's 2015 UWMP and concluded that current and planned supplies are available to meet anticipated water supply needs through the year 2050.

In any given year, SWP supplies may be reduced due to dry weather conditions or regulatory factors. During such an occurrence, the remaining water demands are planned to be met by a combination of alternate supplies such as returning water from SCV Water's accounts in the SWRU, the RRBWBP, and three Exchange Programs (with total banked water at more than 151,000 af), deliveries from SCV Water's flexible storage account in Castaic Lake Reservoir, local groundwater pumping, short-term water exchanges, and participation in DWR dry-year water purchase programs.

Drought periods may affect available water supplies in any single year and even for a duration that spans multiple consecutive years. It is important to note that hydrologic conditions vary from region to region throughout the state. Dry conditions in northern California affecting SWP supply may not affect local groundwater and other supplies in southern California, and the reverse situation can also occur (as it did in 2002 and 2003). For this reason, SCV Water has emphasized developing a water supply portfolio that is diverse, especially in dry years along with water conservation programs. Diversity of supply is considered a key element of reliability, giving the Agency the ability to draw on multiple sources of supply to ensure reliable service during dry years, as well as during normal and wet years.

ES.7 Water Conservation

The Santa Clarita Valley Water Use Efficiency Strategic Plan (WUE SP) was updated in 2015. The purpose of the effort was to prepare a comprehensive long-term conservation plan for the Santa Clarita Valley by adopting objectives, policies and programs designed to promote proven and cost-effective conservation practices. The preparation of the WUE SP included input from stakeholders and the community at large. And it incorporated the SB X7-7 targeted reductions of 20 percent by 2020. The updated WUE SP was supported by a thorough economic analysis that guides water conservation efforts planned and implemented by SCV Water. The economic analysis concluded that water conservation measures were

cost effective when compared to other incremental supplies such as recycled water. The updated WUE SP is consistent with SCV Water's Strategic Plan Objectives including:

- Ensure long-term average water supply meets current and future demand
- Meet local water demands
- Achieve the water conservation target of 20 percent per capita by 2020

SCV Water is committed to a water conservation program that is composed of several conservation measures that will lower projected demand by 2020, building on what has already been implemented over the past two decades. The conservation measures incorporate education, incentives, and conservation mandates among all the various customers present in the Valley. As described in the 2015 UWMP, the Agency must demonstrate SB X7-7 compliance by an interim Daily Per Capita Water Use Target; in 2015 the SCV Water Divisions met their Interim Water Use Target and their 2020 Target; this achievement continued through 2018.

2017 ended a five-year drought for most of California with historic rainfall and snowpack, although Santa Clarita saw below average precipitation that year, and again in 2018 for the eighth consecutive year. The residents, businesses, and city and county government agencies have responded to the calls for conservation by a continued reduction in water use in 2018 by 8,240 af compared to 2013 (approximately a 11 percent reduction).

1 INTRODUCTION

1.1 Background

For most residents of the Santa Clarita Valley (Valley), domestic water service is provided by the Santa Clarita Valley Water Agency (SCV Water) and the Los Angeles County Waterworks District 36 (LACWD 36). SCV Water comprises three divisions: Santa Clarita Water Division (SCWD), Newhall Water Division (NWD), and Valencia Water Division (VWD). Together, SCV Water and LACWD 36 provide water to approximately 73,000 service connections. Santa Clarita Valley Water Agency contracts for State Water Project (SWP) and other sources of imported water, which are delivered from Castaic Lake, after which it is treated, filtered, and disinfected at two SCV Water treatment plants before distribution to the Water Divisions and LACWD 36. SCV Water also contracts with the Santa Clarita Valley Sanitation District for recycled water, which is currently delivered to VWD. Their respective service areas are shown in **Figure 1-1**.

While municipal water supply has grown to become the largest category of water use in the Valley, there remains agricultural and small private water demands that are dependent on local groundwater supplies. Accordingly, ongoing agricultural water requirements and the use of local groundwater to meet those requirements are considered in analyses of water requirements and supplies as reported herein. The information on the locations, construction details, annual pumping and other information for the small fraction of Valley residents reliant on private wells for water supply approximately are not collected by any agency. In the absence of detailed information on private wells and associated water use, pumping as reported herein includes an estimate of groundwater pumped from private wells. The estimate of private pumping reported herein will be refined as part of the Valley's compliance with the Sustainable Groundwater Management Act (SGMA).

For more than 35 years, SCV Water, formerly the Castaic Lake Water Agency (CLWA) and the four retail water purveyors, have reviewed and reported on the availability of water supplies to meet all water requirements in the Valley. Those reports have also addressed local water resources, most notably groundwater, in the region. Past studies have assessed the condition of local groundwater aquifers, their hydrogeologic characteristics, aquifer storage capacity, operational yield and recharge rate, groundwater quality and contamination, and the ongoing conjunctive use of groundwater and imported water resources.

Other efforts have included developing drought contingency plans, coordinating emergency response procedures and implementing Valley-wide conservation programs. In 1985, Newhall County Water District (now NWD), on behalf of the purveyors, prepared the area's first report on urban water supplies and water management. Beginning in 1995, formalized versions of Urban Water Management Plans (UWMP) have been developed and included CLWA. Information in the plans was coordinated among CLWA and the purveyors to provide accurate, comprehensive and consistent water supply and demand information for long term planning purposes. In accordance with the California Urban Water Management Planning Act, the UWMP was updated (2015 UWMP) and submitted by CLWA and the

purveyors to the Department of Water Resources (DWR) in July 2016. The 2015 UWMP includes water demand projections through projected build out of the Valley in 2050 and describes the combination of local groundwater, imported water supplies from the SWP and other sources, local recycled water supplies, other planned water supplies, and conservation objectives to meet the existing and projected urban water demands in the Valley. The 2015 UWMP describes the reliability of local groundwater resources and the adequacy of groundwater supplies to meet that component of overall water supply; and it also describes the mitigation of perchlorate contamination which has impacted several municipal water supply wells, and the implementation of integrated control of perchlorate migration and full restoration of perchlorate-impacted groundwater supply.

In 2009, primarily in preparation of the 2010 UWMP, an updated analysis of groundwater basin yield was completed to guide the ongoing use of groundwater and the associated distribution of pumping to maintain groundwater use at a sustainable rate while also addressing localized issues such as restoration of groundwater contamination that have impacted local groundwater supplies since 1997. The results of the updated groundwater basin analysis are summarized in the groundwater basin yield discussion (Section 3.1) of this Water Report.

1.2 Purpose and Scope of the Report

The purpose of this report, which is the 21st in a series of annual water reports that began to describe water supply conditions in 1998, is to provide current information about water requirements and available water supplies to meet those demands in the Santa Clarita Valley. The preparation of this series of reports is in response to these actions:

- a request made by the Los Angeles County Board of Supervisors in 1998;
- a Memorandum of Understanding (MOU) between the upper basin water purveyors (including LACWD 36 and former Castaic Lake Water Agency, Newhall County Water District and Valencia Water Company) and the United Water Conservation District (UWCD) in 2001;
- the Santa Clarita Valley GWMP in 2003.;

Since 2003, this series of reports has served as an annual summary of groundwater conditions in the Valley in fulfillment of the commitment in the Santa Clarita Valley Groundwater Management Plan (CLWA, 2003) (GWMP), adopted in 2003, to regularly report on implementation of that Plan. With the implementation of the Sustainable Groundwater Management Act (SGMA), a Groundwater Sustainability Plan (GSP) will replace the GWMP and the role that this annual report fulfills in the GWMP. However, this report still serves the requirements requested by the LA County Board and the MOU with the UWCD. The MOU between the Upper Basin Water Purveyor's and the lower basin, represented by the UWCD, went into effect on August 20, 2001. The purpose of the MOU was to establish a joint monitoring program between the two parties to ensure that there is a continued regional understanding of water resources along the Santa Clara River. This joint monitoring program included database management, groundwater flow modeling, basin yield estimates, and an expansion on the annual reporting which began for the Upper Santa Clara River basin in 1998. Consistent with this

MOU, water resources have been responsibly managed through numerous dry and wet periods providing adequate water resources, preventing water quality degradation and chronic lowering of water levels, for areas along the Santa Clara River. This annual report has served to document the commitment that was made in the MOU.

In October 2018, a new Memorandum of Understanding was entered into by SCV Water and UWCD to build upon and compliment the 2001 MOU, whereby both parties continue to enhance and maintain a productive and collaborative relationship with the purpose of exploring cooperative water resource management strategies to enhance the conjunctive use of imported water, groundwater, recycled water, and surface water within the region.

This report was prepared for SCV Water and LACWD 36. It continues a format for providing information regarding water uses and the availability of water supplies on an annual basis, along with a summary of groundwater conditions. It is intended to be a helpful resource for use by water planners and local land use planning agencies. This report is complemented by the 2015 UWMP for the area, which provides longer-term water supply planning over a 35-year period, and by several other technical reports, some of which are specifically referenced herein.

1.3 Santa Clarita Valley Water Divisions and LACWD 36

As introduced above, three divisions of SCV Water and LACWD 36 provide water service to most residents of the Santa Clarita Valley. Brief summary descriptions of those entities are as follows.

Santa Clarita Water Division has a service area that covers 34,700 acres and includes a portion of the City of Santa Clarita and unincorporated portions of Los Angeles County in the communities of Saugus, Canyon Country, and Newhall with approximately 31,650 service connections. Water has been supplied from both imported water from sources outside the Valley and groundwater from the Alluvium and Saugus Formation in varying proportions over the last 35 years, with the majority of supply currently being met by imported sources (82 percent in 2018).

Los Angeles County Waterworks District 36 has a service area that encompasses approximately 6,800 acres in the Hasley Canyon area and the unincorporated community of Val Verde. LACWD 36 has approximately 1,350 service connections. Prior to 2012, LACWD 36 had typically obtained its full water supply from a connection to the SCV Water's Castaic Conduit. However, beginning in 2012 and continuing through 2018, that imported water supply has largely been replaced by groundwater pumped from the Saugus Formation.

Newhall Water Division has a service area of approximately 28,400 acres and includes portions of the City of Santa Clarita and unincorporated portions of Los Angeles County in the communities of Newhall, Canyon Country, Valencia, Tesoro and Castaic with approximately 9,800 service connections. NWD supplies water from both groundwater and imported water sources (with groundwater historically being the more predominant source of supply). However, in 2018 groundwater accounted for only 38 percent of supply.

Valencia Water Division has a service area which serves approximately 30,150 service connections in a portion of the City of Santa Clarita and in the unincorporated communities of Castaic, Newhall, Saugus, Stevenson Ranch, Mission Village, and Valencia representing an area of approximately 19,000 acres. VWD has typically supplied water from both groundwater and imported water sources. The two sources have historically been supplied in even proportions with slightly more supply generally coming from imported sources (except recently, in 2014, 2015, and 2016, when groundwater was 58 to approximately 70 percent of supply). In 2018, groundwater was 47 percent of supply. VWD also has a small amount of recycled water for non-potable use.

1.4 Senate Bill No. 634 Santa Clarita Valley Water Agency

Senate bill No. 634 was signed into law on October 15, 2017, which repealed the existing Castaic Lake Water Agency Law. The legislation created the Santa Clarita Valley Water Agency (SCV Water) which consolidated CLWA and the SCWD and NCWD into one public water provider for the Santa Clarita Valley. SCV Water will continue to supply water to LACWD 36. This consolidation, along with the acquisition of VWC resulted in SCV Water and Los Angeles County Waterworks 36 as being the sole public water providers for the Santa Clarita Valley.

The purpose of this law is to improve service, reduce costs, and improve efficiencies. The law came into effect on January 1, 2018 combining the boards of the Newhall County Water District and the Castaic Lake Water Agency forming SCV water. SCV Water filed a LAFCO application on January 31, 2018, which was reviewed by LAFCO which provided conditions of approval consistent with the legislation. Starting on November 3, 2020 the process of electing SCV Water board members will begin, and by January 2023, the SCV Water Board will be composed of nine publicly elected board members from three electoral divisions.

1.5 The Upper Santa Clara River Hydrologic Area and East Groundwater Subbasin

The Upper Santa Clara River Hydrologic Area (HA), as defined by the DWR, is located almost entirely in northwestern Los Angeles County (**Figure 1-2**). The area encompasses approximately 654 square miles of flat valley land (approximately 6 percent of the total area) and hills and mountains (approximately 94 percent of the total area) that border the valley area. The mountains include the Santa Susana and San Gabriel Mountains to the south, and the Sierra Pelona and Leibre-Sawmill Mountains to the north. Elevations range from approximately 800 feet on the valley floor to approximately 6,500 feet in the San Gabriel Mountains. The headwaters of the Santa Clara River are at an elevation of approximately 3,200 feet at the divide separating the HA from the Mojave Desert. The HA comprises four subareas as shown on **Figure 1-2**. Of the four, the Eastern Hydrologic Subarea has been the study area of prior investigations, and it will remain the focus of this report.

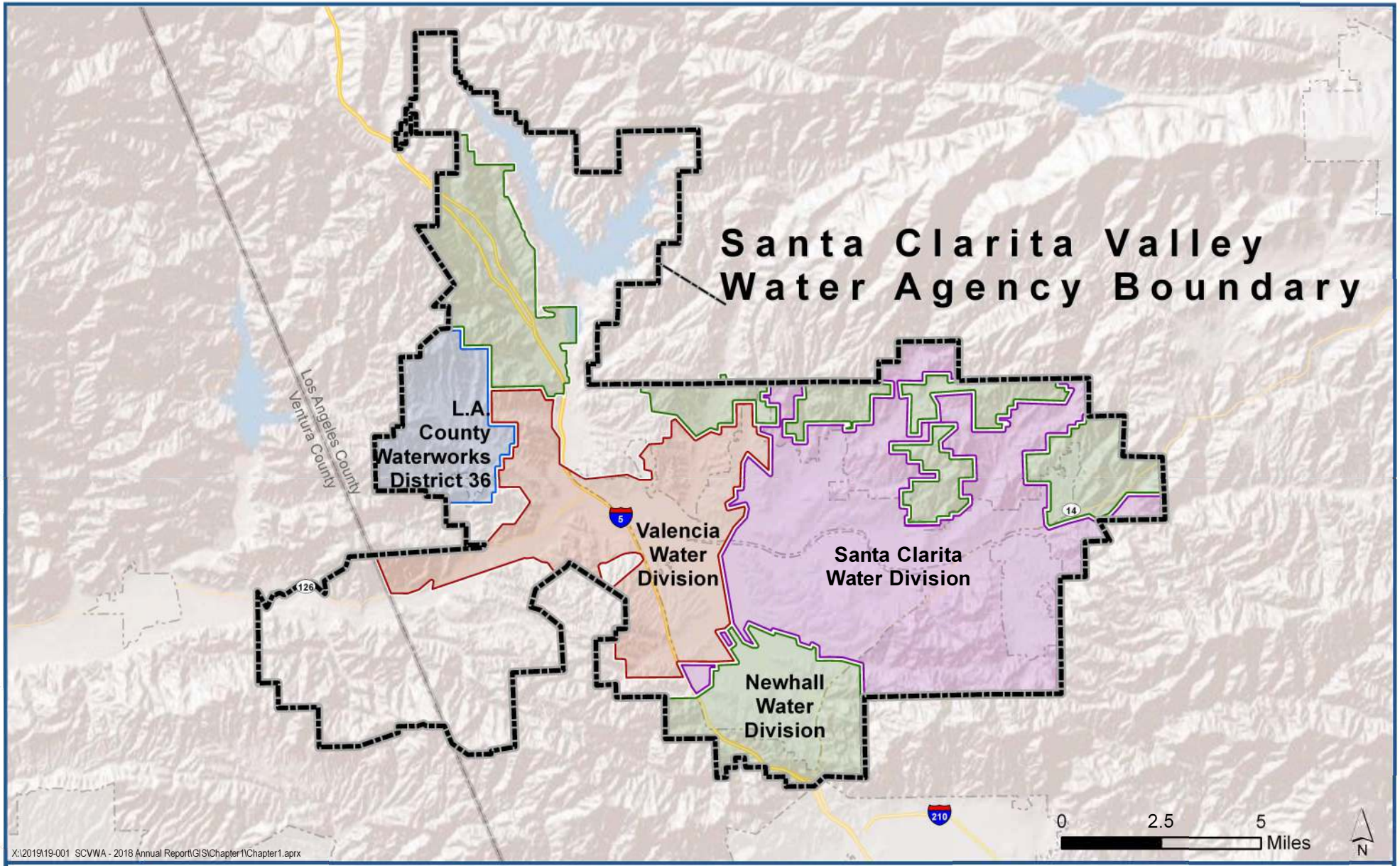
The Santa Clara River and its tributaries flow intermittently from Lang Station westward approximately 35 miles to just west of the Los Angeles-Ventura County line, where the River is the outlet from the HA. The principal tributaries of the Santa Clara River in the Santa Clarita Valley are Castaic Creek, San

Francisquito Creek, Bouquet Creek, and the South Fork of the Santa Clara River. In addition to intermittent natural tributary inflow, the Santa Clara River receives treated wastewater discharge from the Saugus and Valencia Water Reclamation Plants, which are operated by the Santa Clarita Valley Sanitation District of Los Angeles County. In addition, a minor amount of groundwater treated for perchlorate removal from the Whitaker-Bermite site is also discharged into the river upstream of the WRPs. The Santa Clara River flows westward through Ventura County near Oxnard. Along that route, the River traverses all subbasins of the Santa Clara River Valley Groundwater Basin (Basin). There are six subbasins that compose the Basin and they span across Los Angeles and Ventura counties. From east to west the subbasins are the Santa Clara River Valley East, Piru, Fillmore, Santa Paula, Mound, and Oxnard as shown in **Figure 1-3**. The Santa Clara River Valley East Subbasin (Subbasin), beneath the Santa Clarita Valley, is the source of essentially all local groundwater used for water supply in the Santa Clarita Valley and the focus of this report.

There are four active precipitation gages in the Subbasin. Two gages have long-term records, the Newhall Fire Station #73 gage and the Newhall County Water District gage (now Newhall Water Division), while the other two, #204 Santa Clarita (established in 2006) and Canyon Country (established in 2010), have shorter-term records that can be used for comparative purposes (**Figure 1-4**). The Los Angeles County Department of Public Works (LADPW) has maintained records for the Newhall Fire Station #73 gage since 1931. NCWD/NWD has maintained records for the NCWD/NWD gage since 1979. The cumulative records from these two gages correlate closely, although the NCWD/NWD gage historically records a higher amount (approximately 30 percent) than the Newhall Fire Station #73 gage over the entire NCWD/NWD gage period of record (1979-2018). The overall offset is likely due to the differences in location between the two gages, with the NCWD/NWD gage situated farther south in the hills rimming the southern edge of the Santa Clarita Valley at an elevation of approximately 1,390 feet, while the Newhall Fire Station #73 gage is located northwest of the NCWD/NWD gage and further away from the hills at an elevation of approximately 1,330 feet.

The third gage, #204 Santa Clarita, was established in December 2006 near the Rio Vista Treatment Plant (elevation 1,410 feet) near the main Santa Clara River channel and on the north side of the Valley (**Figure 1-4**). This gage is operated by SCV Water (formerly by CLWA) and is part of the California Irrigation Management Information System (CIMIS) managed by DWR. Daily precipitation data at this location are available beginning in January 2008. These data correlate well with the other two precipitation gages in the Valley over the period of 2008 through 2018, with the exception of data for the month of December 2010 and January 2017. The fourth gage, Canyon Country, reported by National Centers for Environmental Information (NCEI), is located farther east in the Valley near Sand Canyon Road and the Santa Clara River. Daily precipitation data at this location are available beginning in January 2010, and these data also correlate well with the other two long-term precipitation gages in the Valley and the CIMIS gage over the period of record (2010-2017). Comparison of historical data collected from all four gages between 2010 through 2018 indicates the NCWD/NWD gage receives the most precipitation followed by the Newhall Fire Station Gage #73, Canyon Country, and CMIS Station 204.

The Santa Clarita Valley is characterized as having an arid climate. Historically, intermittent periods of below-average precipitation have typically been followed by periods of above-average precipitation in a cyclical pattern, with each above average or below average period typically lasting from one to five years. The longer-term precipitation records for the Newhall Fire Station #73 gage are illustrated in **Figure 1-5**. Long-term annual (calendar year) average precipitation at that gage is 17.5 inches calculated for the 1931 through 2018 period. **Figure 1-5** also shows the cumulative departure from mean annual precipitation which shows periods of above average rainfall (increasing slope or trend with time) and below average rainfall (declining trend or slope with time). In general, periods of below-average precipitation have been longer and more moderate than periods of above average precipitation. Historically, the periods from 1947 to 1964, 1971 to 1976, 1984 to 1991 and 1999 to 2003 have generally been drier than average; the periods from 1938 to 1946, 1965 to 1970, 1977 to 1983, 1992 to 1996, and 2004 to 2005 have been wetter than average. Recently, the dry or below average period that began in 2006, has generally persisted through 2018 with all but two of those years (2008 and 2010) having below average rainfall totals. 2012 and 2013 were significantly below average with approximately 9.0 and 3.7 inches, respectively, and 2013 experienced the lowest amount of precipitation that has been recorded since 1931. Generally, the 2006 through 2018 period has experienced the longest and most severe dry period since the 1947 to 1964 period. Precipitation in 2018 was below the long-term average at 12.7 inches. Early 2019 has seen above average rainfall in the Santa Clarita Valley, and year-to-date demand has been about the same as 2017 and slightly less than 2018. However, these conditions combined with water supply considerations, anticipated growth in the service area, and continued water conservation measures, discussed in Chapters 3, 4, and 5 are expected to result in 2019 water requirements being slightly more than the water requirements in 2018.



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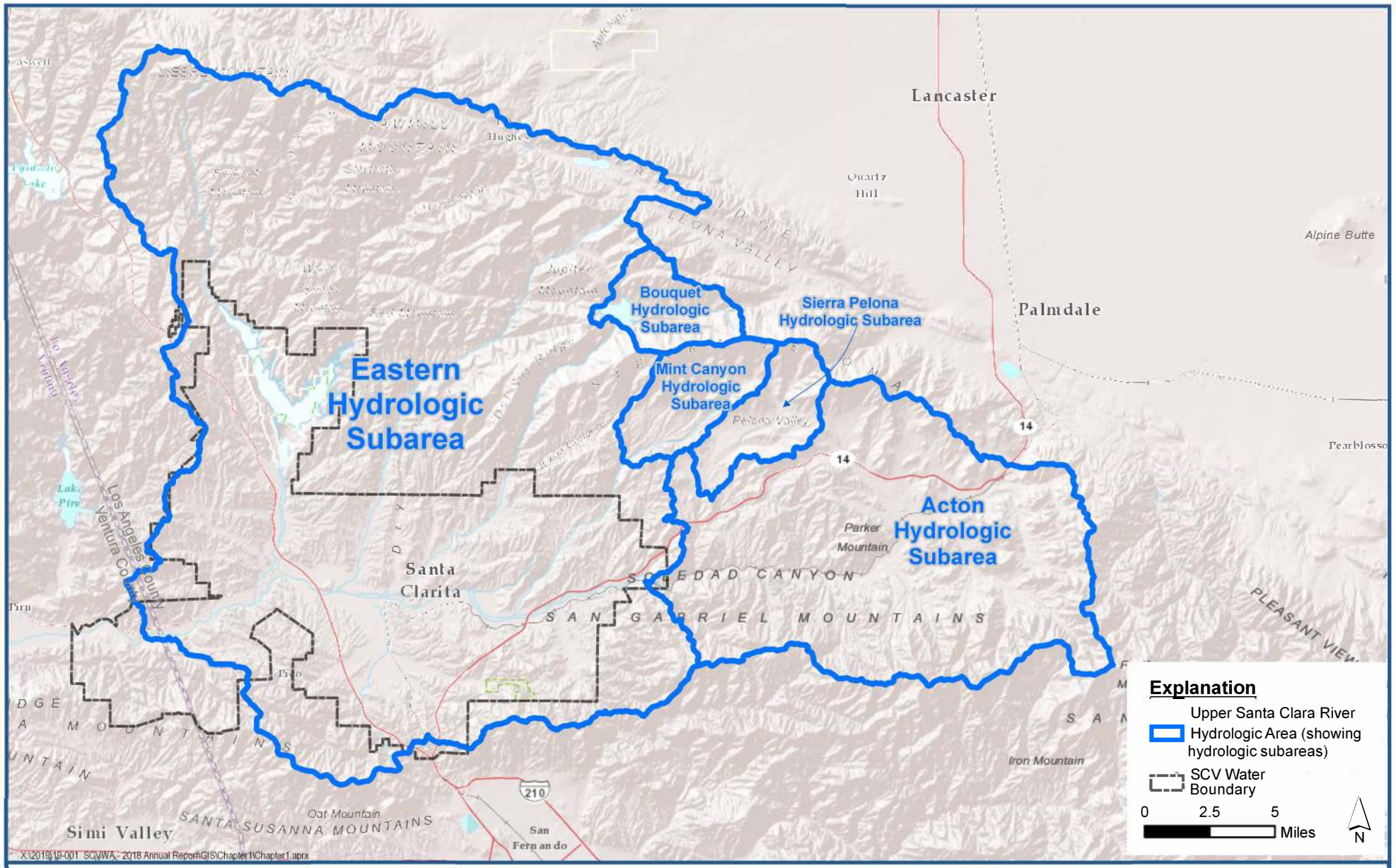
SCV Water, Water Divisions, and LACWD 36 Service Areas

Santa Clarita Valley Water Report
Santa Clarita Valley, Los Angeles County, California

Figure 1-1



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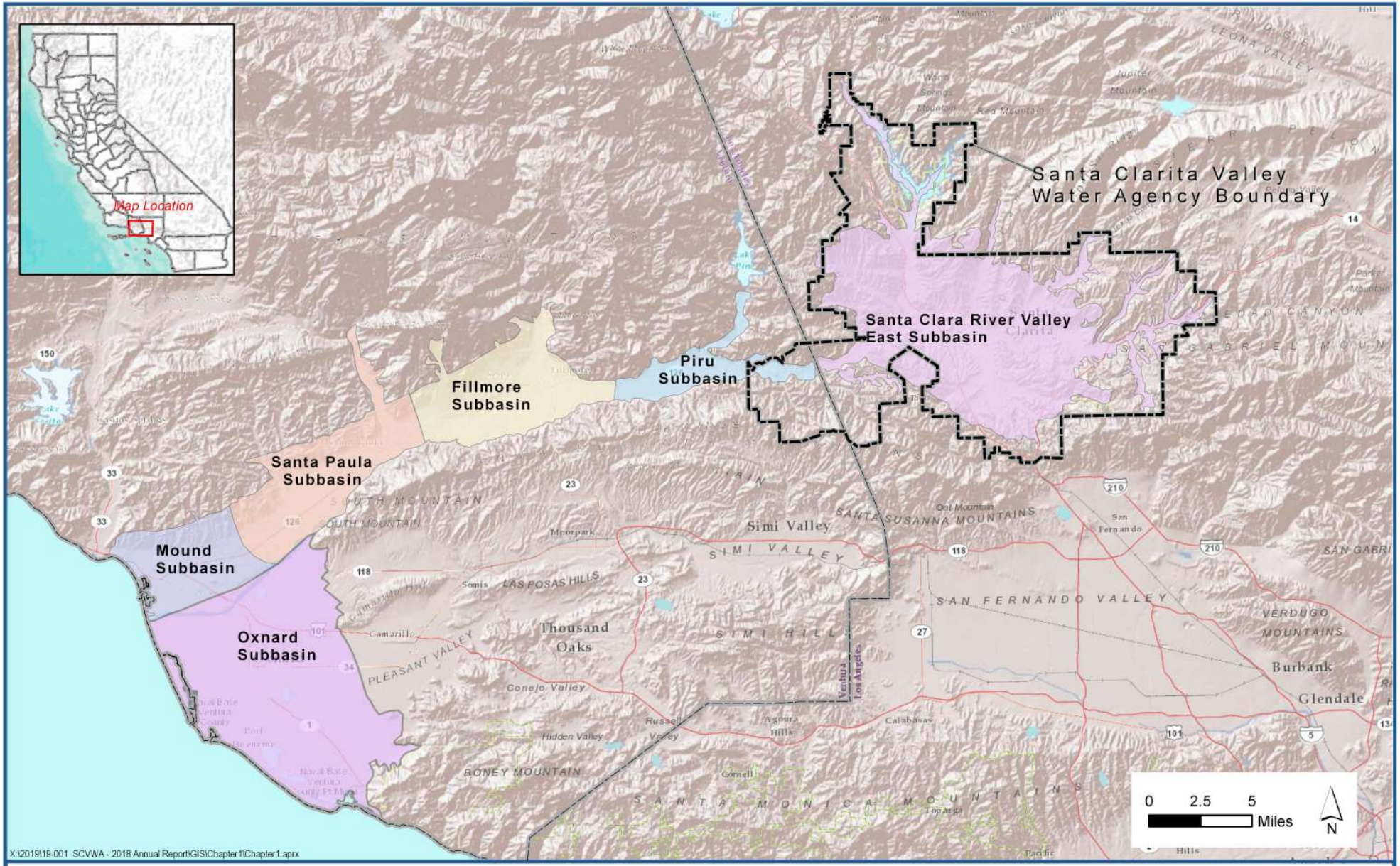
Upper Santa Clara River Hydrologic Area

Santa Clarita Valley Water Report
Santa Clarita Valley, Los Angeles County, California

Figure 1-2



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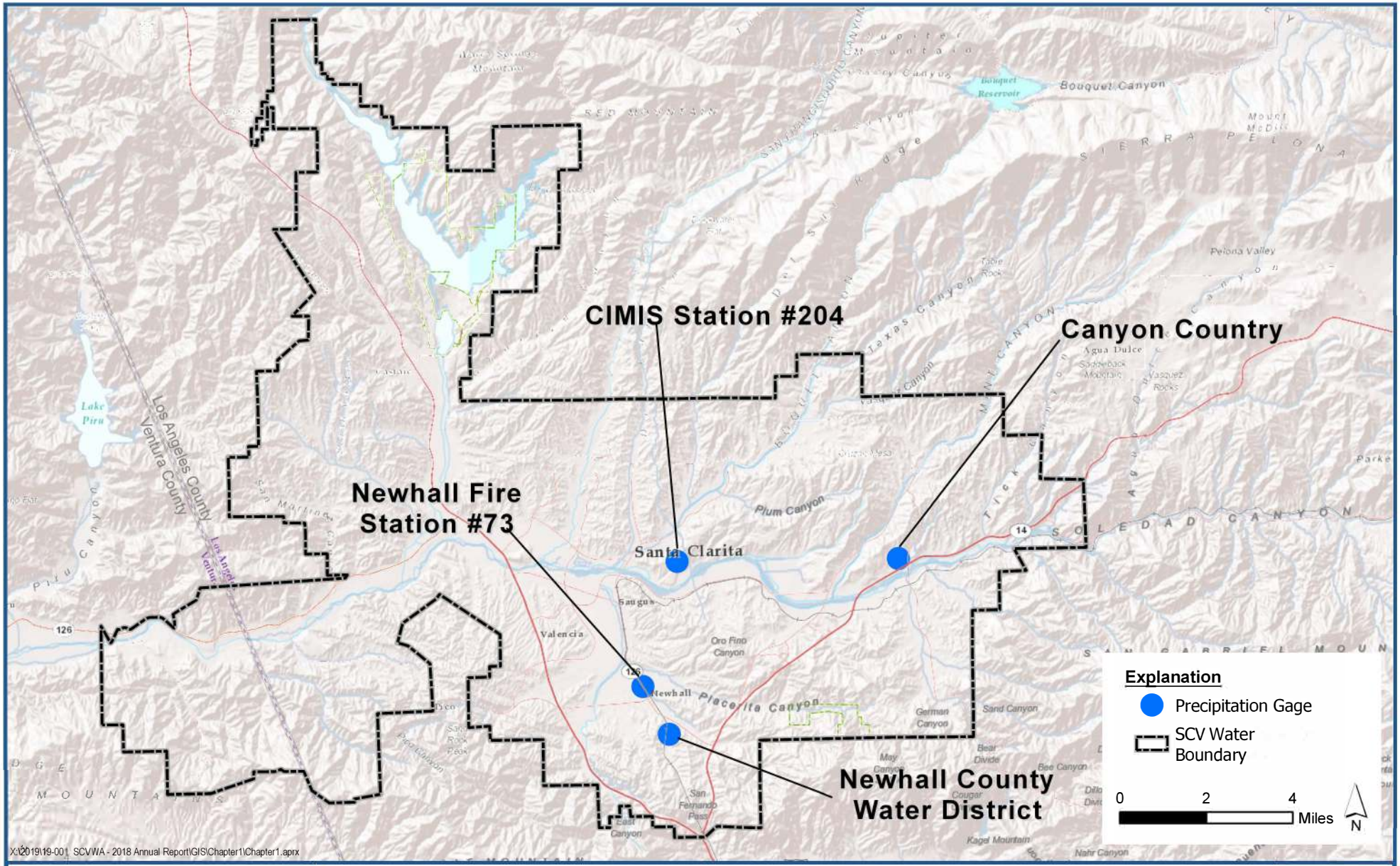
Santa Clara River Valley Groundwater Basin and Subbasins

Figure 1-3

Santa Clarita Valley Water Report
Santa Clarita Valley, Los Angeles County, California



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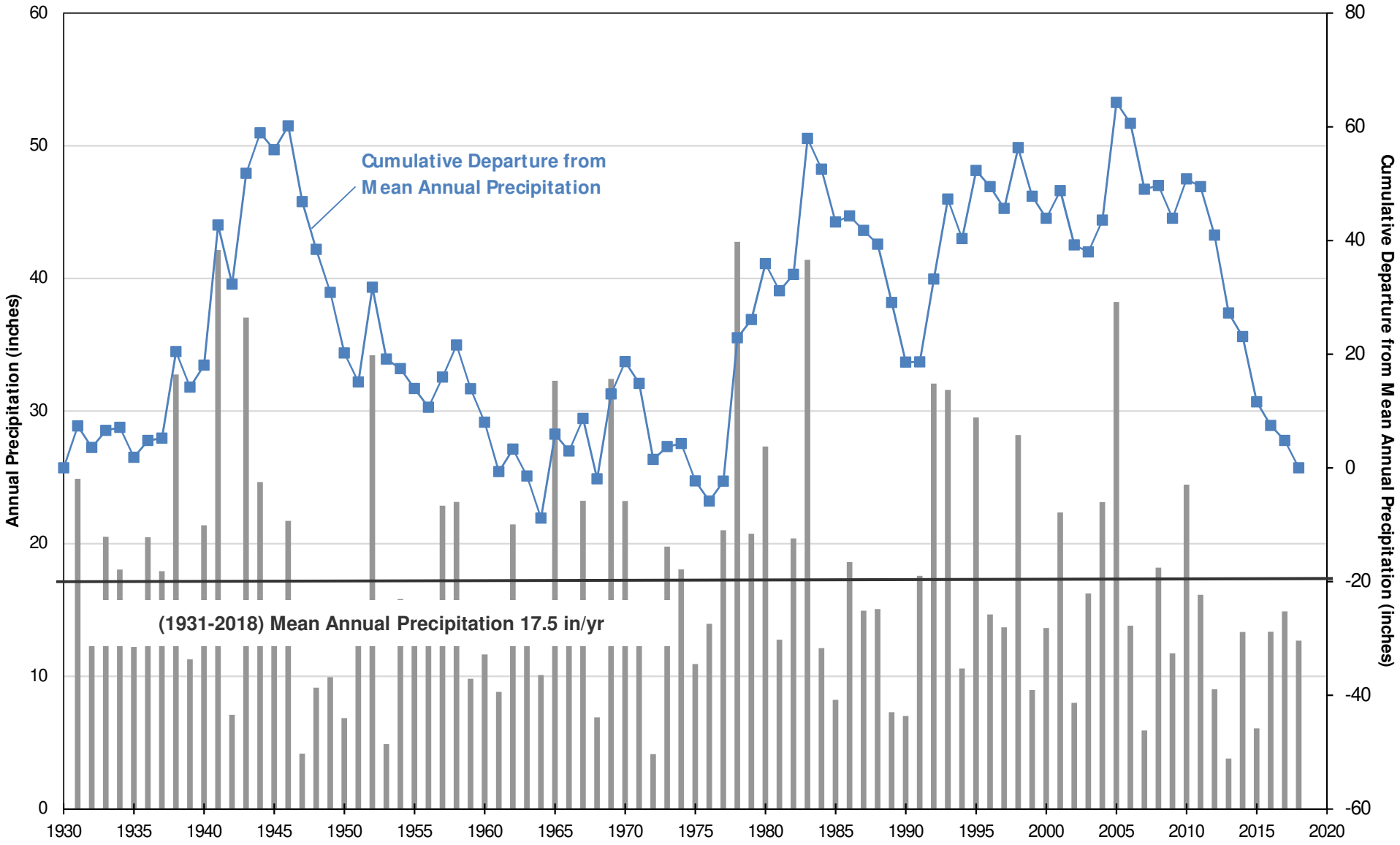
Precipitation Gage Locations

Santa Clarita Valley Water Report
Santa Clarita Valley, Los Angeles County, California

Figure 1-4



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Annual Precipitation and Cumulative Departure from Mean Annual Precipitation at Newhall Fire Station #73 Gage

Santa Clarita Valley Water Report
Santa Clarita Valley, Los Angeles County, California

Figure 1-5

2 2018 WATER SUPPLIES AND USE

Water supplies in Santa Clarita Valley are utilized for municipal, agricultural, private domestic, and miscellaneous purposes. The sources of water are varied and include imported water from the SWP and other sources, along with local supplies from treated groundwater, recycled water, and groundwater.

2.1 2018 Water Supplies

Total water use in the Santa Clarita Valley was 78,300 af in 2018. Of the total, 65,200 af (approximately 83 percent) were for municipal use (**Table 2-1**) and the remaining 13,100 af (17 percent) were for agricultural and other (miscellaneous) uses (**Table 2-2**), including estimated individual domestic uses. Total water use was met by a combination of approximately 35,900 af from local groundwater resources (approximately 22,800 af for municipal supply and 13,100 af for agricultural and other uses), 42,000 af from SWP and other imported water sources, and approximately 400 af from recycled water (**Table 2-3**).

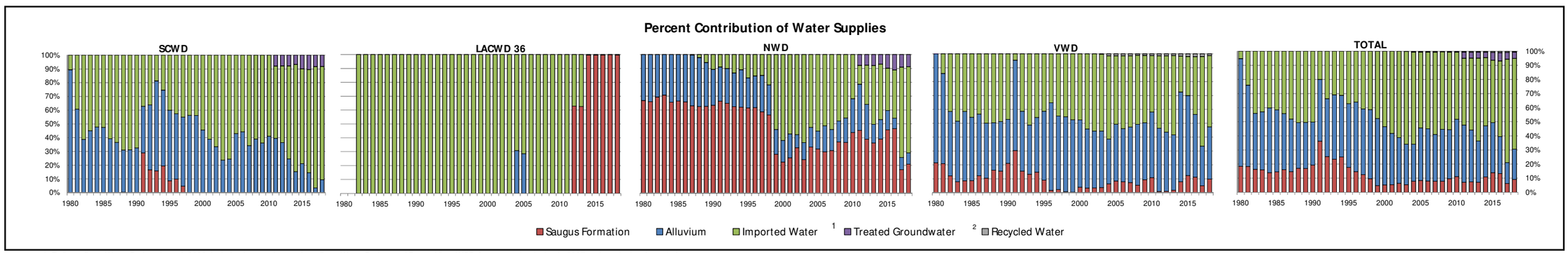
Compared to 2017, total water use in the Santa Clarita Valley in 2018 was two percent higher, but it was below the short-term projected water requirement estimated in last year's Annual Water Report. Water use has increased for a third consecutive year, but follows a two-year total reduction in municipal water use of almost 26 percent (over 2014-2015), that was primarily attributed to aggressive conservation as the purveyors and the local community were aware of ongoing drought conditions and actions to achieve compliance with State-mandated water conservation targets. The increase in 2018 was attributed to a continued growth of the community and a continued but lessened conservation effort by consumers due to the State emergency water conservation measures shifting from mandatory to voluntary compliance.

2.2 Total Water Use Historical Trends

Water supply utilization for all uses in the Santa Clarita Valley for the period 1980 through 2018, is summarized in **Table 2-3**. The trends in utilization of local groundwater and imported water, complemented by the addition of recycled water, are graphically illustrated in **Figure 2-1**. As can be seen by inspection of **Table 2-3** and **Figure 2-1**, total water use in the Valley was nearly linearly increasing from the early 1980's (approximately 36,000 to 42,000 afy) through 2007 (92,000 af), with some climatic-related fluctuations in certain years. Since 2007, total water use has generally declined back to levels last seen in the late 1990s. Overall, since the inception of supplemental SWP supplies, total annual water use has increased from approximately 37,000 af in 1980 to between 80,000 to 90,000 af per year from 2002 through 2014 and has since declined to approximately 70,000 to 80,000 afy from 2015 through 2018. The relatively stable 13-year trend (2002 through 2014) had been mostly attributed to the expansion of water conservation efforts having a greater effect on demand than the continued growth in service connections (**Table 2-3** and **Figure 2-1**). The subsequent decline in water demand since 2014 is attributed to more stringent conservation efforts that were implemented to reduce water demands and to comply with state-mandated reductions in water usage of 25 percent from 2013 levels.

Table 2-1
Water Supply Utilization by Santa Clarita Valley Water Agency and Los Angeles County Waterworks District 36
Santa Clarita Valley Water Report
(Acre-Feet)

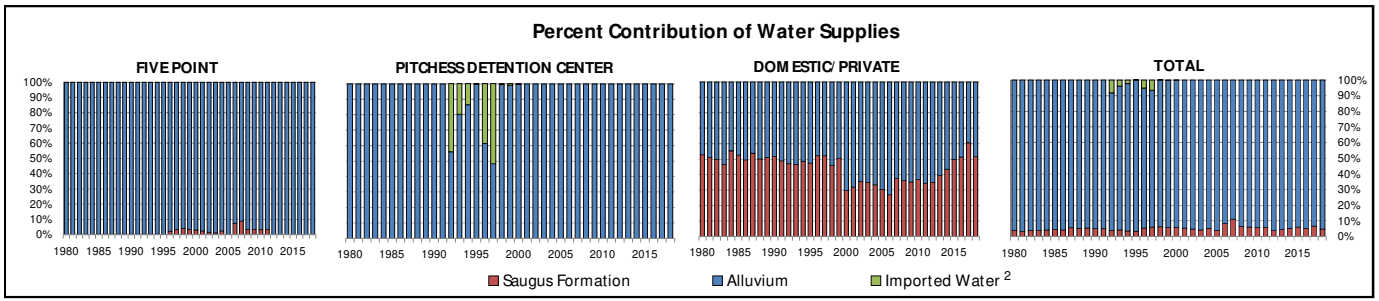
	Santa Clarita Water Division					Los Angeles County Waterworks District 36				Newhall Water Division					Valencia Water Division					All Municipal Divisions and LACWD 36					
	SCV Water		Local Production			SCV Water	Local Production			SCV Water		Local Production			SCV Water	Local Production		Other		SCV Water		Local Production		Other	
Year	*Imported Water* [1]	*Treated Groundwater* [2]	*Alluvium*	*Saugus Formation*	**Total**	*Imported Water* [1]	*Alluvium* [3]	*Saugus Formation* [4]	**Total**	*Imported Water* [1]	*Treated Groundwater* [2]	*Alluvium*	*Saugus Formation*	**Total**	*Imported Water* [1]	*Alluvium*	*Saugus Formation*	*Recycled Water* [5]	**Total**	*Imported Water* [1]	*Treated Groundwater* [2]	*Alluvium*	*Saugus Formation*	*Recycled Water*	**Total**
1980	1,126	-	9,467	0	**10,593**	0	-	-	**0**	0	-	1,170	2,363	**3,533**	0	5,995	1,644	-	**7,639**	1,126	-	16,632	4,007	-	**21,765**
1981	4,603	-	7,106	0	**11,709**	0	-	-	**0**	0	-	1,350	2,621	**3,971**	1,214	5,597	1,808	-	**8,619**	5,817	-	14,053	4,429	-	**24,299**
1982	6,454	-	4,091	0	**10,545**	145	-	-	**145**	0	-	1,178	2,672	**3,850**	3,060	3,415	897	-	**7,372**	9,659	-	8,684	3,569	-	**21,912**
1983	5,214	-	4,269	0	**9,483**	207	-	-	**207**	0	-	1,147	2,787	**3,934**	3,764	3,387	611	-	**7,762**	9,185	-	8,803	3,398	-	**21,386**
1984	6,616	-	6,057	0	**12,673**	240	-	-	**240**	0	-	1,549	2,955	**4,504**	4,140	4,975	854	-	**9,969**	10,996	-	12,581	3,809	-	**27,386**
1985	6,910	-	6,242	0	**13,152**	272	-	-	**272**	0	-	1,644	3,255	**4,899**	4,641	4,633	885	-	**10,159**	11,823	-	12,519	4,140	-	**28,482**
1986	8,366	-	5,409	0	**13,775**	342	-	-	**342**	0	-	1,842	3,548	**5,390**	5,051	5,167	1,427	-	**11,645**	13,759	-	12,418	4,975	-	**31,152**
1987	9,712	-	5,582	0	**15,294**	361	-	-	**361**	22	-	2,127	3,657	**5,806**	6,190	4,921	1,305	-	**12,416**	16,285	-	12,630	4,962	-	**33,877**
1988	11,430	-	5,079	63	**16,572**	434	-	-	**434**	142	-	2,283	4,041	**6,466**	7,027	4,835	2,300	-	**14,162**	19,033	-	12,197	6,404	-	**37,634**
1989	12,790	-	5,785	0	**18,575**	457	-	-	**457**	428	-	2,367	4,688	**7,483**	7,943	5,826	2,529	-	**16,298**	21,618	-	13,978	7,217	-	**42,813**
1990	12,480	-	5,983	40	**18,503**	513	-	-	**513**	796	-	1,936	4,746	**7,478**	7,824	5,232	3,516	-	**16,572**	21,613	-	13,151	8,302	-	**43,066**
1991	6,158	-	5,593	4,781	**16,532**	435	-	-	**435**	675	-	1,864	4,994	**7,533**	700	9,951	4,642	-	**15,293**	7,968	-	17,408	14,417	-	**39,793**
1992	6,350	-	8,288	2,913	**17,551**	421	-	-	**421**	802	-	1,994	5,160	**7,956**	6,338	6,615	2,385	-	**15,338**	13,911	-	16,897	10,458	-	**41,266**
1993	3,429	-	12,016	2,901	**18,346**	465	-	-	**465**	1,075	-	1,977	5,068	**8,120**	8,424	5,815	2,182	-	**16,421**	13,393	-	19,808	10,151	-	**43,352**
1994	5,052	-	10,996	3,863	**19,911**	453	-	-	**453**	906	-	2,225	5,103	**8,234**	7,978	6,847	2,565	-	**17,390**	14,389	-	20,068	11,531	-	**45,988**
1995	7,955	-	10,217	1,726	**19,898**	477	-	-	**477**	1,305	-	1,675	4,775	**7,755**	7,259	8,698	1,586	-	**17,543**	16,996	-	20,590	8,087	-	**45,673**
1996	9,385	-	10,445	2,176	**22,006**	533	-	-	**533**	1,213	-	1,803	4,871	**7,887**	6,962	12,433	326	-	**19,721**	18,093	-	24,681	7,373	-	**50,147**
1997	10,120	-	11,268	1,068	**22,456**	785	-	-	**785**	1,324	-	2,309	5,168	**8,801**	9,919	11,696	516	-	**22,131**	22,148	-	25,273	6,752	-	**54,173**
1998	8,893	-	11,426	0	**20,319**	578	-	-	**578**	1,769	-	1,761	4,557	**8,087**	9,014	10,711	149	-	**19,874**	20,254	-	23,898	4,706	-	**48,858**
1999	10,772	-	13,741	0	**24,513**	654	-	-	**654**	5,050	-	1,676	2,622	**9,348**	10,806	11,823	106	-	**22,735**	27,282	-	27,240	2,728	-	**57,250**
2000	13,751	-	11,529	0	**25,280**	800	-	-	**800**	6,024	-	1,508	2,186	**9,718**	12,004	12,179	1,007	-	**25,190**	32,579	-	25,216	3,193	-	**60,988**
2001	15,648	-	9,941	0	**25,589**	907	-	-	**907**	5,452	-	1,641	2,432	**9,525**	13,362	10,518	835	-	**24,715**	35,369	-	22,100	3,267	-	**60,736**
2002	18,916	-	9,513	0	**28,429**	1,069	-	-	**1,069**	5,986	-	981	3,395	**10,362**	15,792	11,603	965	-	**28,360**	41,763	-	22,097	4,360	-	**68,220**
2003	20,665	-	6,424	0	**27,089**	1,175	-	-	**1,175**	6,572	-	1,266	2,513	**10,351**	16,004	11,707	1,068	50	**28,829**	44,416	-	19,397	3,581	50	**67,444**
2004	22,045	-	7,146	0	**29,191**	854	380	-	**1,234**	5,896	-	1,582	3,739	**11,217**	18,410	9,862	1,962	420	**30,654**	47,205	-	18,970	5,701	420	**72,296**
2005	16,476	-	12,408	0	**28,884**	857	343	-	**1,200**	5,932	-	1,389	3,435	**10,756**	14,732	12,228	2,513	418	**29,891**	37,997	-	26,368	5,948	418	**70,731**
2006	16,548	-	13,156	0	**29,704**	1,289	-	-	**1,289**	5,898	-	2,149	3,423	**11,470**	16,313	11,884	2,449	419	**31,065**	40,048	-	27,189	5,872	419	**73,528**
2007	20,488	-	10,686	0	**31,174**	1,406	-	-	**1,406**	6,478	-	1,806	3,691	**11,975**	16,779	13,140	2,367	470	**32,756**	45,151	-	25,632	6,058	470	**77,311**
2008	18,598	-	11,878	0	**30,476**	1,354	-	-	**1,354**	5,428	-	1,717	4,195	**11,340**	16,325	14,324	1,770	311	**32,730**	41,705	-	27,919	5,965	311	**75,900**
2009	17,739	-	10,077	0	**27,816**	1,243	-	-	**1,243**	4,832	-	1,860	3,868	**10,559**	14,732	12,459	2,836	328	**30,355**	38,546	-	24,396	6,704	328	**69,974**
2010	15,188	-	10,607	0	**25,795**	1,141	-	-	**1,141**	3,035	-	2,323	4,173	**9,531**	11,214	13,054	2,995	336	**27,599**	30,578	-	25,984	7,168	336	**64,066**
2011	13,593	2,038	10,195	0	**25,826**	1,172	-	-	**1,172**	1,325	746	3,216	4,389	**9,676**	14,718	12,775	265	373	**28,131**	30,808	2,784	26,186	4,654	373	**64,805**
2012	15,600	2,164	10,192	0	**27,956**	471	-	794	**1,265**	2,965	792	2,631	4,081	**10,469**	16,522	12,770	302	428	**30,022**	35,558	2,956	25,593	5,177	428	**69,712**
2013	20,059	2,275	7,262	0	**29,596**	485	-	811	**1,296**	4,488	833	1,405	3,835	**10,561**	18,249	12,764	594	400	**32,007**	43,281	3,108	21,431	5,240	400	**73,460**
2014	21,478	1,832	4,220	0	**27,530**	4	-	1,238	**1,242**	3,942	671	1,383	3,849	**9,845**	7,668	19,080	2,339	474	**29,561**	33,092	2,503	24,683	7,426	474	**68,178**
2015	15,019	2,167	4,597	0	**21,783**	3	-	973	**976**	2,478	794	1,131	3,697	**8,100**	6,648	13,605	2,929	450	**23,632**	24,148	2,961	19,333	7,599	450	**54,491**
2016	17,943	2,494	3,485	0	**23,922**	3	0	1,047	**1,050**	2,876	913	626	3,842	**8,257**	10,308	11,133	2,789	507	**24,737**	31,130	3,407	15,244	7,678	507	**57,966**
2017	23,257	2,191	907	0	**26,355**	1	0	1,093	**1,094**	5,831	802	780	1,523	**8,936**	17,562	7,737	1,370	501	**27,170**	46,651	2,993	9,424	3,986	501	**63,555**
2018	21,611	2,136	2,465	0	**26,212**	5	0	1,204	**1,209**	5,583	782	728	1,880	**8,973**	14,800	10,837	2,837	352	**28,826**	41,999	2,918	14,030	5,921	352	**65,220**



1. Reflects State Water Project through 2006; includes imported water from State Water Project and Buena Vista WSD Agreement beginning in 2007 and continuing through the present year.
2. In January 2011, SCV Water began operation of the Saugus groundwater containment project as part of municipal water supply. After treatment for perchlorate removal, that water was blended with treated imported water and delivered through the SCV Water distribution system. The amounts of treated groundwater from Saugus 1 and 2 utilized by SCWD and NWD reflect the estimated distribution to each Division consistent with the proportions in the December, 2006 MOU that establishes amounts to be delivered to SCWD and NWD. Although the MOU indicates all the treated Saugus 1 and 2 water is delivered to NWD and SCWD, a minor, unquantifiable amount of the water may have been delivered to the other purveyors as a result of varying distribution system operations.
3.Groundwater purchased from Pitchess Detention Center.
4.Groundwater production began at a new LA County Waterworks District 36 Saugus well in December 2011.
5. Recycled water totals for 2012 and 2013 are estimates based on the water treament plant production meter; estimates were necessary due to customer meter failure.

Table 2-2
Individual Water Supply Utilization by Agricultural and Other Users
Santa Clarita Valley Water Report
(Acre-Feet)

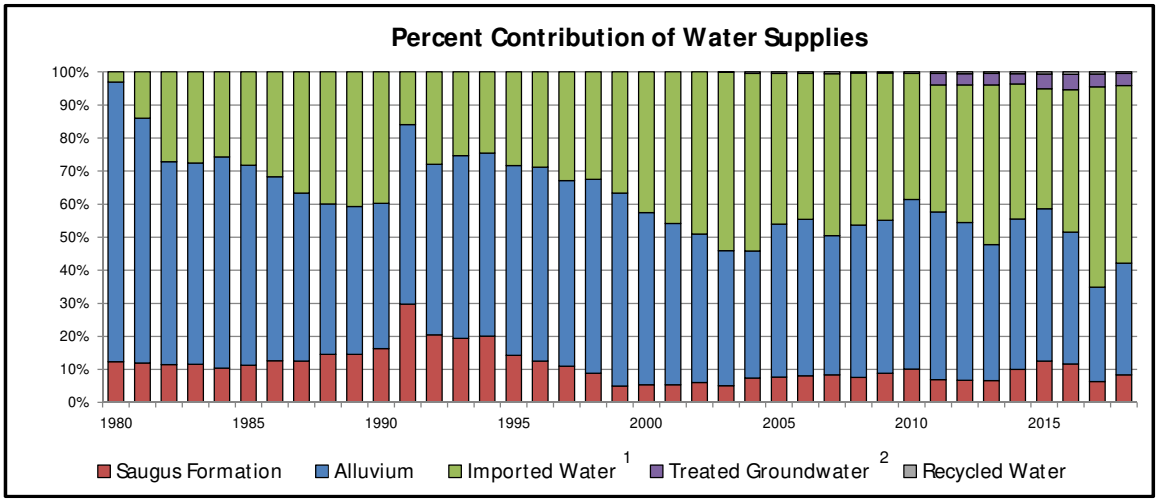
Year	Five Point			Pitchess Detention Center[1]			Small Private Domestic, Irrigation, and Golf Course Uses			All Agricultural and Other Users			
	Local Production		Total	Purchased from SCV Water	Local Production	Total	Local Production		Total	Purchased from SCV Water	Local Production		Total
	Alluvium	*Saugus Formation*		*Imported Water*[2]	*Alluvium*		*Alluvium*[3]	*Saugus Formation*[4]		*Imported Water*[2]	*Alluvium*	*Saugus Formation*	
1980	11,331	20	**11,351**	0	3,000	**3,000**	500	562	**1,062**	0	14,831	582	**15,413**
1981	13,237	20	**13,257**	0	3,000	**3,000**	500	521	**1,021**	0	16,737	541	**17,278**
1982	9,684	20	**9,704**	0	3,000	**3,000**	500	501	**1,001**	0	13,184	521	**13,705**
1983	7,983	20	**8,003**	0	3,000	**3,000**	500	434	**934**	0	11,483	454	**11,937**
1984	11,237	20	**11,257**	0	3,000	**3,000**	500	620	**1,120**	0	14,737	640	**15,377**
1985	9,328	20	**9,348**	0	3,000	**3,000**	500	555	**1,055**	0	12,828	575	**13,403**
1986	8,287	20	**8,307**	0	3,000	**3,000**	500	490	**990**	0	11,787	510	**12,297**
1987	6,512	20	**6,532**	0	3,000	**3,000**	500	579	**1,079**	0	10,012	599	**10,611**
1988	5,951	20	**5,971**	0	3,000	**3,000**	500	504	**1,004**	0	9,451	524	**9,975**
1989	6,243	20	**6,263**	0	3,000	**3,000**	500	522	**1,022**	0	9,743	542	**10,285**
1990	8,225	20	**8,245**	0	2,000	**2,000**	500	539	**1,039**	0	10,725	559	**11,284**
1991	7,039	20	**7,059**	0	2,240	**2,240**	500	480	**980**	0	9,779	500	**10,279**
1992	8,938	20	**8,958**	987	1,256	**2,243**	500	446	**946**	987	10,694	466	**12,147**
1993	8,020	20	**8,040**	443	1,798	**2,241**	500	439	**939**	443	10,318	459	**11,220**
1994	10,606	20	**10,626**	311	1,959	**2,270**	500	474	**974**	311	13,065	494	**13,870**
1995	11,174	20	**11,194**	6	2,200	**2,206**	500	453	**953**	6	13,874	473	**14,353**
1996	12,020	266	**12,286**	780	1,237	**2,017**	500	547	**1,047**	780	13,757	813	**15,350**
1997	12,826	445	**13,271**	1,067	1,000	**2,067**	500	548	**1,048**	1,067	14,326	993	**16,386**
1998	10,250	426	**10,676**	12	2,000	**2,012**	500	423	**923**	12	12,750	849	**13,611**
1999	13,824	479	**14,303**	20	1,842	**1,862**	500	509	**1,009**	20	16,166	988	**17,174**
2000	11,857	374	**12,231**	3	1,644	**1,647**	1,220	513	**1,733**	3	14,721	887	**15,611**
2001	12,661	300	**12,961**	0	1,604	**1,604**	1,224	573	**1,797**	0	15,489	873	**16,362**
2002	13,514	211	**13,725**	0	1,602	**1,602**	1,063	589	**1,652**	0	16,179	800	**16,979**
2003	10,999	122	**11,121**	0	2,273	**2,273**	931	504	**1,435**	0	14,203	626	**14,829**
2004	10,991	268	**11,259**	0	2,725	**2,725**	1,071	535	**1,606**	0	14,787	803	**15,590**
2005	8,648	6	**8,654**	0	2,499	**2,499**	1,133	499	**1,632**	0	12,280	505	**12,785**
2006	11,477	934	**12,411**	0	3,026	**3,026**	1,369	506	**1,875**	0	15,872	1,440	**17,312**
2007	9,968	971	**10,939**	0	2,085	**2,085**	1,088	656	**1,744**	0	13,141	1,627	**14,768**
2008	9,191	330	**9,521**	0	3,506	**3,506**	1,100	623	**1,723**	0	13,797	953	**14,750**
2009	11,061	379	**11,440**	0	3,432	**3,432**	1,097	595	**1,692**	0	15,590	974	**16,564**
2010	10,772	366	**11,138**	0	3,446	**3,446**	957	558	**1,515**	0	15,175	924	**16,099**
2011	10,323	344	**10,667**	0	3,226	**3,226**	1,013	533	**1,546**	0	14,562	877	**15,439**
2012	11,296	0	**11,296**	0	2,722	**2,722**	1,090	586	**1,676**	0	15,108	586	**15,694**
2013	12,091	0	**12,091**	0	2,309	**2,309**	1,061	690	**1,751**	0	15,461	690	**16,151**
2014	9,262	0	**9,262**	0	2,082	**2,082**	869	672	**1,541**	0	12,213	672	**12,885**
2015	8,868	0	**8,868**	0	1,768	**1,768**	723	720	**1,443**	0	11,359	720	**12,079**
2016	11,276	0	**11,276**	0	1,616	**1,616**	713	754	**1,467**	0	13,605	754	**14,359**
2017	10,348	0	**10,348**	0	1,630	**1,630**	576	884	**1,460**	0	12,554	884	**13,438**
2018	10,231	0	**10,231**	0	1,611	**1,611**	595	634	**1,229**	0	12,437	634	**13,071**



1. *Formerly called Los Angeles County Honor Farm.*
2. *Reflects State Water Project through 2006; includes imported water from State Water Project and Buena Vista WSD Agreement beginning in 2007.*
3. *Sand Canyon Country Club irrigation and estimated private pumping.*
4. *Valencia Country Club and Vista Valencia Golf Course irrigation.*

Table 2-3
Total Water Supply Utilization for Municipal, Agricultural and Other Uses
Santa Clarita Valley Water Report
(Acre-Feet)

Year	SCV Water		Local Production		Other	
	Imported Water[1]	*Treated Groundwater*[2]	*Alluvium*	*Saugus Formation*	*Recycled Water*	**Total**
1980	1,126	-	31,463	4,589	-	**37,178**
1981	5,817	-	30,790	4,970	-	**41,577**
1982	9,659	-	21,868	4,090	-	**35,617**
1983	9,185	-	20,286	3,852	-	**33,323**
1984	10,996	-	27,318	4,449	-	**42,763**
1985	11,823	-	25,347	4,715	-	**41,885**
1986	13,759	-	24,205	5,485	-	**43,449**
1987	16,285	-	22,642	5,561	-	**44,488**
1988	19,033	-	21,648	6,928	-	**47,609**
1989	21,618	-	23,721	7,759	-	**53,098**
1990	21,613	-	23,876	8,861	-	**54,350**
1991	7,968	-	27,187	14,917	-	**50,072**
1992	14,898	-	27,591	10,924	-	**53,413**
1993	13,836	-	30,126	10,610	-	**54,572**
1994	14,700	-	33,133	12,025	-	**59,858**
1995	17,002	-	34,464	8,560	-	**60,026**
1996	18,873	-	38,438	8,186	-	**65,497**
1997	23,215	-	39,599	7,745	-	**70,559**
1998	20,266	-	36,648	5,555	-	**62,469**
1999	27,302	-	43,406	3,716	-	**74,424**
2000	32,582	-	39,937	4,080	-	**76,599**
2001	35,369	-	37,589	4,140	-	**77,098**
2002	41,763	-	38,276	5,160	-	**85,199**
2003	44,416	-	33,599	4,207	50	**82,273**
2004	47,205	-	33,757	6,503	420	**87,885**
2005	37,997	-	38,648	6,453	418	**83,516**
2006	40,048	-	43,061	7,312	419	**90,840**
2007	45,151	-	38,773	7,685	470	**92,079**
2008	41,705	-	41,716	6,918	311	**90,650**
2009	38,546	-	39,986	7,678	328	**86,538**
2010	30,578	-	41,159	8,092	336	**80,165**
2011	30,808	2,784	40,748	5,531	373	**80,244**
2012	35,558	2,956	40,701	5,763	428	**85,406**
2013	43,281	3,108	36,892	5,930	400	**89,611**
2014	33,092	2,503	36,896	8,098	474	**81,063**
2015	24,148	2,961	30,692	8,319	450	**66,570**
2016	31,130	3,407	28,849	8,432	507	**72,325**
2017	46,651	2,993	21,978	4,870	501	**76,993**
2018	41,999	2,918	26,467	6,555	352	**78,291**



1. Reflects State Water Project through 2006; includes imported water from State Water Project and Buena Vista WSD Agreement beginning in 2007.
2. In January 2011, SCV Water began operation of the Saugus Formation groundwater containment project. After treatment for perchlorate removal, that water was blended with treated imported water and delivered through the SCV Water distribution system.

These efforts have been successful in dramatically reducing demand in recent years to levels not seen since the late 1990s.

As can also be seen by inspection of **Table 2-3** and **Figure 2-1**, most of the historical increase in water demand from 1980 through 2007 has been met with generally greater proportions of imported SWP water, complemented by other imported water supplies. Variations in water demand since 2007 have been met with a corresponding increase or decrease in the use of imported water while total groundwater use had generally remained constant through 2014, ranging from approximately 46,000 to 49,000 afy. Groundwater use in 2018 was nearly at the lowest level (36,000 af) of the last 26 years (1991-2016).

2.3 Municipal Water Use

The use of local groundwater, augmented by imported SWP and non-SWP water supplies and treated Saugus Formation groundwater, and also slightly augmented by the use of recycled water, are summarized in **Table 2-1**. Municipal water requirements in 2018 (65,200 af) were above the interpolated projections for 2018 in the 2015 UWMP by approximately 2,100 af (about three percent).

The historical trend in service connections by division (formerly by purveyor) is presented in **Table 2-4**. There is a slight decrease in service connections in 2018 compared to 2017, which was the result of VWD incorporating a similar methodology to the other divisions in not counting service connections for fire service and vacant construction locations. Since 2009, the annual increase in the number of new service connections has ranged from 200 to 800. The number of new service connections in recent years is small compared to the number added each year over the 2001 to 2009 period when the number of new service connections ranged from 1,000 to 6,000. In 2001, 52,300 service connections used 60,700 af, and in 2018, 73,000 service connections used 65,200 af (**Figure 2-2**). In 2001, the amount of water per service connection was more than 1 af, while water use has declined recently to levels that average less than 1 af per service connection.

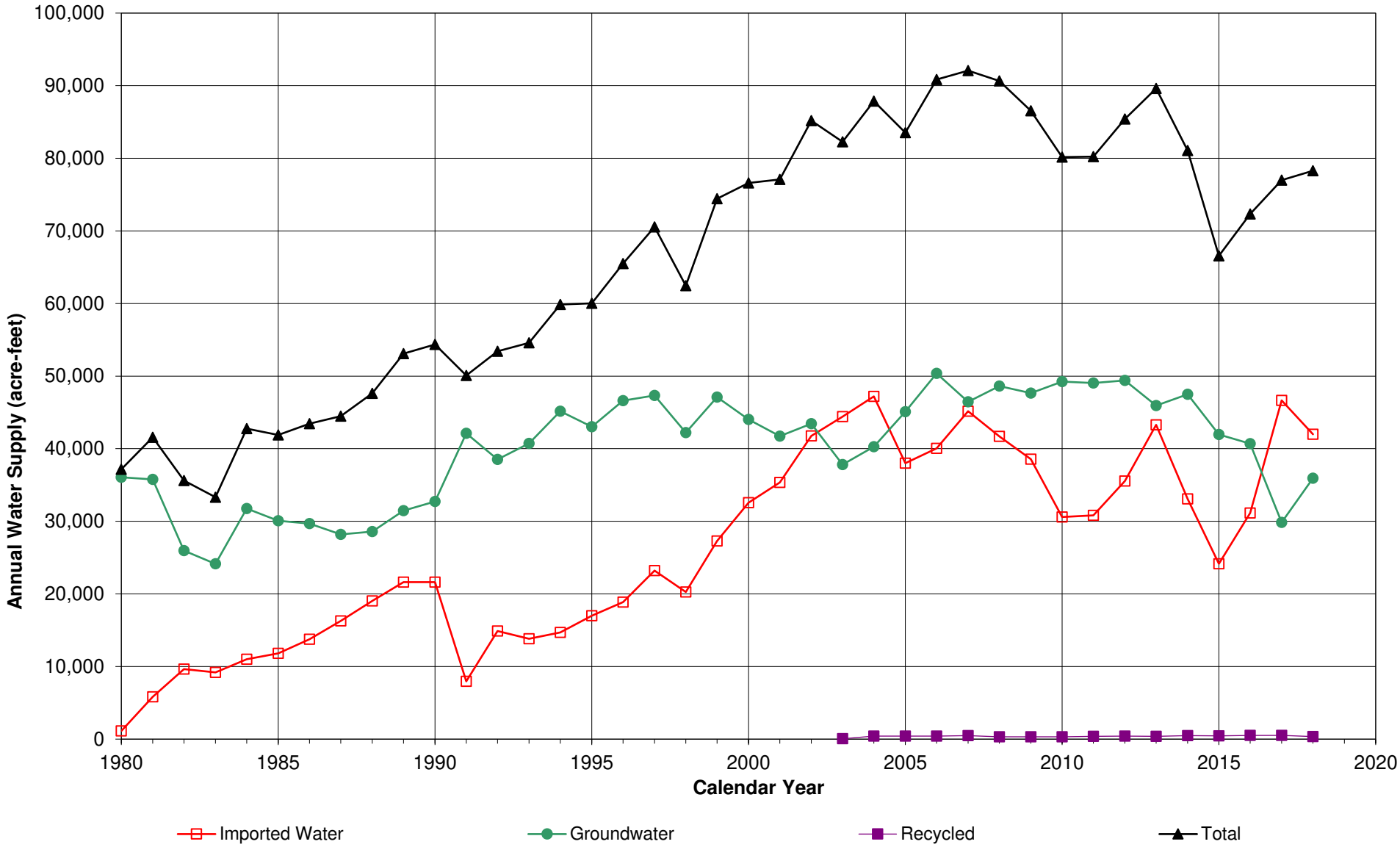
Table 2-4: Service Connections by Division and LACWD36

Year	SCWD	VWD	NWD	LACWD 36	TOTAL
2001	22,000	22,000	7,200	1,111	52,311
2002	24,175	25,286	7,700	1,187	58,348
2003	25,175	26,810	8,650	1,301	61,936
2004	26,161	28,296	9,010	1,319	64,786
2005	27,000	28,800	9,200	1,321	66,321
2006	27,582	29,111	9,346	1,338	67,377
2007	27,911	29,445	9,525	1,343	68,224
2008	28,547	29,924	9,540	1,357	69,368
2009	28,687	29,948	9,580	1,350	69,565
2010	28,904	30,080	9,637	1,332	69,953
2011	29,089	30,217	9,670	1,337	70,313
2012	29,352	30,411	9,693	1,343	70,799
2013	29,713	30,796	9,702	1,350	71,561
2014	30,229	31,101	9,710	1,345	72,385
2015	30,681	31,353	9,736	1,345	73,115
2016	31,229	31,485	9,758	1,349	73,821
2017	31,355	31,578	9,746	1,355	74,034
2018	31,657	30,154[1]	9,789	1,353	72,953

2.4 Agricultural and Other Water Uses

Water supply utilization for agricultural and other non-municipal uses are summarized in **Table 2-2**. The category of Small Private Domestic, Irrigation and Golf Course Uses in **Table 2-2** includes an estimated 500 afy of individual private pumping from the Alluvium. Annual water supply utilization for all agricultural and other non-municipal uses has generally remained stable and has averaged approximately 15,000 af since the mid-1990s and was approximately 13,100 af in 2018.

[1] Prior to 2018, the service connection count for VWD included fire service connections and vacant construction connections. These types of connections will be omitted going forward to be consistent with the other Divisions.

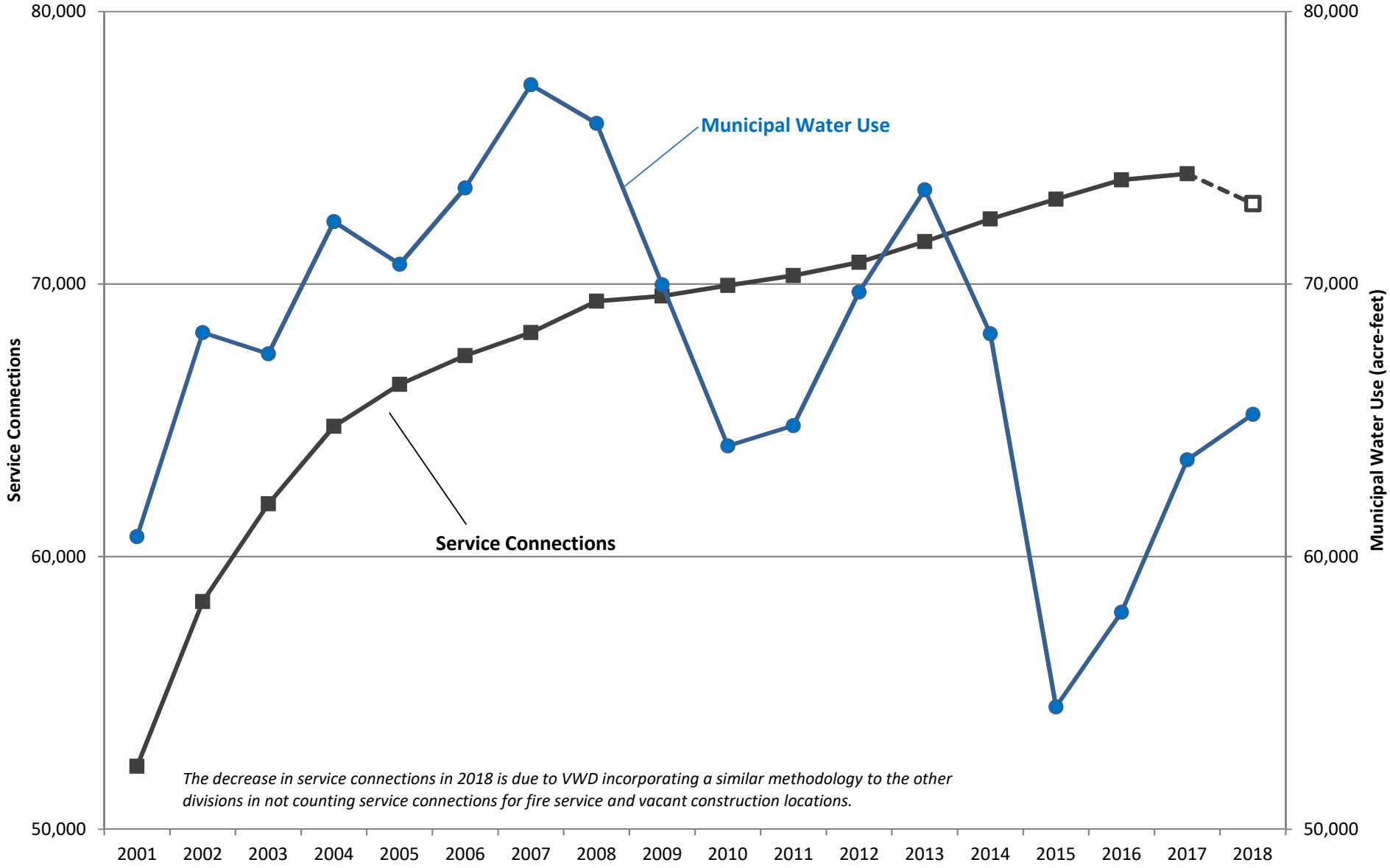


Luhdorff & Scalmanini
Consulting Engineers

Total Water Supply Utilization

Santa Clarita Valley Water Report
Santa Clarita Valley, Los Angeles County, California

Figure 2-1



Luhdorff & Scalmanini
Consulting Engineers

Service Connections and Municipal Water Use

Santa Clarita Valley Water Report
Santa Clarita Valley, Los Angeles County, California

Figure 2-2

3 WATER SUPPLIES

Prior to 1980, local groundwater extracted from the Alluvium and the Saugus Formation was the sole source of water supply in the Santa Clarita Valley. Since 1980, local groundwater supplies have been supplemented with imported SWP water supplies, augmented in 2007 by acquisition of additional supplemental water imported from the Buena Vista Water Storage District (BVWSD) and Rosedale-Rio Bravo Water Storage District (RRWSD), and Yuba Accord water in 2008. Those water supplies have also been slightly augmented by deliveries from the recycled water program since 2003. This section describes the groundwater resources of the Santa Clarita Valley, SWP and other imported water supplies, and the recycled water program.

3.1 Groundwater Basin Yield

The groundwater basin beneath the Santa Clarita Valley, identified in the DWR's interim update to Bulletin 118 (DWR, 2016) as the Santa Clara River Valley Groundwater Basin, East Subbasin (Basin No. 4-4.07), comprises two aquifers, the Alluvium and Saugus Formation. The Alluvium generally underlies the Santa Clara River and its several tributaries, and the Saugus Formation underlies practically the entire Upper Santa Clara River area. The mapped extent of the Santa Clara River Valley East Groundwater Subbasin in DWR Bulletin 118 and its relationship to the extent of the SCV Water service area are illustrated in **Figure 3-1**. The mapped subbasin boundary approximately coincides with the outer extent of the Alluvium and Saugus Formation.

3.1.1 Historical Investigations

Since 1986, there have been several efforts which have evaluated and reported on the Alluvium and Saugus Formations, interpreted hydrologic conditions, and estimated sustainable yields from both formations (Slade, 1986; Slade, 1988; Slade & Associates, 2002; CLWA, 2003; CH2M Hill, 2004; CH2M HILL, 2005; CH2M HILL and LSCE, 2005; CLWA, 2005; and LSCE and GSI, 2009). Generally, these investigations have similar conclusions for basin conditions and yield:

- Analysis of groundwater levels and production indicates that there have been no conditions that would be illustrative of groundwater overdraft.
- The utilization of operational yield (as opposed to perennial yield) as a basis for managing groundwater production would be more applicable in this basin to reflect the fluctuating utilization of groundwater in conjunction with imported SWP water.
- The operational yield of the Alluvium would typically be 30,000 to 40,000 afy for wet and normal rainfall years, with an expected reduction into the range of 30,000 to 35,000 afy in dry years.
- The operational yield of the Saugus Formation would typically be in the range of 7,500 to 15,000 afy on a long-term basis, with possible short-term increases during dry periods into a range of 15,000 to 25,000 afy, and to 35,000 afy if dry conditions continue.

These conclusions became the foundation of the initial Groundwater Operating Plan (initial Plan) first developed in 2004 after the adoption of a formal Groundwater Management Plan (GWMP) in 2003 (CLWA, 2003). The groundwater component of overall water supply in the Valley was derived from this initial Plan to meet water requirements (municipal, agricultural and other non-municipal, and small individual domestic) while maintaining the basin in a sustainable condition (i.e., no long-term depletion of groundwater or interrelated surface water). This initial Plan also addressed groundwater contamination issues in the basin, all consistent with the GWMP. The initial Plan was based on the concept that pumping can vary from year to year to generally rely on increased groundwater use in dry periods and increased recharge during locally wet periods, and to collectively assure that the groundwater basin is adequately replenished through various wet/dry cycles.

3.1.2 Current Operating Plan

The initial Plan was updated in 2008 to evaluate the yield of the basin and present a sustainable operating plan for utilizing groundwater resources from the Alluvium and the Saugus Formation under wet, normal, and dry conditions (LSCE and GSI, 2009), summarized in **Table 3-1**. This effort to update the initial Plan was conducted partly in preparation for the 2010 UWMP and continued in the 2015 UWMP, and in part because of events that can be expected to impact the future reliability of the supplemental water supply from the SWP. The purveyors (at the time) initiated this updated analysis (Current Operating Plan) to further assess groundwater development potential and possible augmentation of the initial Plan. A further consideration in conducting the updated analysis of the basin was that climate change could alter local rainfall and associated recharge patterns, thus affecting local groundwater supplies, i.e. the yield of the basin. Finally, the Los Angeles County Flood Control District (LACFCD) was planning a number of small flood control projects in the Santa Clarita Valley that would result in an increase in recharge to the groundwater system. The purveyors had interest in whether that potential for increased recharge from the LACFCD projects could appreciably augment the yield of the basin.

Table 3-1: Groundwater Operating Plan for the Santa Clarita Valley

Aquifer	Groundwater Production (af)			
	Normal Years	Dry Year 1	Dry Year 2	Dry Year 3
Alluvium	30,000 to 40,000	30,000 to 35,000	30,000 to 35,000	30,000 to 35,000
Saugus	7,500 to 15,000	15,000 to 25,000	21,000 to 25,000	21,000 to 35,000
Total	37,500 to 55,000	45,000 to 60,000	51,000 to 60,000	51,000 to 70,000

The updated basin yield analysis (LSCE and GSI, 2009), completed in August 2009, had the following conclusions:

- The Current Operating Plan, with currently envisioned pumping rates and distribution and comparable to the initial Plan described above, will not cause detrimental short- or long-term effects to the groundwater and surface water resources in the Valley and is, therefore,

sustainable (**Table 3-1**). Further, local conditions in the Alluvium in the eastern end of the basin can be expected to repeat historical groundwater level declines during dry periods, necessitating a reduction in desired pumping from the Alluvium due to decreased well yield. However, those reductions in pumping from the Alluvium can be made up by an equivalent amount of increased pumping on a short-term basis in other parts of the basin without disrupting basin-wide sustainability or local pumping capacity in those other areas. For the Saugus Formation, the modeling analysis indicated that it can sustain the pumping that is embedded in the Current Operating Plan.

- A Potential Operating Plan (pumping between 41,500 and 47,500 afy from the Alluvium) would result in lower groundwater levels, failure of the basin to fully recover (during wet hydrologic cycles) from depressed storage that would occur during dry periods, and generally declining trends in groundwater levels and storage. Long-term lowering of groundwater levels would also occur in the Saugus Formation (pumping between approximately 16,000 and nearly 40,000 afy) with only partial water level recovery occurring in the Saugus Formation. Thus, the Potential Operating Plan would not be sustainable over a long-term period.
- Several climate change models were examined to estimate the potential impacts on local hydrology in the Santa Clarita Valley. The range of potential climate change impacts extends from a possible wet trend to a possible dry trend over the long term (from 2010 through 2095). The trends that range from an approximate continuation of historical average precipitation, to something wetter than that, would appear to result in continued sustainability of the Current Operating Plan, again with intermittent constraints on full pumping in the eastern part of the basin. The potential long-term dry trend arising out of climate change would be expected to decrease local recharge to the point that lower and declining groundwater levels would render the Current Operating Plan unsustainable. Ultimately it was recognized that a wide range of potential climate change scenarios produce a range of non-unique results with respect to local hydrologic conditions and associated sustainable groundwater supply. Notable in the wide range of possibilities, however, was the output that, over the planning horizon of the 2010 and 2015 UWMP (through 2050), the range of relatively wet to relatively dry hydrologic conditions would be expected to produce sustainable groundwater conditions under the Current Operating Plan.

Based on the preceding conclusions, groundwater utilization generally has continued in accordance with the Current Operating Plan; and the Potential Operating Plan is not being considered for implementation.

3.1.3 Sustainable Groundwater Management Act (SGMA)

The Sustainable Groundwater Management Act (SGMA) was passed by the State in 2014, which provided a state-wide framework for "management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results". SGMA requires local water agencies to sustainable manage groundwater resources. By January 2022, the Santa Clarita Valley Groundwater Sustainability Agency (SCV-GSA) will develop a Groundwater

Sustainability Plan (GSP) that describes basin conditions and how SCV-GSA will sustainably manage the groundwater resources in the basin without causing significant and unreasonable undesirable results.

Sustainable groundwater management provides a buffer against drought and climate change and contributes to reliable water supplies regardless of weather patterns. Santa Clarita depends on groundwater for a portion of its annual water supply and sustainable groundwater management is essential to a reliable and resilient water system.

The SCV-GSA's GSP will cover the East Subbasin of the Santa Clara River Groundwater Basin (**Figure 3-1**). Its western limit is near the Los Angeles-Ventura County Line and its eastern limit is generally along Highway 14. It includes the neighborhoods of Castaic, Stevenson Ranch, Valencia, Newhall, Saugus, and Canyon Country.

For information on the SGMA efforts in the Subbasin, please refer to the homepage for SCV-GSA at https://scvgsa.org.

3.2 Alluvium – General

The spatial extent of the aquifers used for groundwater supply in the Valley, the Alluvium and the Saugus Formation, are illustrated in **Figure 3-1**. Geologic descriptions and hydrogeologic details related to both aquifers are included in several technical reports including Slade (1986, 1988, and 2002), CH2M Hill (2005) and LSCE (2005), the 2005 UWMP (CLWA, 2005), the 2010 UWMP (CLWA, 2011), and the 2015 UWMP.

Consistent with the 2001 Update Report (Slade, 2002), the 2005 Basin Yield Report (CH2M Hill and LSCE, 2005), the 2009 Updated Basin Yield Report (LSCE and GSI, 2009), and the UWMPs (2005, 2010, and 2015), the management practice of the Agency continues to be reliance on groundwater from the Alluvium for part of the overall municipal water supply, whereby total pumping from the Alluvium (by municipal, agricultural, and private pumpers) is in accordance with the Current Operating Plan, 30,000 to 40,000 afy in wet and normal years, with possible reduction to 30,000 to 35,000 afy during multiple dry years. Such operations will maximize use of the Alluvium because of the aquifer's ability to store and produce good quality water on a sustainable basis, and because the Alluvium is capable of rapid recovery of groundwater storage in wet periods. As with many groundwater basins, it is possible to intermittently exceed a long-term average yield for one or more years without long-term adverse effects. Higher pumping for short periods may temporarily lower groundwater storage and related water levels, as has been the case in the Alluvium several times since the 1930's. However, subsequent decreases in pumping limit the amount of water level decline. Normal to wet-period recharge results in a rapid return of groundwater levels to historic highs. Historical groundwater level data collected from the Alluvium over numerous hydrologic cycles continue to provide assurance that groundwater elevations, if locally lowered during dry periods, recover in subsequent average or wet years. Such water level response to rainfall is a significant characteristic of permeable, porous, alluvial aquifer systems that occur within large watersheds. In light of these historical observations, complemented by

the long-term sustainability analysis using a numerical groundwater flow model in 2008, there is ongoing confidence that groundwater will continue to be a sustainable source of water supply at the rates of pumping as described in the 2009 Updated Basin Yield Report, and incorporated in the Valley's recent UWMPs.

Long-term adverse impacts to the Alluvium could occur if the amount of water extracted from the aquifer were to exceed the amount of water that recharges the aquifer over an extended period. However, the quantity and quality of water in the Alluvium and all significant pumping from the Alluvium are routinely monitored, and no long-term adverse impacts have ever been evident. Ultimately, SCV Water has identified cooperative measures to be taken, if needed, to ensure sustainable use of the aquifer's groundwater resources. Such measures include, but are not limited to, the continuation of conjunctive use of SWP and other imported supplemental water with local groundwater, artificial recharge of the aquifer with local runoff or other surface water supplies, expanded use of other water supplies such as recycled water, and expanded implementation of demand-side management, including conservation.

3.2.1 Alluvium – 2018 Pumpage

Total pumping from the Alluvium in 2018 was approximately 26,450 af, approximately 4,450 af more than was pumped in 2017 and below the Current Operating Plan range for a dry year. Of the total Alluvial pumping in 2018, approximately 14,000 af (53 percent) was for municipal water supply, and the balance, approximately 12,450 af (47 percent), was for agriculture and other private uses, including individual domestic uses. The increase in groundwater pumping from the Alluvium in 2018 over 2017 was the result of a lower proportion of water demands being met by imported water supplies.

3.2.2 Alluvium – Hydrogeologic Conditions

Interpretation of longer term, historical groundwater levels and pumping indicate that the amount of groundwater pumping in 2018 was at the lower end of historically observed conditions, while recent trends in groundwater levels are consistent with dry period declines or stable conditions. Since 1980, when SWP deliveries began, there has been a change in municipal/agricultural pumping distribution toward a higher fraction for municipal water supply from approximately 50 percent to more than 65 percent of Alluvial pumpage, reflecting general land use changes in the Valley. The recent shift back to a 50 percent municipal/agricultural pumping distribution over the last few years is related to an increase in imported municipal water use and not due to changes in land use. Ultimately, on a long-term average annual basis since the initiation of SWP deliveries in 1980, total Alluvial pumping has been approximately 32,700 afy, which is at the lower end of the range of operational yield of the Alluvium during normal years and in the middle of the range for dry years. That annual average has been higher over the last ten years, approximately 34,400 afy, which remains within the range of operational yield of the Alluvium on a long term annual average basis representing normal hydrologic conditions and also within the range for multiple dry year conditions. The overall historic record of Alluvial pumping is shown in **Table 2-3** and illustrated in **Figure 3-2**.

Groundwater levels in various parts of the basin have historically exhibited different responses to both pumpage and climatic fluctuations. Since the 1960's, depending on location, groundwater levels in the Alluvium have remained fairly stable with small seasonal variations (generally toward the western end in the main part of the Valley), or have fluctuated from near the ground surface when the subbasin is full in wet periods, to as much as 100 feet lower during intermittent dry periods of reduced recharge (generally toward the eastern end of the subbasin). For illustration of the various groundwater level conditions in the Valley, the Alluvial wells have been grouped into areas with similar groundwater level patterns, as shown in **Figure 3-3**. The groundwater level records from many monitored wells in the Valley have been analyzed and a representative number of wells have been selected to illustrate groundwater conditions in the different areas of the Valley. The data from the representative wells have been organized into hydrograph form showing groundwater elevation on a time series basis as illustrated in **Figures 3-4 and 3-5**. Also shown on these plots is a marker indicating whether any calendar year had below-average rainfall. The plots show the range of values over time through each area and contain a sufficiently long-term record to illustrate trends over time that are typically observed in each area.

Situated along the upstream end of the Santa Clara River, the Mint Canyon area, located at the far eastern end of the Valley, and the nearby Above Saugus Water Reclamation Plant (WRP) area generally exhibit similar groundwater level responses (**Figure 3-4**) to hydrologic (local climate) and pumping conditions. Groundwater elevations in wells located in the Mint Canyon area generally show more pronounced water level recoveries during wet periods as compared to groundwater levels in the Above Saugus WRP area. These eastern parts of the Valley have historically experienced a number of alternating wet and dry hydrologic conditions during which groundwater level declines have been followed by returns to high or mid-range historic levels. When water levels are low, well yields and pumping capacities in this and other eastern areas are impacted due to a reduction in the saturated thickness of the Alluvium which impacts well operations. SCV Water typically responds by decreasing or ceasing pumping from the Alluvium and increasing the use of groundwater from the Saugus Formation and imported (SWP and other) supplies, as shown in **Table 2-3**. The Agency also shifts a fraction of the Alluvial pumping that would normally be supplied by the eastern areas to areas further west, where well yields and pumping capacities remain generally constant because of smaller groundwater level fluctuations in response to wet and dry hydrologic periods. Long-term pumping in the Mint Canyon area has averaged approximately 6,900 afy (1985-2018). However, since a high of over 12,000 afy in 2006, pumping in the Mint Canyon area has since generally declined, and in 2018 pumping was approximately 1,600 af. Historical wet and dry periods illustrate the groundwater level response to managed Alluvial pumping. The period from 2006 through 2010 saw water level declines on the order of 50 to 60 feet; pumping was gradually reduced, and water levels stopped declining (**Figure 3-6**)**.** Subsequent wet conditions in late 2010, continuing into 2011, resulted in a nearly full recovery of groundwater levels and aquifer storage. With such high groundwater levels, pumping was temporarily increased in 2011/2012. Dry conditions since 2012 coupled with decreases in pumping have resulted in groundwater levels stabilizing and showing slight increases in groundwater levels since 2013 in the Mint Canyon area

(**Figure 3-4**). It is expected that aquifer storage and groundwater levels in the Mint Canyon area will recover once normal and/or wet conditions resume in the Valley.

Just west of the Mint Canyon area, the Above Saugus WRP area has shown similar hydrologic trends. Pumping trends are historically similar to the Mint Canyon area, with the pumping fluctuating in response to wet and dry periods. However, long-term average annual pumping in the Above Saugus WRP area has been less than half the pumping rate in Mint Canyon, as shown in **Figure 3-6**, at approximately 3,300 afy (1985-2018). Since the most recent high pumping rate of almost 6,000 af in 2010, pumping in this area has steadily declined, and in 2018 was 800 af, a slight increase from 2017. Groundwater level response is similar to the Mint Canyon area in that groundwater levels are sensitive to variations in rainfall and pumping. Groundwater levels have exhibited a decline since 2005/2006 (except for a moderate rise in 2010/2011 in response to the above normal rainfall in that period) through 2013. Groundwater levels in the Above Saugus WRP area were relatively stable or slightly increasing from 2014 through 2018.

In the Bouquet Canyon area, groundwater levels, as represented by the Guida and Clark wells in **Figure 3-4**, are influenced by a number of factors, including groundwater pumping and recharge from rainfall, natural streamflow in Bouquet Canyon Creek and releases from Bouquet Reservoir into Bouquet Canyon Creek. Long-term annual groundwater pumping has averaged 1,600 afy (1985-2018) and has steadily declined since 2006 from a high of approximately 2,400 af to approximately 900 af in 2018 (similar to the pumping rates of the late 1980s). Since 2005, groundwater elevations had increased in response to a wet rainfall year in 2005 and to resumed 'normal' releases of water from Bouquet Reservoir to Bouquet Canyon Creek that occurred in 2009 through 2011[2]. However, the dry conditions and a continued reduction in Bouquet Reservoir releases (related to streambed issues – not drought related) from 2012 through 2018 resulted in groundwater elevations declining a total of 30 to 45 feet. Following a slight increase in 2017, groundwater levels in 2018 are at historic lows in the SCWD-Clark well.

Wells located in the San Francisquito Canyon area and presented in **Figure 3-5** (W5, W9 and W11 wells) generally exhibit similar long-term groundwater level trends that respond to variations in rainfall and pumpage with seasonal declines and partial recovery in dry years or full recovery to historical highs in

[2] Flow in Bouquet Canyon Creek is regulated by releases from Bouquet Reservoir, which is operated by Los Angeles Department of Water and Power. Per an agreement with United Water Conservation District, minimum releases from Bouquet Reservoir are specified. These releases had been maintained until a series of storms in 2005 created substantial runoff and altered the streambed so that even small amounts of flow overflows onto Bouquet Canyon Road. Efforts to prevent flow onto the road while maintaining specified releases have not been completely successful, and therefore releases from Bouquet Reservoir have continued to be reduced during March through October since 2006 through 2018 (except for 2009-2011). Currently, the Los Angeles County Department of Public Works is overseeing the Bouquet Canyon Creek Restoration Project with the primary objective to restore in-stream and riparian habitat by re-establishing creek flows. In 2018, field investigations, technical analyses, and modeling were initiated for the project (http://dpw.lacounty.gov/wrd/Projects/BouquetCanyonCreek/index.cfm).

wet years, similar in nature to other eastern areas of the Valley. In this area, groundwater levels have declined approximately 50 feet from historic highs between 2011 and 2016. 2017 saw an increase in groundwater elevations of approximately 10 ft with little to no change in elevation in 2018. Groundwater level response in 2016 through 2018 may have been influenced by slight variation in pumping. The long-term average annual pumping rate has been approximately 1,800 afy (1985-2018) with a peak of approximately 3,900 af in 2005. From 2005 through 2015, pumping was relatively constant, averaging approximately 3,200 afy, however, total pumping in this area declined from 2016 to 2018 with values ranging between 1,800 to 2,300.

In the western part and lower elevation portion of the subbasin, groundwater levels in the Alluvium respond to pumping and precipitation in a similar manner, but to an attenuated or limited extent compared to those situated in the eastern, higher elevation areas. As shown in the group of groundwater elevation hydrographs in **Figure 3-5** the magnitude of groundwater level fluctuations in the Below Saugus WRP area are less than those observed in the eastern areas of the Valley.

Wells located in the Below Saugus WRP area in **Figure 3-5** (VWD's I and Q2 wells), along the Santa Clara River immediately downstream of the Saugus Water Reclamation Plant generally show declining groundwater levels from 2006 through 2015, followed by relatively stable levels through 2018. Groundwater levels in this area did not have the short-term increase in levels in 2010 and 2011 as seen in other areas, and they have had a more rapid rate of decline since 2011, although that rate of decline stopped in 2015 and has been stable since then with some variations in groundwater levels of approximately 5 to 10 feet. Although the groundwater levels in the Below Saugus WRP area are relatively low, the water levels are still at or substantially above well screen intake sections and they remain higher than historic lows observed in the 1960s. Pumping in this area had been generally constant at approximately 6,000 afy from the mid-1990s to the early 2000s, followed by more variable (and overall increasing) annual pumping that ranged from 4,000 af in 2005/2006 to 10,500 af in 2014 and at or below 8,000 in 2015 and 2016. In 2018, pumping increased to 7,000 af, up from 4,700 af in 2017.

Groundwater levels in the Castaic Valley area, located along Castaic Creek below Castaic Lake, have been relatively stable since the 1950s to approximately 2011. From 2011 to 2016, there was a decline of approximately 30 feet. These declines are likely in response to dry climatic conditions (**Figure 3-5**). The annual pumping rate of wells in this area has been approximately 5,000 afy (1985-2018) (**Figure 3-6**). Over the past three years, pumping has been stable at approximately 3,100 afy. Groundwater levels in 2017 increased by 20 to 30 feet in the Castaic Valley Area and had risen nearly to historic highs. Groundwater levels decreased by about 10 feet in 2018.

In the area downstream of the Valencia Water Reclamation Plant (WRP), which discharges treated effluent to the Santa Clara River, groundwater pumping increased from below 5,000 afy in the 1980s to above 10,000 afy in the late-1990s. Since then, pumping has increased at a slower rate averaging approximately 11,100 afy since 2000 and was approximately 10,800 af in 2018 (**Figure 3-6**). Long-term groundwater levels in this area have generally been stable and have exhibited slight response to

pumping and climatic fluctuations, although from 2008 to 2016, a slight decline of approximately 10 feet has been observed in some wells in this area due to generally dry conditions. In 2017, groundwater levels increased slightly (5-10 feet) and remained unchanged in 2018 (**Figure 3-5**).

In summary, groundwater levels over the last 35 years in the Alluvium have exhibited historic highs as recent as 2011. In some locations, there are dry-period declines (resulting from use of some groundwater from storage) followed by wet-period recoveries of groundwater levels and storage. Since importation of supplemental SWP water beginning in 1980, or over the last 50 to 60 years (since the 1950s - 60s), groundwater levels in the Alluvium show no chronic trend toward decreasing water levels and storage (overdraft), although the recent long-term drought has had an influence on groundwater levels in many areas of the subbasin. Consequently, pumping from the Alluvium has been and continues to be sustainable, well within the operational yield of that aquifer on a long-term annual average basis. In 2018, groundwater levels were stable to slightly lower compared to the previous year.

3.3 Saugus Formation – General

Wells constructed in the Saugus Formation are operated by SCV Water in a manner consistent with the Current Operating Plan and historical investigations that include the 2001 Update Report (Slade, 2002), the 2005 Basin Yield Report (CH2M Hill and LSCE, 2005), and the 2009 Updated Basin Yield Report (LSCE and GSI, 2009). These wells are primarily located in the southern and western portions of the basin (**Figure 3-7**). The Current Operating Plan targets pumping from the Saugus Formation in the range of 7,500 to 15,000 afy in average/normal years, with planned dry-year pumping of 15,000 to 35,000 afy for one to three consecutive dry years, when shortages to SWP water supplies could occur. The Current Operating Plan envisioned that high pumping during dry periods would be followed by periods of lower pumping in order to allow recovery of water levels and storage in the Saugus Formation. Maintaining the substantial volume of water in the Saugus Formation remains an important strategy to help maintain water supplies in the Santa Clarita Valley during drought periods. The ability to pump the Saugus Formation at dry-year levels has been historically impaired due to perchlorate contamination issues and resultant reduced production capacity. Both of these issues are expected to be resolved through installation of treatment and achieving containment.

3.3.1 Saugus Formation – 2018 Pumpage

Total pumping from the Saugus Formation in 2018 was approximately 9,450 af, or approximately 1,550 af more than in the preceding year. This included approximately 2,900 af that were pumped from SCV Water's Saugus 1 and Saugus 2 wells as part of the perchlorate pump and treat program as described herein. The bulk of Saugus Formation pumping in 2018 (approximately 8,800 af) was for municipal water supply, and the balance (650 af) was for agricultural and other uses.

3.3.2 Saugus Formation – Hydrogeologic Conditions

Since the importation of SWP water beginning in 1980, total pumping from the Saugus Formation has ranged between 3,700 afy in 1999 to a high of nearly 15,000 af in 1991. Average annual pumping from 1980 through 2018 has been approximately 7,400 af. These pumping rates remain well within, and

generally at the lower end of the range of the Current Operating Plan for the Saugus Formation. The overall historic record of pumping from the Saugus Formation is illustrated in **Figure 3-8**.

Since the early 1990s, when groundwater pumping from the Saugus Formation peaked, there had been a steady decline in pumping through the remainder of that decade. Since then, Saugus Formation pumping was trending upward from approximately 4,000 af in the early 2000s to more than 11,800 af in 2016. Pumping in the Saugus was 9,450 af in 2018, with the recent 5-year average at approximately 10,200 afy.

Unlike the Alluvium, which has an abundance of wells with extensive water level records, the water level data for the Saugus Formation are limited by both the geographic distribution of the wells in that Formation and the period of record. The number of wells has changed over the last several years with the addition of monitoring wells west of the Whittaker Bermite facility in the vicinity of wells VWD-201 and VWD-160. However, the wells that do have a historical water level record that exists prior to the initiation of SWP deliveries in 1980, indicate that groundwater levels in the Saugus Formation were relatively low in the 1960s and experienced a gradual increase by the mid-1980s, followed by a decline that ended in the early 1990s. Since then, groundwater levels increased over the next 10 to 15 years and over the past 8 or 9 years have experienced a decline (**Figure 3-9**). The most recent downward trend has been experienced since 2006 through 2016 which also corresponds to a long-term climatic dry period. In the southern-most Saugus Formation wells (South Fork Area plot), groundwater level declines during this dry period have ranged from 50 to 100 feet. Changes in groundwater elevations varied in 2018 for the Southern Saugus area. Water levels were either stable or showed rises or declines of 10 feet or less. In the central and western Saugus Formation wells (Central/West Area plot), declines have ranged from 30 to 50 feet from 2006 to 2016. 2017 had a modest increase in groundwater levels between 5-10 feet but declines in 2018 have resulted in historic lows for VWD-160 and 206. VWD-201 experienced groundwater decline in 2018 but remains 30 feet above the historic low occurring in the early 1990s. There continues to be fluctuations in groundwater levels attributed to seasonal and climatic fluctuations along with pumpage, but the prevalent long-term trend, when evaluating groundwater levels back to the 1960s is one of general stability.

Consistent with the 2001 Update Report (Slade, 2002), the 2005 Basin Yield Report (CH2M Hill and LSCE, 2005), the 2005 UWMP, the 2009 Updated Basin Yield Report (LSCE and GSI, 2009), the 2010 UWMP, and the 2015 UWMP SCV Water continues to maintain groundwater storage and associated water levels in the Saugus Formation so that supply is available during drought periods, when supplies from the Alluvium, the SWP, and/or other supplemental supplies may be reduced. The period of increased pumping during the early 1990s is a good example of this management strategy. Most notably, in 1991, when SWP deliveries were substantially reduced, increased pumping from the Saugus Formation made up almost half of the decrease in SWP deliveries. The increased pumping over several consecutive dry years (1991-1994) resulted in short-term groundwater level declines, reflecting the use of water from storage. However, groundwater levels subsequently recovered in the Saugus Formation when pumping

declined in the late 1990s to early 2000s to around 4,000 afy, reflecting recovery of groundwater storage.

3.4 Imported Water Supplies

SCV Water obtains the majority of its imported water supplies from the SWP, which is owned and operated by the DWR. SCV Water is one of 29 contractors holding long-term SWP contracts with DWR. SWP water originates as rainfall and snowmelt in the Sacramento and Feather watersheds where the SWP's largest reservoir, Lake Oroville, is located. The water released from Lake Oroville flows down the Feather River, joins flows in the Sacramento River and enters the Sacramento-San Joaquin Delta. Water is diverted from the Delta into the Clifton Court Forebay, and then pumped into the 444-mile long California Aqueduct. A portion of SWP water delivered to southern California may temporarily be stored in San Luis Reservoir, which is jointly operated by DWR and the U.S. Bureau of Reclamation. Prior to delivery to SCV Water, SWP supplies are stored in Castaic Lake, a terminal reservoir located at the end of the West Branch of the California Aqueduct.

SCV Water's service area covers approximately 195 square miles (124,800 acres), including the City of Santa Clarita and surrounding unincorporated communities. Water from the SWP and other sources located outside the Valley is treated, filtered and disinfected at SCV Water's Earl Schmidt Filtration Plant and Rio Vista Water Treatment Plant, which have a combined treatment capacity of 122 million gallons per day. This water is delivered from the treatment plants to each of the Water Divisions and LACWD 36 through a distribution network of pipelines and turnouts. At present, SCV Water delivers water through 26 potable turnouts as schematically illustrated in **Figure 3-10**.

In 2018, SCV Water fulfilled the following major accomplishments in order to enhance, preserve, and strengthen the quality and reliability of existing and future supplies:

- continued participation in long-term water banking programs with RRBWSD and Semitropic,
- continued to participate in two-for-one exchange programs with RRBWSD and WKWD,
- continued implementation of the AB 3030 Groundwater Management Plan and continued planning efforts for the development of a groundwater sustainability plan (GSP) under the Sustainable Groundwater Management Act (SGMA),
- executed a Memorandum of Understanding with the United Water Conservation District to facilitate cooperative management of Santa Clara River water resources, building upon and complementing the 2001 MOU that established a joint water supply and water quality monitoring and planning program regarding the Upper and Lower Santa Clara River areas,
- joined the Santa Clarita Valley Groundwater Sustainability Agency (GSA) Joint Powers Authority,
- executed an amendment to extend the SWP contract by 50 years,
- participated in SWP contract negotiations to implement the California Water Fix,
- joined the California Water Fix financing Joint Power Authority, and
- executed an agreement to participate in Phase 2 of Sites Reservoir planning studies.

3.4.1 State Water Project Table A and Other Imported Water Supplies

Each SWP contractor has a specified water supply amount shown in Table A of its contract that currently totals approximately 4.1 million af. SCV Water's contractual Table A Amount is 95,200 afy of water from SWP. The term of the SCV Water contract is through 2038. DWR released the final Environmental Impact Report (EIR) for the proposed extension in November 2018, and in January 2019, the Agency executed an amendment to extend the contract term through 2085, however, the amendment will not become effective until certain precedent conditions are met.

In addition to Table A supplies, the SWP Contract provides for additional types of water that may periodically be available, from "Article 21" water and the Turn-Back Water Pool Program. 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. Turn-Back Water Pool is for SWP contractors that will not use their allocated annual entitlement and wish to sell their project water to another contractor. Sometimes water becomes available in either of these programs that SCV Water may decide to utilize.

In early 2007, SCV Water finalized a Water Acquisition Agreement with the BVWSD and the RRBWSD in Kern County. Under this Program, Buena Vista's high flow Kern River entitlements (and other acquired waters that may become available) are captured and recharged within Rosedale-Rio Bravo's service area on an ongoing basis. SCV Water receives 11,000 af of these supplies annually through either exchange of Buena Vista's and Rosedale-Rio Bravo's SWP supplies or through direct delivery of water to the California Aqueduct via the Cross Valley Canal.

In 2008, SCV Water entered into the Yuba Accord Agreement, which allows for the purchase of water from the Yuba County Water Agency through the Department of Water Resources to 21 State Water Project contractors (including SCV Water) and the San Luis and Delta-Mendota Water Authority. This non-SWP supply is available to SCV Water in certain years depending on hydrology. Under certain hydrologic conditions, additional water may be available to SCV Water from this program.

Additionally, SCV Water has access to 4,684 af of "flexible storage" in Castaic Lake. In 2015, SCV Water negotiated a 10-year extension of an agreement with the Ventura County SWP contractors (County) to allow SCV Water to utilize the County's flexible storage account of 1,376 af. SCV Water may withdraw water from the County's flexible storage on an as-needed basis; however, any water withdrawn from this storage account must be replaced within five years. The combined flexible storage from SCV Water's and the County's accounts provides total flexible storage of 6,060 af, which is maintained in Castaic Lake for use in a future dry period or an emergency.

As described in the 2015 UWMP, the Newhall Land and Farming Company (now Five Point Holdings, LLC) acquired a water transfer from Kern County sources known as the Nickel water. This source of supply totals 1,607 afy. The Nickel water comes from a firm source of supply. This source of supply was acquired in anticipation of the development of Newhall Ranch, and is a supply that is contractually

committed by Newhall Land under the Newhall Ranch Specific Plan approved by the Los Angeles County Board of Supervisors. Under its acquisition agreement, Newhall Land may assign its rights to this supply to SCV Water, and in the meantime, may sell on an annual basis any or all of this supply. Prior to any sale, it is assumed that SCV Water may purchase this supply from Newhall Land, in a year in which additional supply may be needed.

3.4.2 2018 Imported Water Supply and Disposition

SCV Water has a contractual Table A Amount of 95,200 afy of water from SWP. As shown in **Table 3-2**, the allocation process proceeded as follows: the initial allocation for 2018 was announced as 15 percent on November 29, 2017, and the final allocation of 35 percent was announced on May 21, 2018. SCV Water's final allocation of Table A Amount for 2018 was 35 percent, or 33,320 af. Additional supply in 2018 included 42,788 af of SWP carryover from 2017, and 11,000 af from Buena Vista/Rosedale-Rio Bravo[3]. SCV Water's total available imported supply in 2018 was 87,108 af.

The disposition of water by SCV Water in 2018 to various entities included delivery to the Water Divisions and LACWD 36 and sales of water to other entities is summarized in **Table 3-2**. The largest portion of supplies were delivered to the Water Divisions and LACWD 36 (41,999 af), 5,000 af were sold to Kern County Water Agency's westside member units, 62 af were delivered to Devil's Den, and 836 af reflect water loss (386 af by the Rio Vista Treatment Plant for the conservation garden and the remainder from meter reading differences). The remaining 39,211 af were carried over in SWP storage for potential use in 2019.

Article 21 water and Turn-Back Pool water were available in 2018, but sufficient Table A and Carryover Water were available, so SCV Water chose not to exercise the rights to receive these supplies. Additionally, flexible storage was not utilized in 2018, Nickel water was not utilized, and SCV Water did not purchase water from Yuba Accord in 2018.

3.4.3 Water Banking and Exchange Supplies

SCV Water maintains supply in various banking programs in the Kern Basin, and thereby has diverse supply options when needed. In 2005, CLWA completed an agreement to participate in a long-term water banking program with RRBWSD in Kern County. This long-term program allows storage of up to 100,000 af at any one time. SCV Water (formerly CLWA) delivered 20,000 af of its excess Table A water into storage in both 2005 and 2006. In 2007, pursuant to the Water Acquisition Agreement with BVWSD and RRBWSD as described below, CLWA was also back-credited a total of 22,000 af for 2005 and 2006 (11,000 af of BV/RRB in each year). In 2007, CLWA delivered 8,200 af of SWP water and another 33,668

[3] See 2007 Water Acquisition Agreement with the Buena Vista Water Storage District (BVWSD) and the Rosedale-Rio Bravo Water Storage District (RRBWSD) in Kern County.

Table 3-2
2018 SCVWA Imported Water Supply and Disposition
(acre-feet)

Supply		
2018 Final SWP Table A Allocation[1]		33,320
Total SWP Carryover to 2018 [2]		42,788
Buena Vista/Rosedale Rio-Bravo		11,000
Total 2018 Imported Water Supply		**87,108**
Disposition		
Deliveries		41,999
Santa Clarita Water Division	*21,611*	
Valencia Water Division	*14.800*	
Newhall Water Division	*5,583*	
Los Angeles County WD 36	*5*	
SCVWA/DWR/Purveyor Metering[3]		836
Deliveries to Devil's Den		62
Kern Westside District Sale		5,000
Total Carryover to 2019[4]		39,211
Total 2018 Imported Water Disposition		**87,108**

[1] Final 2018 allocation was 35% of contractual Table A amount of 95,200 af, which progressed as follows:

Initial allocation, November 29, 2017	15%	14,280 af
Allocation increase, January 29, 2018	20%	19,040 af
Allocation increase, April 24, 2018	30%	28,560 af
Allocation increase, May 21, 2018	35%	33,320 af
Final allocation (no change)	35%	33,320 af

[2] Total carryover from 2017 available in 2018 was 42,788 af. Of that amount, 24,424 af was delivered, with the remaining (18,346 af) to be carried over to 2019.

[3] Reflects water loss, use by the Rio Vista Water Treatment Plant (including 386 af in 2018 for Water Conservation Garden), and meter reading differences.

[4] Total carryover available in 2019 (39,211 af) consists of unused carryover from 2018 (18,346 af) and additional 2018 Table A carryover (20,847 af).

af (25,418 af of SWP water and 8,250 BV/RRB water) in 2010. In 2011, SCV Water delivered 986 af of SWP water into storage and in 2012 delivered another 6,031 af of SWP water into storage. At the beginning of 2014, the recoverable storage in the program after groundwater and other losses was approximately 100,000 af. In 2014, 2,824 af of water were withdrawn from the bank, and in 2015, another 2,998 af were withdrawn leaving a balance of approximately 95,000 af. In 2016, 5,060 af were banked with no additional water banked or withdrawn in 2017 or 2018, and by the end of 2018, approximately 100,000 af remain in storage. Currently, SCV Water's existing withdrawal capacity is 3,000 afy, but additional facilities are under development to increase that capacity by approximately 7,000 afy for a total withdrawal capacity of approximately 10,000 afy and are anticipated to be operational in mid-2019.

In 2011, SCV Water (formerly CLWA) executed a Two-for-One Exchange Program with RRBWSD whereby SCV Water can recover one acre-foot of water for each two acre-feet delivered (less losses). In 2011, SCV Water delivered 15,602 af to the program (4,602 af of carryover and 11,000 af of BV/RRB water), delivered another 3,969 af of SWP water in 2012 and, after program losses, has 9,441 af of recoverable water. No water was withdrawn from or contributed to the RRBWSD Two-for-One Exchange Program from 2014 to 2018, and this program remains at/near capacity. SCV Water also has a Two-for-One Exchange Program with the WKWD in Kern County and delivered 5,000 af in 2011, resulting in a recoverable total of 2,500 af. In 2014, 2,000 af of water was withdrawn from the WKWD Two-for-One exchange program leaving a balance of 500 af. No water was withdrawn from or contributed to this program in 2018.

Other components of SCV Water's imported water supply reliability program include its banking agreements with Semitropic originally composed of two agreements with Semitropic whereby SCV Water (formerly CLWA) banked surplus Table A water supply in 2002 and 2003 (24,000 af and 32,522 af, respectively). The first withdrawal of water occurred in 2009 from the 2002 account in the amount of 4,950 af. Of the 4,950 af withdrawn in 2009, 1,650 af was delivered for water supply in the Valley in 2009, and the 3,300 af balance was delivered in 2010. An additional 4,950 af of water was withdrawn from the Semitropic Water Banking Program in 2014 (with another 5,000 given to Newhall Land in consideration for SCV Water's use of their first priority extraction capacity). Semitropic had recently expanded its groundwater banking program to incorporate its Stored Water Recovery Unit (SWRU). In 2015, SCV Water entered into an agreement with Semitropic to participate in the SWRU (as an additional source of dry-year supply). Under this agreement, the 2002 and 2003 accounts containing 35,970 af were transferred into this new program. Under the SWRU agreement, SCV Water can store and recover additional water within a 15,000 af storage account. The term of the Semitropic Banking Program extends through 2035 with the option of a 10-year renewal. SCV Water may withdraw up to 5,000 afy from its account. 5,340 af were delivered to storage in 2017, and after a 10 percent transmission loss, 4,806 af were banked. The recoverable balance in this account at the end of 2018 stands at 40,776 af.

Also, in 2016, an additional 1,500 af were transferred to Central Coast Water Authority, whereby 750 af must be returned to SCV Water by 2026.

3.5 Other Water Sources

3.5.1 Recycled Water

Recycled water is an important and reliable source of additional water; the use and planned expansion of existing facilities enhances water supply reliability in that it provides an additional source of supply and allows for more efficient utilization of groundwater and imported water supplies. Deliveries of recycled water in the Valley began in 2003 for irrigation water supply at a golf course and in roadway median strips and has expanded somewhat since then, with recent uses that include additional irrigation sites and supply for grading operations via water trucks. Recycled water use has remained low, yet relatively constant over the last fourteen years at approximately 400 afy, and in 2018, recycled water deliveries were approximately 350 af in part due to maintenance required on the primary transmission main.

Recycled water is currently produced at two water reclamation plants (WRPs) operated by the Santa Clarita Valley Sanitation District of Los Angeles County (SCVSD): the Valencia WRP and the Saugus WRP with respective average annual production of 15,500 afy and 6,100 afy, respectively. Most of the treated effluent from these two plants is discharged to the Santa Clara River. As of 2018, there is pending legal action whether these discharges to the Santa Clara River are sufficient to maintain instream flow requirements for the protection of biological resources (LACSD, 2013).

SCV Water is working with SCVSD and other SCV stakeholders on the best path forward to expand the Valley's recycled water resources. In addition, Vista Canyon Water Factory is anticipated to come online in 2019 and eventually produce up to 440 afy of recycled water use for new and existing users in the SCWD service area. The proposed Newhall Ranch WRP is anticipated to produce 4,200 afy at buildout, meeting more than half of the anticipated non-potable demands for the development.

An update to the 2002 Recycled Water Master Plan (RWMP) was conducted in 2016 (Kennedy/Jenks Consultants, 2016). The updated RWMP included near-term, mid-term, and long-term objectives for increasing the use of recycled water where it was economically feasible. The previous and current master plans considered various factors affecting recycled water sources, supplies, users and demands so that CLWA (now SCV Water) could develop a cost-effective recycled water system within its service area. The 2016 update remained a draft pending completion of a CEQA document.

One of the types of water reuse that was considered in the updated RWMP was groundwater replenishment, which represents an opportunity to recharge the underlying aquifer. Two recharge feasibility studies were recently completed for the Agency as it advances efforts to utilize recycled water. These studies looked to evaluate the maximum potential recharge with a source of approximately 5,000 afy of recycled water from Valencia WRP. The first study looked at a recharge area in the northwest portion of the subbasin near Castaic Lake (Geosyntec, 2016) and recommended further

geotechnical, geochemical, and modeling analysis of the proposed site as the initial analysis concluded that the retention time of recharged recycled water was less than the regulatory requirements.

The second study was conducted in the eastern part of the subbasin and recommended pilot studies at the proposed recharge sites to improve hydrogeologic understanding and evaluation of additional sources of diluent (Trussell and GSI, 2017).

3.5.2 Treated Water

As part of the operation of SCV Water's Saugus Perchlorate Treatment Facility (SPTF), numerous monitoring tests are performed on a continuous basis in order to ensure the safety of the treated water leaving the SPTF. Groundwater samples are collected semi-weekly at several locations, including at the Saugus 1 and Saugus 2 wells, both at the influent and effluent water points, at the lead and lag vessels, and at several distribution locations. The samples are analyzed at different frequencies for numerous constituents, including chlorate, perchlorate, chloride, nitrate, nitrite and sulfate. In addition, samples are analyzed for microbiological growth, radiological and volatile organic compounds. In 2018, 2,918 af of groundwater were pumped from Saugus 1 and Saugus 2. After treatment for perchlorate removal, the groundwater was blended with treated imported water and delivered to the Water Divisions through the SCV Water distribution system. To date, more than 23,600 af of groundwater have been extracted and treated from Saugus 1 and Saugus 2 in this manner.

In 2017, a Perchlorate Treatment Facility (PTF) was constructed at VWD-201. In November 2017, the VWD-201 PTF came online to remove perchlorate from the well and provide containment. The water being pumped through the PTF is being discharged in accordance with a National Pollutant Discharge Elimination System permit until the PTF is permitted through DDW for drinking water.

3.6 Water Quality

Water delivered by SCV Water consistently meets drinking water standards set by the United States Environmental Protection Agency (USEPA) and the State Water Resources Control Board (SWRCB) Division of Drinking Water (DDW). An annual Water Quality Report is provided prior to July 1st to all Santa Clarita Valley residents who receive water from the Water Divisions or LACWD 36. There is detailed information in that report summarizing the results of water quality testing of the groundwater and treated SWP water supplied to the residents of the Santa Clarita Valley. The report can be accessed at the following link: https://yourscvwater.com/index.php/water-quality/#waterqualityreports

3.6.1 Water Quality – General

3.6.1.1 Perchlorate

Perchlorate is a regulated chemical in drinking water. In October 2007, the California Department of Public Health (CDPH), which currently is the State Water Resources Control Board Division of Drinking Water (DDW), established a maximum contaminant level (MCL) for perchlorate of 6 micrograms per liter (µg/L). Perchlorate has been a water quality concern in the Valley since 1997 when it was originally

detected in four wells operated by the purveyors in the eastern part of the Saugus Formation, near the former Whittaker-Bermite facility. In late 2002, perchlorate was detected in a fifth municipal well, in this case an Alluvial well (SCWD's Stadium Well), also located near the former Whittaker-Bermite site. Two of those wells (VWD's Well 157 and SCWD's Stadium Well) were sealed and replaced by new wells, and two wells (Saugus 1 and 2 Wells) were returned to service with treatment in January 2011 as described below. NWD's Well NC-11 has remained out of service with a portion of its capacity replaced by a combination of imported water and treated water from the Saugus Perchlorate Treatment Facility (described further below) through a SWP turnout. In early 2005, perchlorate was detected in a second Alluvial well (VWD's Well Q2) near the former Whittaker-Bermite site. Following the installation of wellhead treatment for the removal of perchlorate in the same year, the well was returned to regular water supply service. After two years of subsequent operation with no detections of perchlorate, the wellhead treatment was removed and the well has since remained in active water supply service.

In 2006, perchlorate was detected in low concentrations below the MCL of 6 ug/L and the analytical laboratory's Detection Limit for Reporting (less than 4.0 µg/l) in another Saugus well (NWD's Well 13), near one of the originally impacted wells. NWD-13 has remained in service with regular sampling per the DDW requirements and no subsequent detections of perchlorate. In August 2010, perchlorate was detected further down gradient in an eighth well, VWD's Well 201 that is completed in the Saugus Formation. While the initial detection was below the MCL, the well was immediately taken out of active supply service. Since then, VWD (now SCV Water) has been pursuing restoration alternatives at VWD-201. Currently, SCV Water is revising the 97-005 Document for VWD-201 following DDW's comments from mid-2018. It is anticipated that DDW will issue a permit to return VWD-201 to active service in 2020. Following the detection of perchlorate in VWD Well 201 in 2010, VWD elected to minimize pumping from Well 205 through 2011. And the well was taken out of service in April 2012 when perchlorate was detected at 6 µg/l. Treatment plans for VWD-205 are under consideration and will mostly likely be similar to those employed at VWD-201. As described in the 2015 UWMP, the replacement and reactivation of the impacted wells, augmented by planned and funded replacement wells, adds to the overall ability to meet the groundwater component of total water supply in the Valley.

In February 2003, the California Department of Toxic Substances Control (DTSC) and the impacted purveyors (at the time) entered into a voluntary cleanup agreement entitled *Environmental Oversight Agreement* (amended in 2012). Under the Agreement, DTSC is providing review and oversight of the response activities being undertaken by the purveyors (now SCV Water) related to the detection of perchlorate in the impacted wells. Under the Agreement's Scope of Work, the impacted purveyors prepared a Work Plan for sampling the production wells, a report on the results and findings of the production well sampling, a Human Health Risk Assessment, and a Remedial Action Workplan. In addition, at the time, CLWA and the purveyors conducted an evaluation of treatment technologies and an analysis showing the integrated effectiveness of a project to restore impacted pumping capacity, extract perchlorate-impacted groundwater from two Saugus wells for treatment and control the migration of perchlorate in the Saugus Formation. Environmental review of that project was completed in 2005 with adoption of a mitigated Negative Declaration. The Final Interim Remedial Action Plan for

containment and extraction of perchlorate was completed and approved by DTSC in January 2006. Design and construction of the treatment facilities and pipelines to implement the pump and treat program and to also restore inactivated municipal well capacity was completed in May 2010. Water from Saugus 1 and Saugus 2 was initially treated and discharged into the Santa Clara River. DDW issued an amendment to CLWA's Operating Permit in December 2010, and the wells were placed back in water supply service on January 25, 2011.

The development and implementation of a cleanup plan for the Whittaker-Bermite site and the impacted groundwater is being coordinated among SCV Water, Whittaker Corporation, the State DTSC, and U.S. Army Corps of Engineers. DTSC remains the lead agency responsible for regulatory oversight of the Whittaker-Bermite site. These entities have also coordinated to extend targeted monitoring of the Alluvium and Saugus Formation off-site of the former Whittaker Bermite Facility, and more recently to the west of Saugus 1 and 2 and VWD's Well 201 as shown in **Figure 3-11**. Off-site monitoring wells were installed near Saugus 1 and 2 between 2006 and 2009; two more were installed in 2012, and another two in 2015. Monitoring and sampling of these wells occurs on a regular basis, and the data are being evaluated to assess groundwater conditions west of Whittaker-Bermite and to monitor the effectiveness of perchlorate containment. Additionally, SCV Water's basin groundwater model that was developed for use in analyzing the basin yield and sustainability of the Current Operating Plan was also updated in 2013 and used to assess off-site perchlorate containment.

Under the direction of DTSC, Whittaker has submitted a comprehensive site-wide remediation plan for the contaminants of concern in soil and groundwater detected on the property. A Draft Remedial Action Plan (RAP) for Operating Units (OU) 2 through 6 that focused on soil cleanup was submitted to DTSC in 2009, and the final plan was approved in December 2010. The site-wide Remedial Design (RD) was approved by DTSC in January 2013 for OU units 2 through 6, and remediation of soils through the OUs is in various stages of initiation and completion. In addition to soil remediation, soil vapor extraction (SVE) operations have occurred since May 2012 to remove volatile organic compounds from selected areas of OUs 2 through 6 with plans currently in development to expand to full scale SVE operations in all areas identified in the RAP and RD.

The RAP for groundwater (OU7) and associated CEQA document were approved by DTSC in December 2014. The RAP focuses on three areas where groundwater at the site is impacted. The three areas are the Northern Alluvium, the Saugus Formation, and perched groundwater. The RAP includes an evaluation of remedial alternatives to contain and clean up impacted groundwater in these three areas. Pilot studies and interim measures have been initiated in the Saugus Formation and the Northern Alluvium and are at different stages of progress. Operation of an on-site remediation system to treat perchlorate contamination in the Saugus Formation was implemented in September 2017. Approximately 150 gallons per minute of Saugus formation groundwater is treated by the onsite treatment plan.

3.6.1.2 Volatile Organic Compounds

Organic chemical contaminants, including synthetic and volatile organic chemicals (SOC and VOCs), are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff and septic systems. Organic compounds also include pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff and residential uses. Local supply wells are tested at least annually for VOCs (Saugus 1 and Saugus 2 and VWD-201 are tested weekly) and periodically for SOCs, and Castaic Lake water is checked annually for VOCs and SOCs. The most frequently detected VOCs, Trichloroethylene (TCE) and Tetrachloroethylene (PCE), and the less frequently detected compounds, Chloroform and 1,1-dichloroethene, have been detected in trace amounts below the MCL in groundwater in the Santa Clarita Valley. Therefore, the Valley's water supply complies with state and federal drinking water standards.

Because SCV Water's Water Supply Permit sets an operational goal of no VOCs above the detection limit for reporting in its distribution system and because SCV Water is concerned about any detection of VOCs, SCV Water performed a VOC source identification study (CH2MHill, 2015). This study concluded that the likely source was either the Whittaker-Bermite site or the Saugus Industrial Center and additional monitoring would be necessary to identify the specific source. During start up and discharge of the VWD-201 Perchlorate Treatment Facility, positive results of TCE were detected slightly above the Detection Limit for Reporting (DLR). Therefore, TCE will be addressed as part of the drinking water permitting process of this well with DDW.

3.6.2 Groundwater Quality – Alluvium

Groundwater quality is a key factor in assessing the Alluvium as a source for municipal and agricultural water supply. Groundwater quality details and long-term conditions, examined by integration of individual records from several wells completed in the same aquifer materials and in close proximity to each other, have been discussed in previous annual Water Reports and in the 2015 UWMP. Historical groundwater quality, including available 2018 data, is illustrated in **Figures 3-12 and 3-13**. These figures show historical total dissolved solids (TDS) concentrations, which is a measure of the amount of dissolved minerals and salts in water expressed in milligrams per liter (mg/L) as a unit of measure. These plots include the historical records for wells with water quality that are representative of each area of the Valley, the DDW Secondary MCL (which are the aesthetic based standards "Recommended and Upper Levels") for reference. Concentrations of TDS generally respond to wet periods by exhibiting a downward trend, followed by an increasing trend during dry periods.

In the Mint Canyon and Above Saugus WRP areas (**Figure 3-12**), TDS concentrations have experienced a long-term stable trend over the past 30 years with variation in TDS concentrations during wet and dry periods that range from 300 to 800 mg/L. Generally, TDS concentrations are between the recommended and upper levels of the TDS secondary MCL. VWD-U4 has exhibited short-term increases above the secondary MCL upper level, but concentrations have decreased over the past three years. In 2018, TDS ranged from 470 to 1,200 mg/L.

In Bouquet Canyon, variations in historical TDS concentrations are more gradual than those in Mint Canyon and may be correlated with periods of flow in Bouquet Canyon Creek (**Figure 3-12**). TDS concentrations in Bouquet Canyon have ranged from approximately 400 to almost 900 mg/L historically. In 2018, TDS concentrations exceeded the historical range with a value of 910 mg/L represented by SCWD's Guida well. The TDS concentration at SCWD-Clark well were within the historical range with a value of 850 mg/L.

TDS concentrations in the western areas of the Valley exhibited similar patterns and responses to wet and dry periods as those observed in the eastern portions of the Valley (**Figure 3-13**). TDS concentrations in San Francisquito Canyon and Below Saugus WRP areas historically have ranged from approximately 300 to 1,100 mg/L. In 2018, TDS concentrations were within historical ranges and ranged from approximately 580 to 960 mg/L.

In Castaic Valley and Below Valencia WRP areas, TDS concentrations have historically ranged between 300 to 1,100 mg/L. At times, variations in TDS concentrations appear to be related to wet and dry periods along with discharge from Castaic Lake. In 2018, there was only one analysis for TDS with a concentration of 460 mg/L, which is within the historic range.

In summary, water quality in the Alluvium exhibits no long-term increasing trends. TDS concentrations in 2018 are within historical ranges with the exception of a slightly higher result from well VWD-U4, which was also the case in 2015 through 2017. SCWD-Guida was slightly above historic averages but still below the TDS secondary MCL upper level. There have been periodic fluctuations in some parts of the basin, where groundwater quality has generally inversely varied with precipitation and streamflow. The fluctuations often occur during dry and wet periods when recharge decreases during dry periods, resulting in increased salinity and higher amounts of recharge during wet periods which results in decreased salinity. In 2018, of the 31 sampled alluvial wells throughout the Valley, two were found to be in exceedance of the DDW Secondary MCL upper level for TDS. For both of these wells (VWD-U4 and VWD-U6), this is the fifth consecutive year TDS values have been at or exceeded the upper level. Both of these wells are located in the above Saugus WRP area. Testing by SCV Water in accordance with DDW requirements demonstrates that groundwater with the exception of occasional variances above the secondary MCL for TDS, meets acceptable drinking water standards.

The presence of long-term consistent water quality patterns, although intermittently affected by wet and dry cycles, supports the conclusion that the Alluvium remains a viable ongoing water supply source in terms of groundwater quality even with short-term exceedances in a few of the wells.

3.6.3 Groundwater Quality – Saugus Formation

As discussed above for the Alluvium, groundwater quality is also a key factor in also assessing the Saugus Formation as a source for municipal and agricultural water supply. As with groundwater level data, long-term Saugus Formation groundwater quality data are not sufficiently extensive to permit any sort of basin-wide analysis or assessment of pumping-related impacts on quality. However, integration of

individual records from several wells has been used to examine general water quality trends. Based on those records, water quality in the Saugus Formation has not historically exhibited the recharge-related fluctuations seen in the Alluvium. Based on available data over the last 50 years, groundwater quality in the Saugus Formation has exhibited stable to slightly increasing trends in TDS concentrations as illustrated in **Figure 3-14**. Beginning in 2000, several wells within the Saugus Formation have exhibited an increase in TDS concentrations, similar to short-term changes in the Alluvium, possibly as a result of decreased recharge to the Saugus Formation from the Alluvium. Since 2006, however, these concentrations had been steadily declining through 2010, followed by an increase through 2016 and a slight decrease in 2017/2018. TDS concentrations in the Saugus Formation remain within the range of historic concentrations and below the Secondary MCL upper level. Groundwater quality within the Saugus Formation will continue to be monitored to ensure that degradation to the long-term viability of the Saugus Formation as a component of overall water supply does not occur.

3.6.4 Imported Water Quality

SCV Water operates two surface water treatment plants, the Earl Schmidt Filtration Plant located near Castaic Lake and the Rio Vista Water Treatment Plant located in Saugus. SCV Water produces water that meets drinking water standards set by the USEPA and DDW. SWP water has different aesthetic characteristics than groundwater with lower TDS concentrations of approximately 250 to 400 mg/L.

Historically, the SWP delivered only surface water from northern California through the Sacramento-San Joaquin River Delta. However, with the increase in conjunctive use and integrated water supply planning to minimize impacts on available water supplies during periods of drought, SCV Water and other SWP contractors began “water banking” programs where SWP water could be stored or exchanged during wet years and withdrawn in dry years. During the dry-year periods, a greater portion of water in the SWP includes banked water supplies. The banked water has met all water quality standards established by DWR under its pump-in policy for the SWP.

3.7 Santa Clara River

The Memorandum of Understanding (MOU) between the SCV Water and the United Water Conservation District (UWCD), which manages surface and groundwater resources in seven groundwater subbasins in the Lower Santa Clara River Valley Area, was a significant accomplishment when it was initially prepared and executed in 2001 and later updated and renewed in 2018. The MOU initiated a collaborative and integrated approach to data collection; database management; groundwater flow modeling; assessment of groundwater basin conditions, including determination of basin yield amounts; and preparation and presentation of reports. The preparation and presentation of reports included continued annual reports such as this one for current planning and consideration of development proposals, and more technically detailed reports on geologic and hydrologic aspects of the overall stream-aquifer system. Meetings of the MOU participants have continued, and coordination of the Upper (Santa Clarita Valley) and Lower (UWCD) Santa Clara River databases has been accomplished. As discussed above, a numerical groundwater flow model of the entire Santa Clarita groundwater basin was initially developed and calibrated in 2002-2004. Subsequent to its initial use in 2004 for assessing

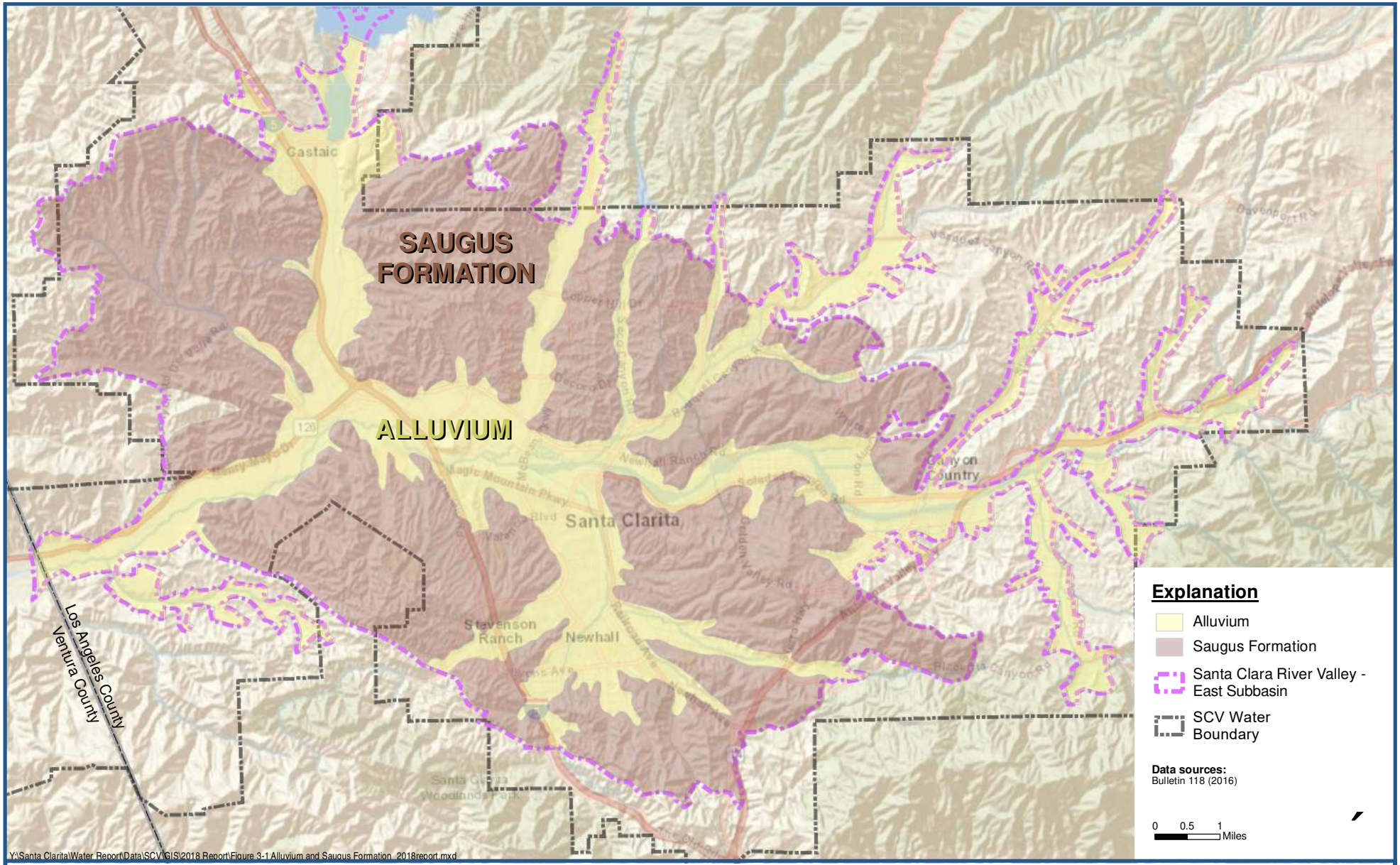
the effectiveness of various operating scenarios to restore pumping capacity impacted by perchlorate contamination (by pumping and treating groundwater for water supply while simultaneously controlling the migration of contaminated groundwater), the model was used in 2005 for evaluation of basin yield under varying management actions and hydrologic conditions. The results completed the determination of sustainable operating yield values for both the Alluvium and the Saugus Formation, which were incorporated in the 2005 UWMP. The updated analysis of basin yield, completed in 2009, indicates that the Current Operating Plan will maintain river flows at higher levels than occurred prior to urbanization of the Valley; the resultant operating yield values for both the Alluvium and the Saugus Formation are incorporated in the 2015 UWMP.

On occasion, public comments have been raised on whether use and management of groundwater in the Santa Clarita Valley have adversely impacted surface water flows into Ventura County. Part of the groundwater modeling work has addressed the surface water flow question as well as groundwater levels and storage. While the sustainability of groundwater has logically derived primarily from projected long-term stability of groundwater levels and storage, it has also derived in part from modeled simulations of surface water flows and stream-aquifer interactions from groundwater pumping in the central and western portions of the Valley. In addition, the long-term history of groundwater levels in the western and central part of the Valley, as illustrated in **Figures 3-4** and **3-5**, supports the modeled analysis and suggests that groundwater levels have not declined to a degree in which recharge from the Santa Clara River has impacted streamflow to Ventura County.

Historical annual streamflow in the Santa Clara River, into and out of the Santa Clarita Valley has been monitored at an upstream gage at Santa Clara River above Lang Railroad Station at Lang gage and Capra Road Railroad Crossing and two downstream gages (County Line and SCR at Piru) (**Figure 3-15**). The Lang gage (F93B-R) shows a wide range of average annual streamflow into the basin; however, the data from the gage has not always been accurate because the gage's location limited the ability to record streamflow. In 2010, Los Angeles County Department of Public Works (LADPW) removed the transducer that previously collected streamflow data due to operational problems with the transducer and the location of the gage not being adequate to allow for accurate streamflow measurements. Between 2010 and 2012, LADPW has conducted manual measurements of streamflow, however, the measurements were not frequent enough to account for the range of streamflows that likely occurred. In June 2013, LADPW relocated the Lang gage to a more suitable location 150 feet upstream on the Santa Clara River, and it was renamed Capra Road Railroad Crossing (F93C-R).

The downstream gage, County Line gage (11108500), was moved in 1996 to its present location near Piru and renamed SCR at Piru (11109000), approximately two miles downriver. The combined record (1953-2018) of the two downstream gages indicates an annual stream discharge of approximately 45,300 afy (**Figure 3-16**). These data recorded near the County line show notably higher flows from the Santa Clarita Valley into the uppermost downstream subbasin, the Piru subbasin, over the last 35 to 40 years, likely the result of WRP discharges and releases from Castaic Lake.

Water quality in the upper Santa Clara River is affected by natural and urban runoff, WRP discharges and source water quality from reservoir releases and potentially groundwater inflow. Annually, during the dry summer season, the composition of the streamflow in the Santa Clara River in the Upper Santa Clara River is predominantly composed of WRP discharges, and the TDS concentrations are generally higher compared to the wet winter/spring periods. During the wet season, streamflow in the river is composed of runoff from the watershed and urban areas, along with WRP discharges resulting in relatively lower TDS concentrations. Water quality data from surface flows in the River in the central part of the Valley (Mass Emission Station located near the I-5 overpass) were obtained from surface water monitoring by the Upper Santa Clara River Watershed Management Group as required for the region's municipal stormwater permit. Preliminary review of those results from the 2003-2018 period indicate that TDS concentrations vary from about 800 to 900 mg/L during the dry summer season and about 100 to 300 mg/L during the wet winter/spring season. Comparison with alluvial groundwater quality plots from Section 3.6.2 indicates that this range of concentrations is comparable to the range of TDS concentrations observed in the alluvial aquifer.



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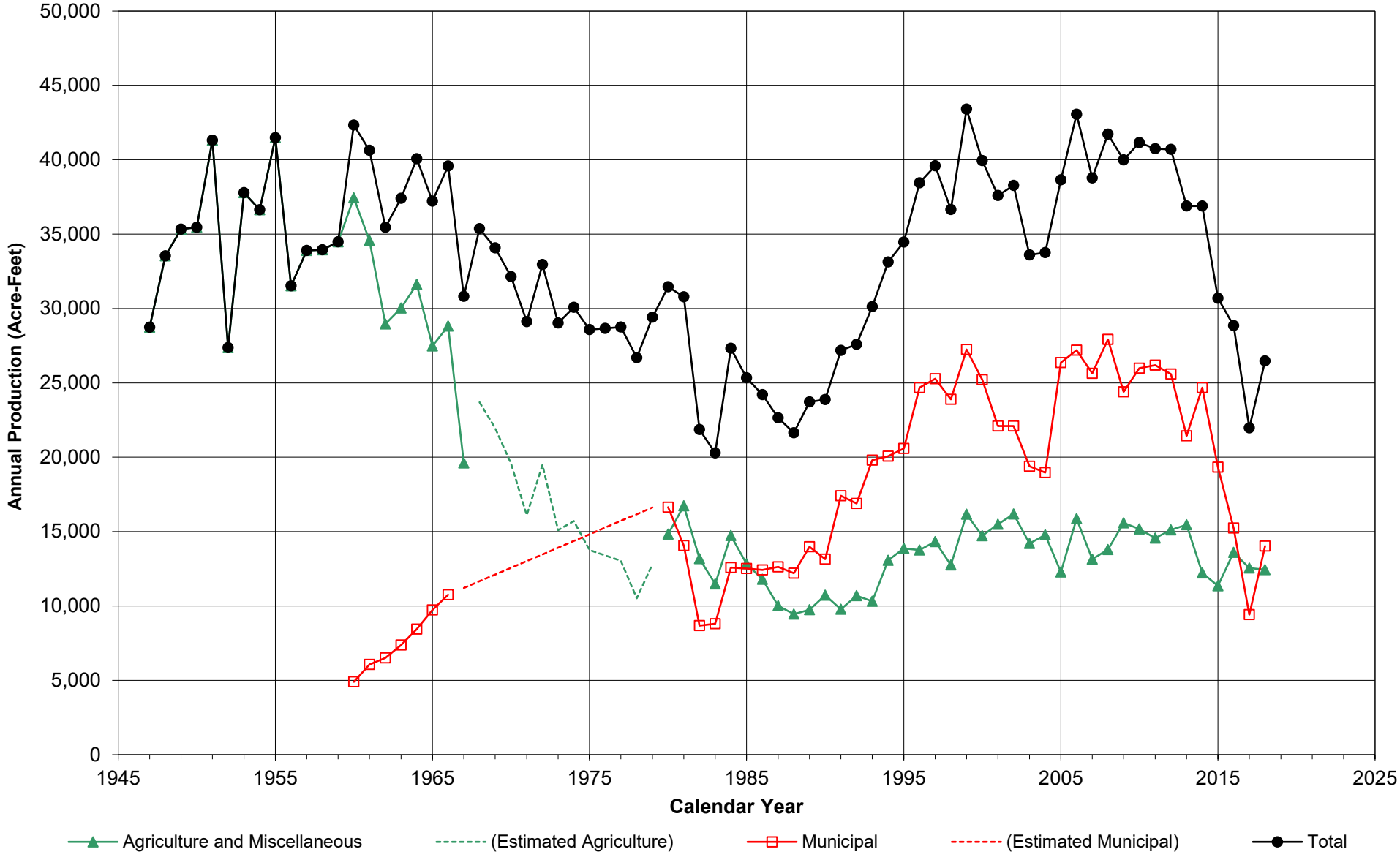
Consulting Engineers

Alluvium and Saugus Formation

Santa Clarita Valley Water Report
Santa Clarita Valley, Los Angeles County, California

Figure 3-1



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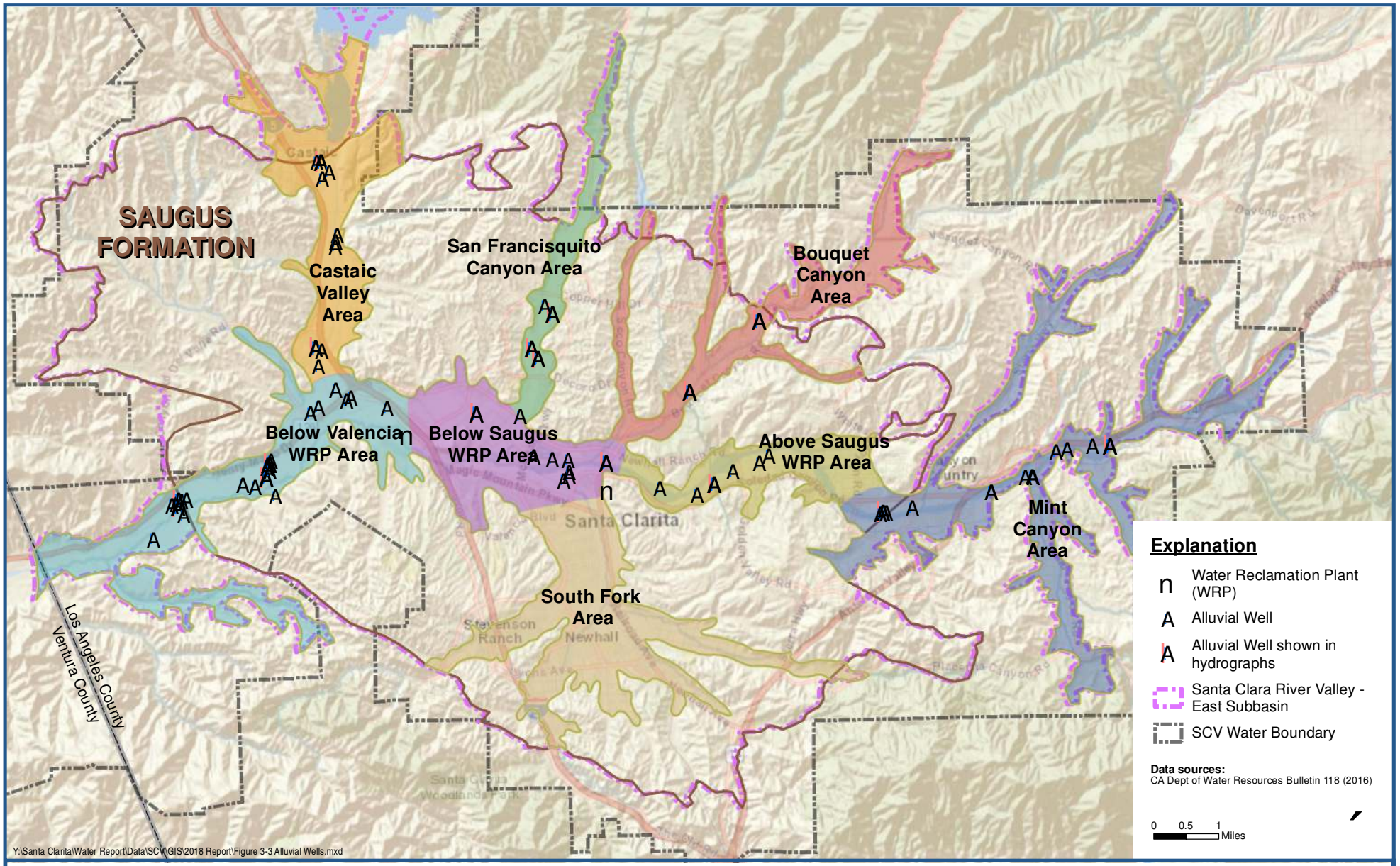
Groundwater Production - Alluvium

Santa Clarita Valley Water Report
Santa Clarita Valley, Los Angeles County, California

Figure 3-2



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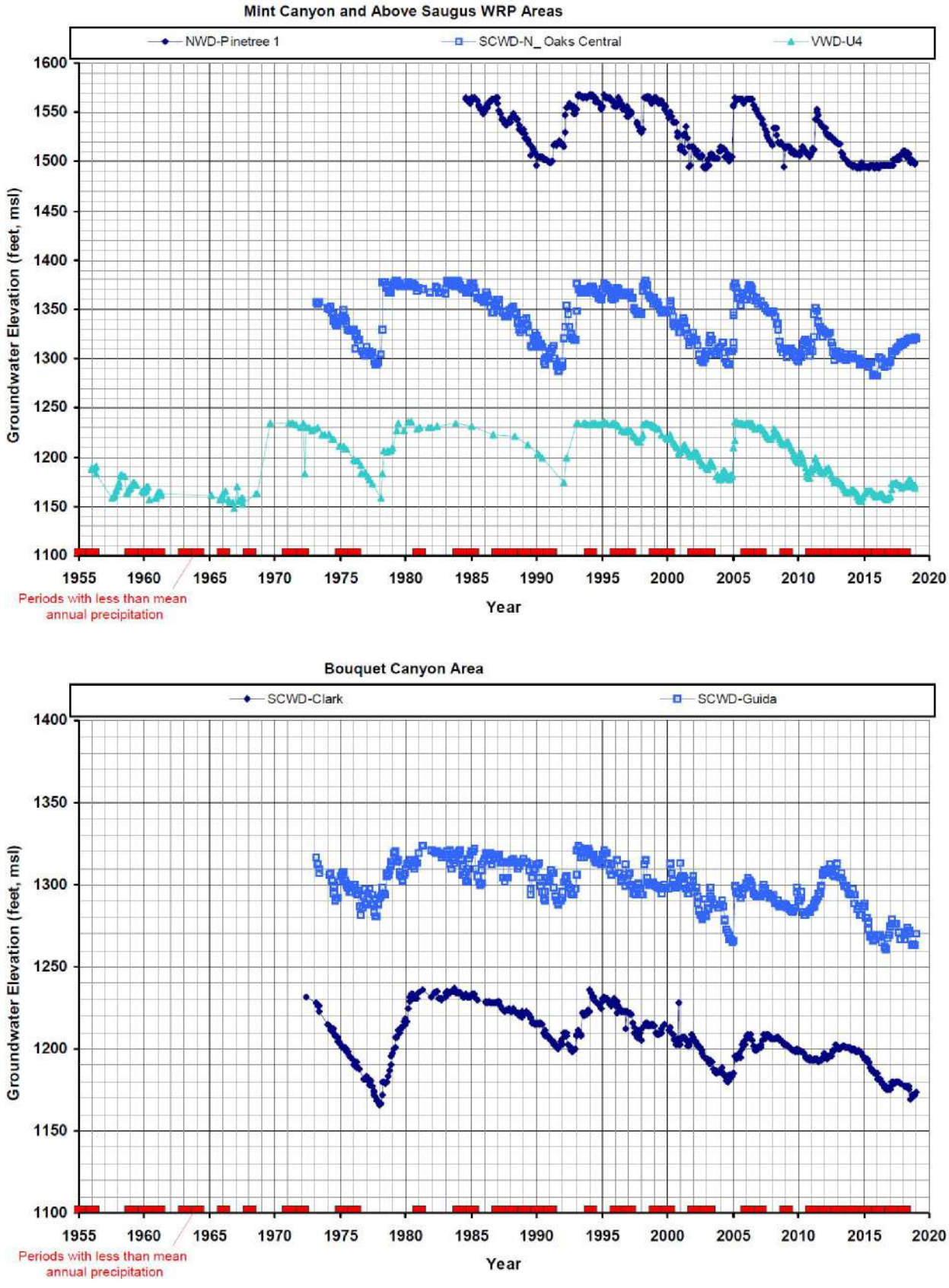
Alluvial Well Locations By Area

Santa Clarita Valley Water Report
Santa Clarita Valley, Los Angeles County, California

Figure 3-3



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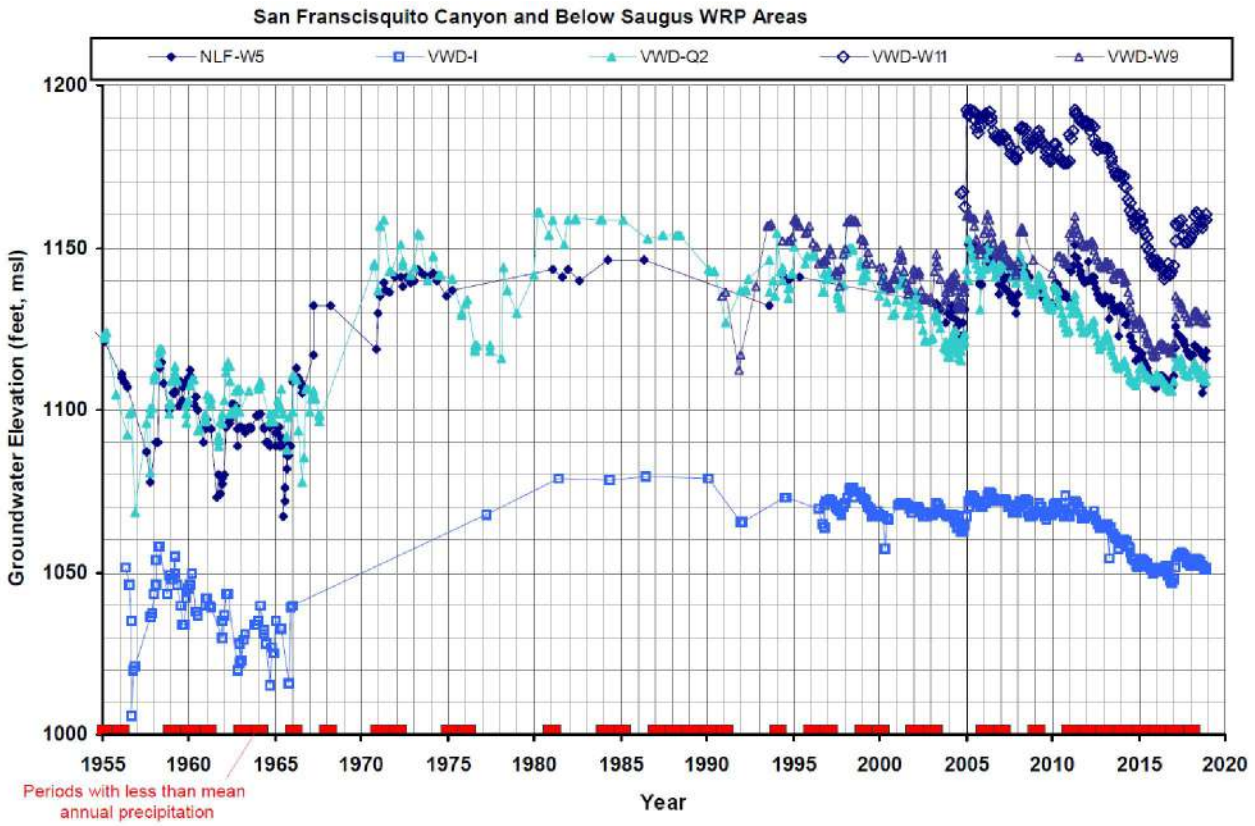
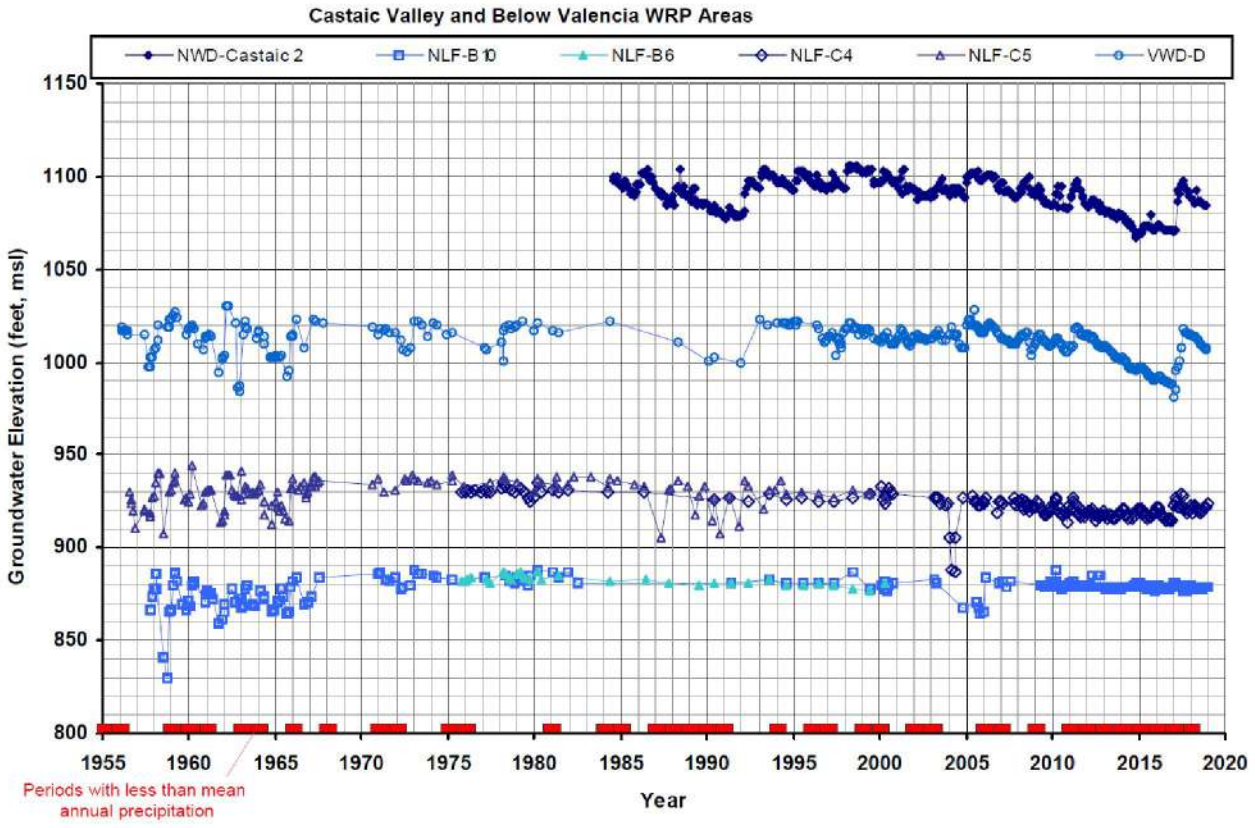
Groundwater Elevations in Eastern Santa Clarita Valley Alluvial Wells

Santa Clarita Valley Water Report
Santa Clarita Valley, Los Angeles County, California

Figure 3-4





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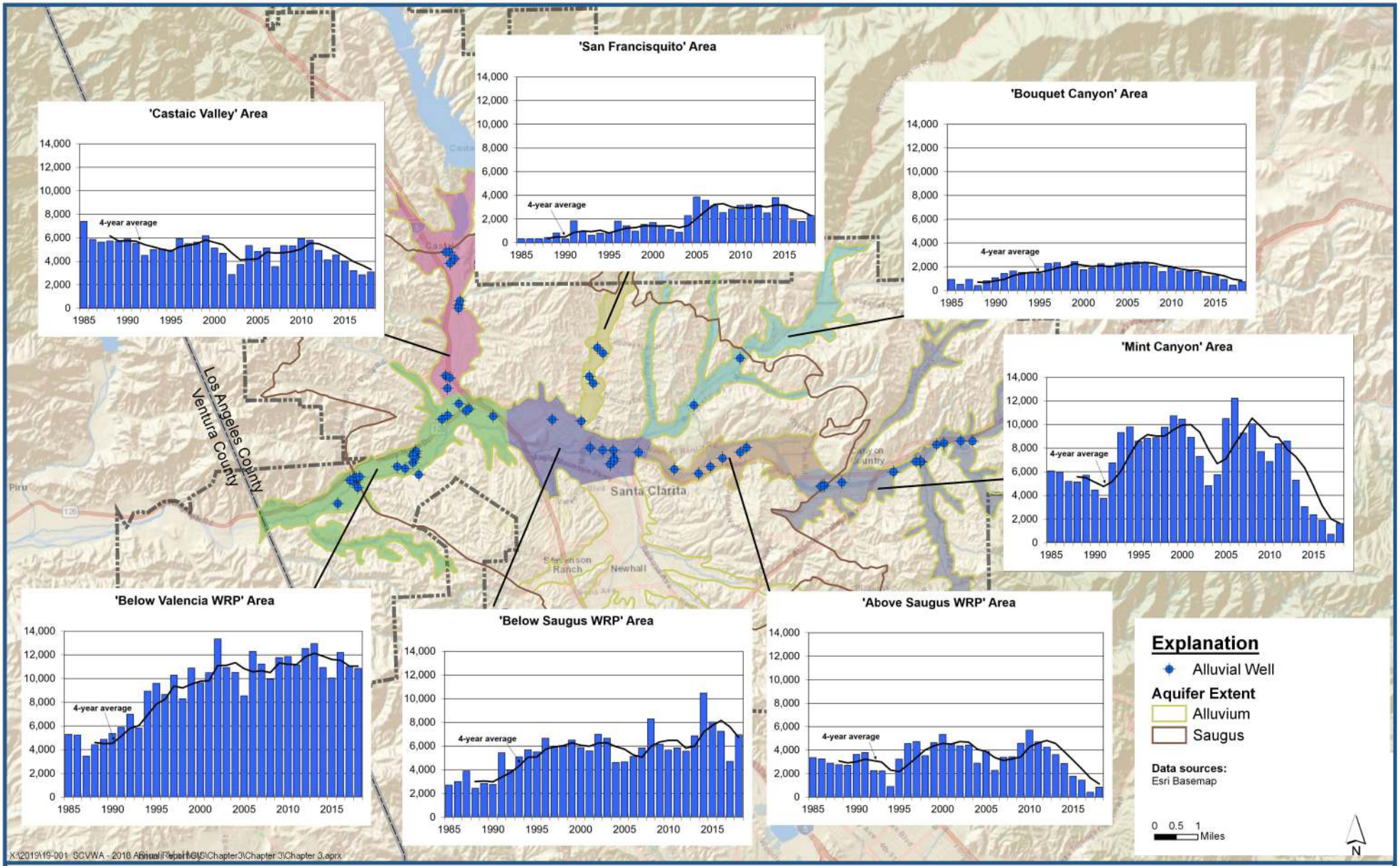
Groundwater Elevations in Western Santa Clarita Valley Alluvial Wells

Santa Clarita Valley Water Report
Santa Clarita Valley, Los Angeles County, California

Figure 3-5



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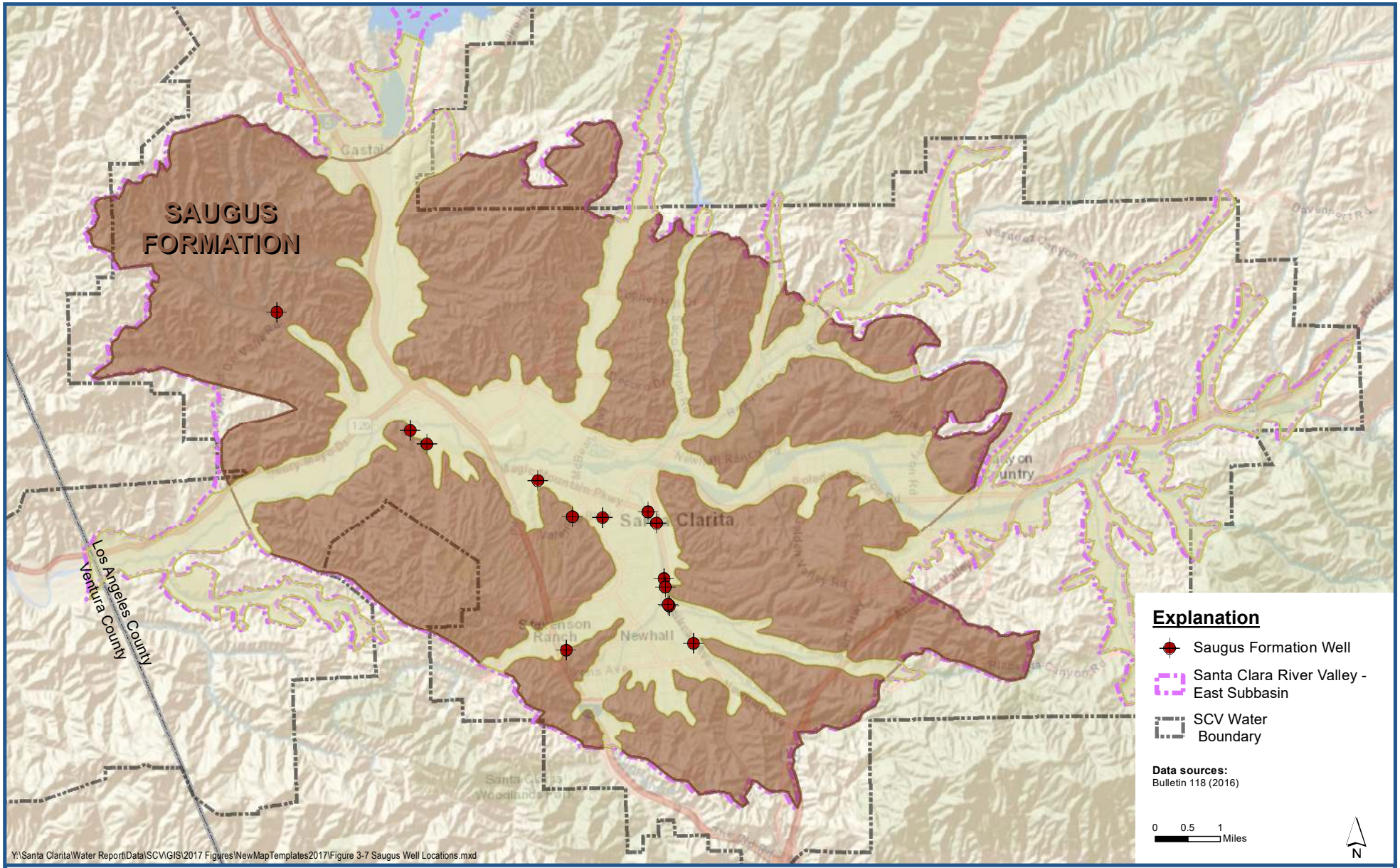
Annual Groundwater Production from Alluvium by Area (Acre-feet)

Santa Clarita Valley Water Report
Santa Clarita Valley, Los Angeles County, California

Figure 3-6



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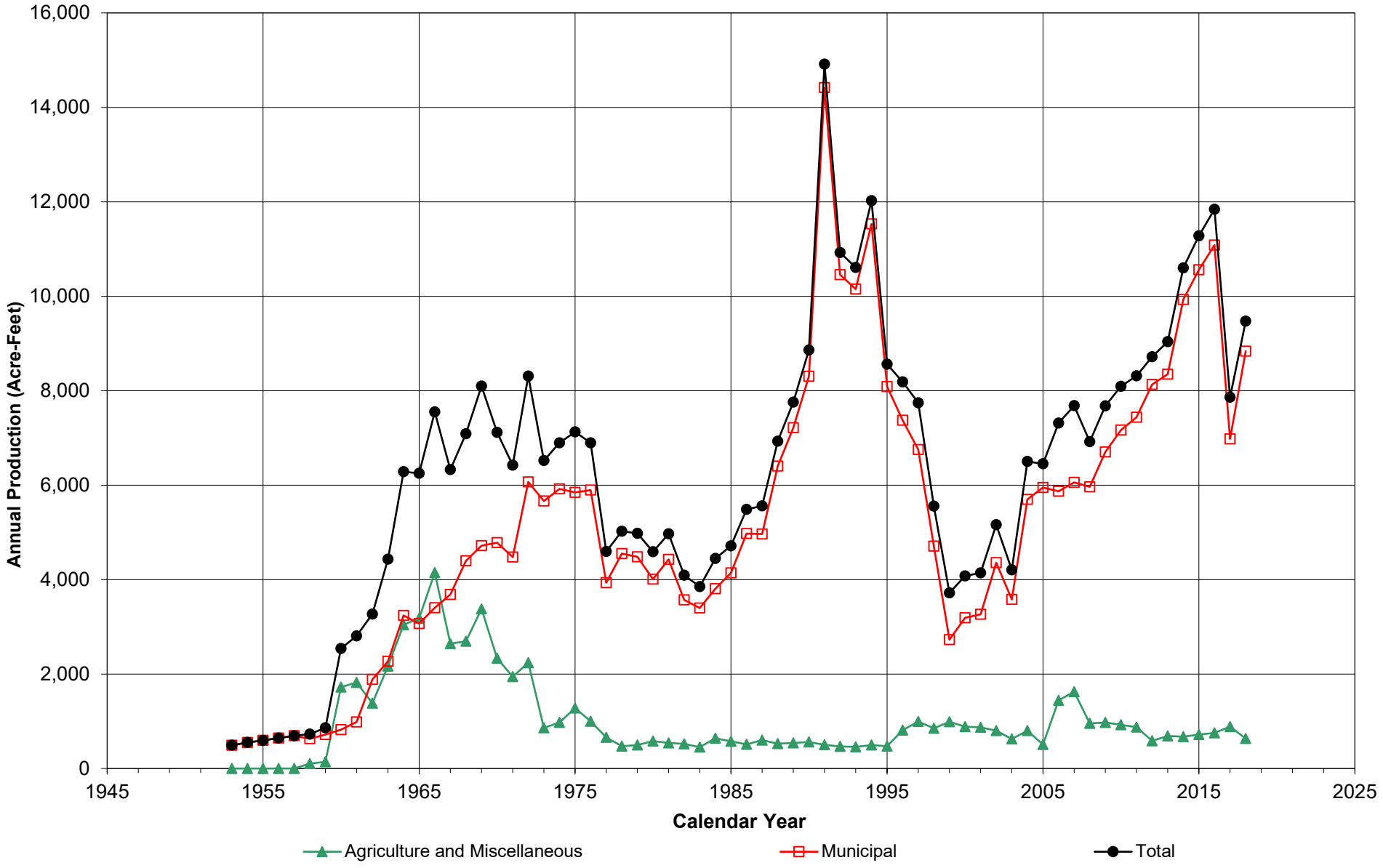
Saugus Formation Well Locations

Santa Clarita Valley Water Report
Santa Clarita Valley, Los Angeles County, California

Figure 3-7



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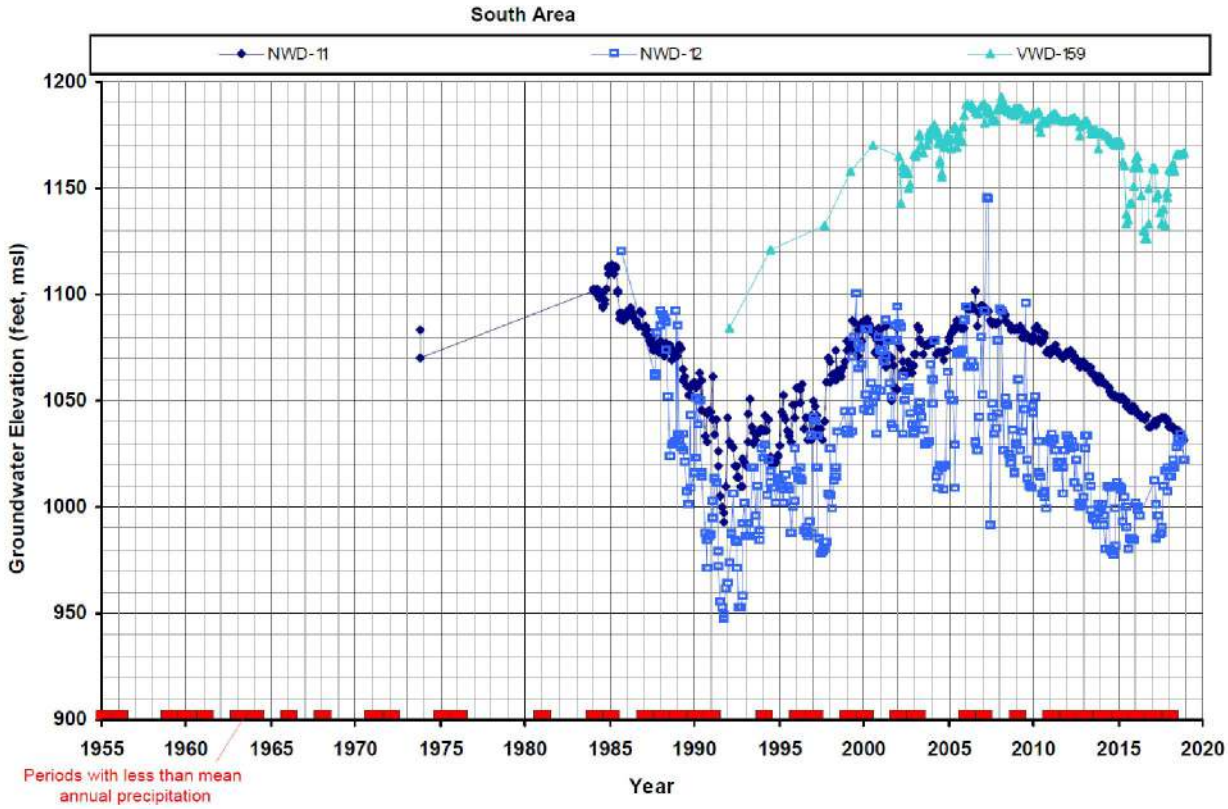
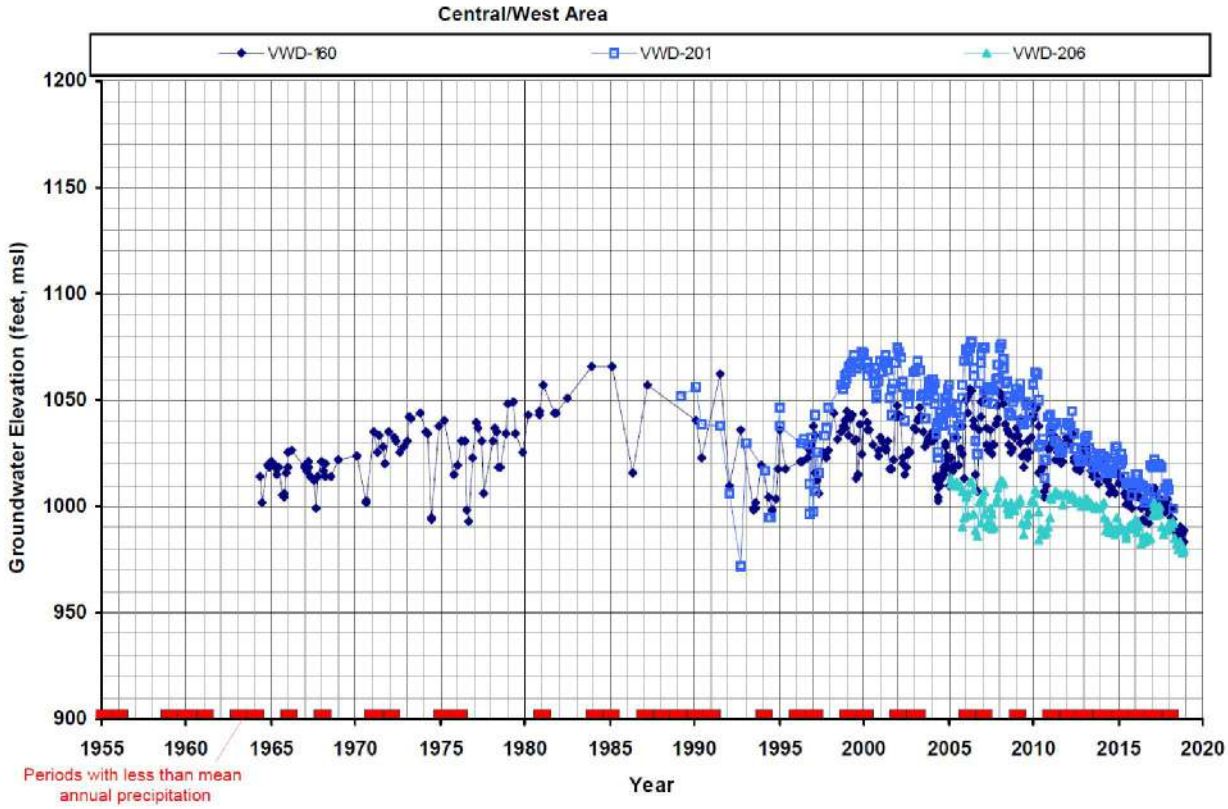
Groundwater Production - Saugus Formation

Santa Clarita Valley Water Report
Santa Clarita Valley, Los Angeles County, California

Figure 3-8





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Groundwater Elevations in Saugus Wells

Santa Clarita Valley Water Report
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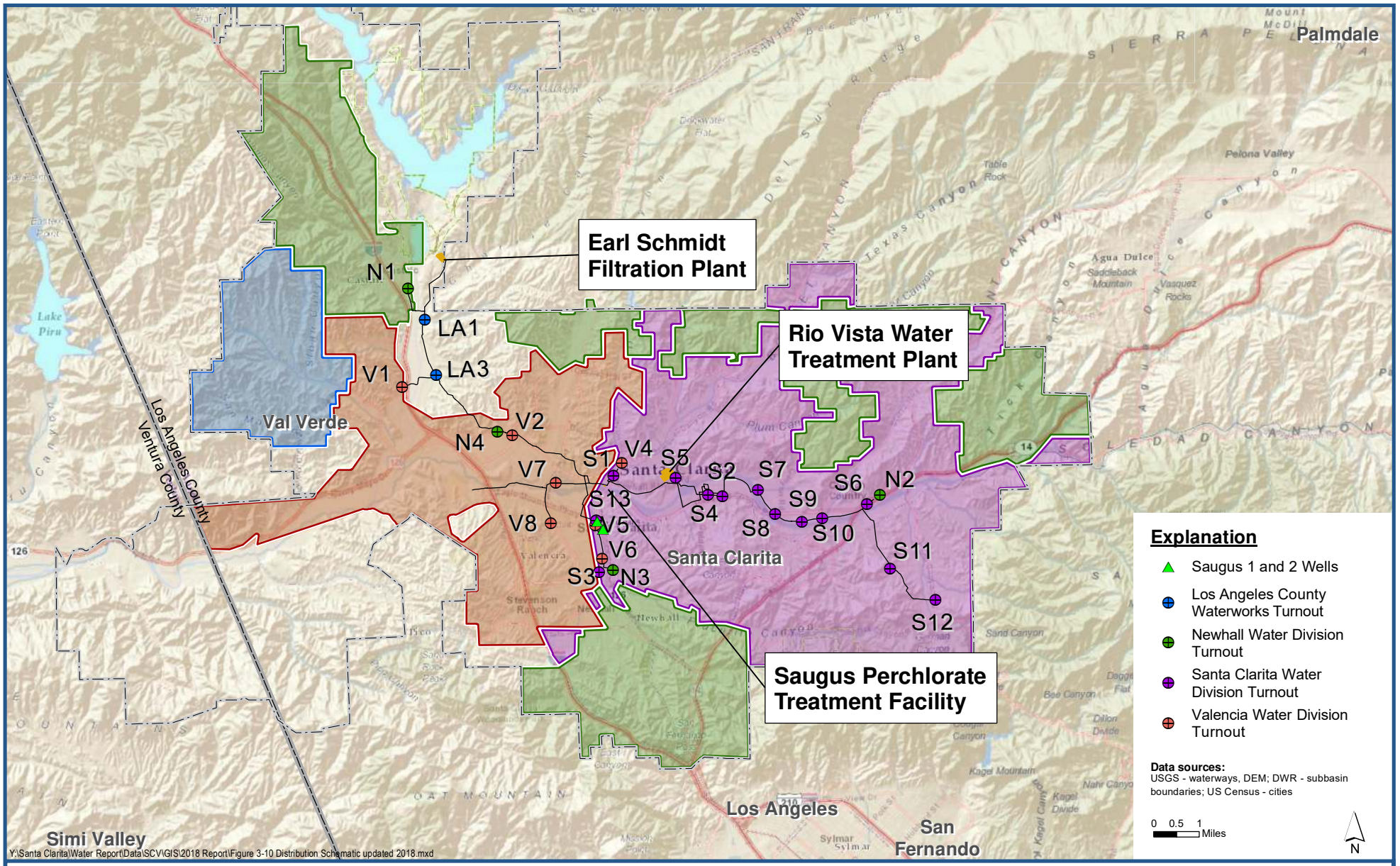
Figure 3-9



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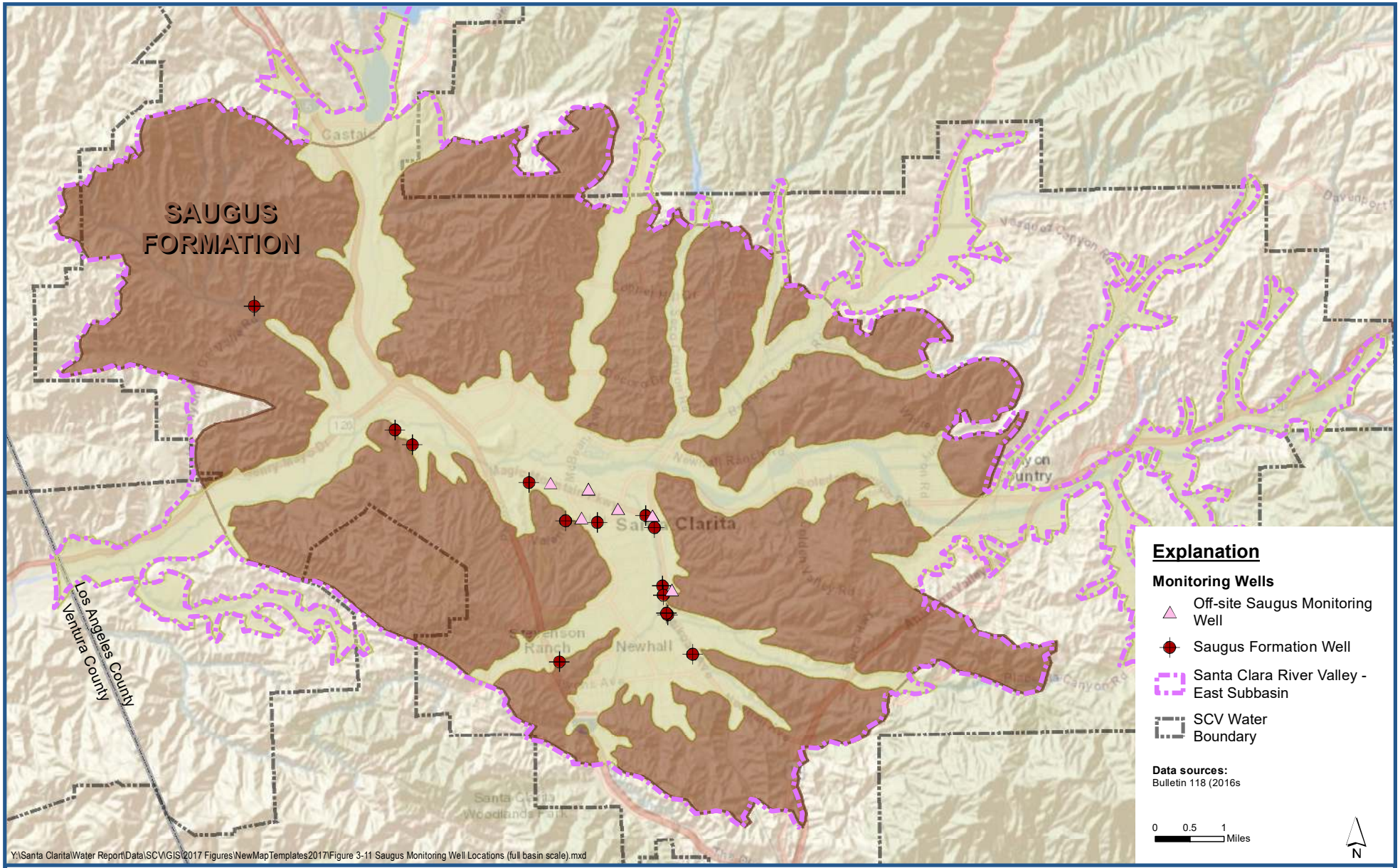
Treated Water Distribution System
Santa Clarita Valley Water Agency

Santa Clarita Valley Water Report
Santa Clarita Valley, Los Angeles County, California

Figure 3-10



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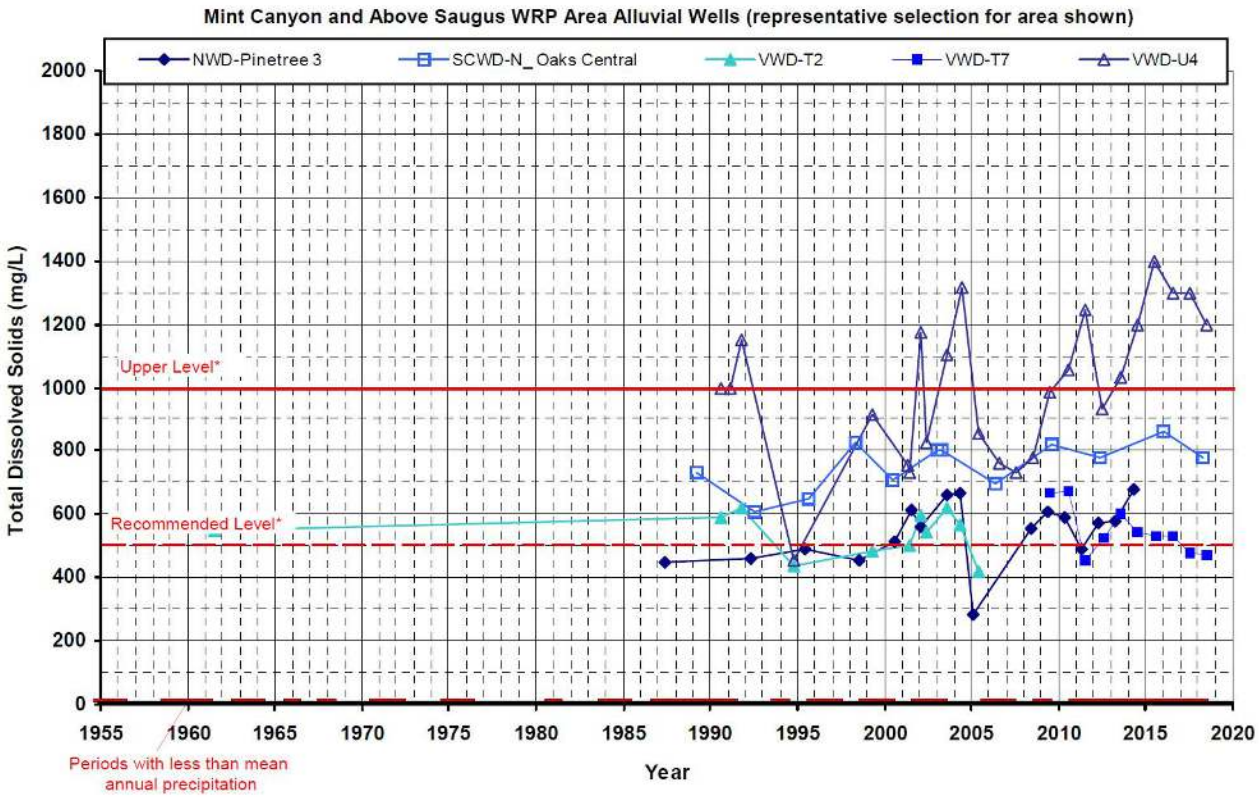
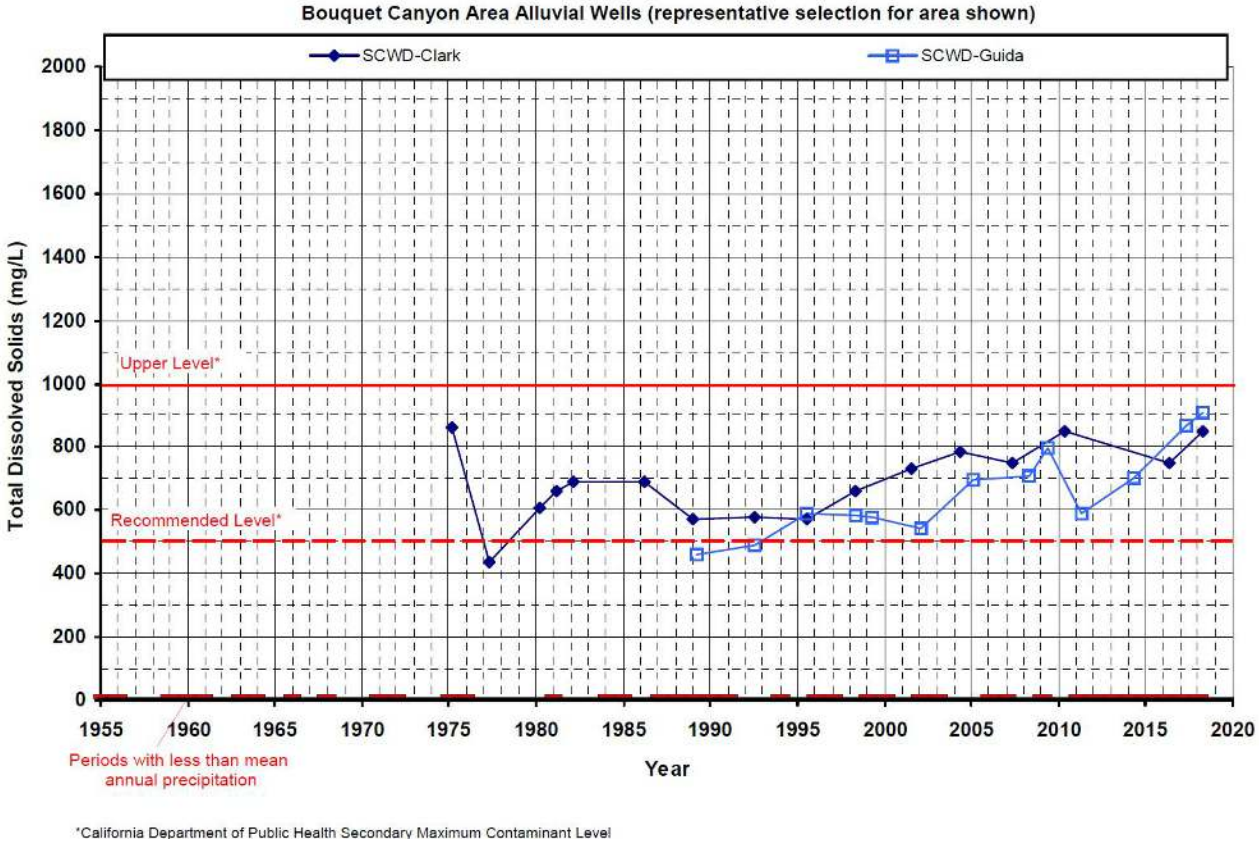
Saugus Formation Monitoring Well Locations

Santa Clarita Valley Water Report
Santa Clarita Valley, Los Angeles County, California

Figure 3-11





*California Department of Public Health Secondary Maximum Contaminant Level

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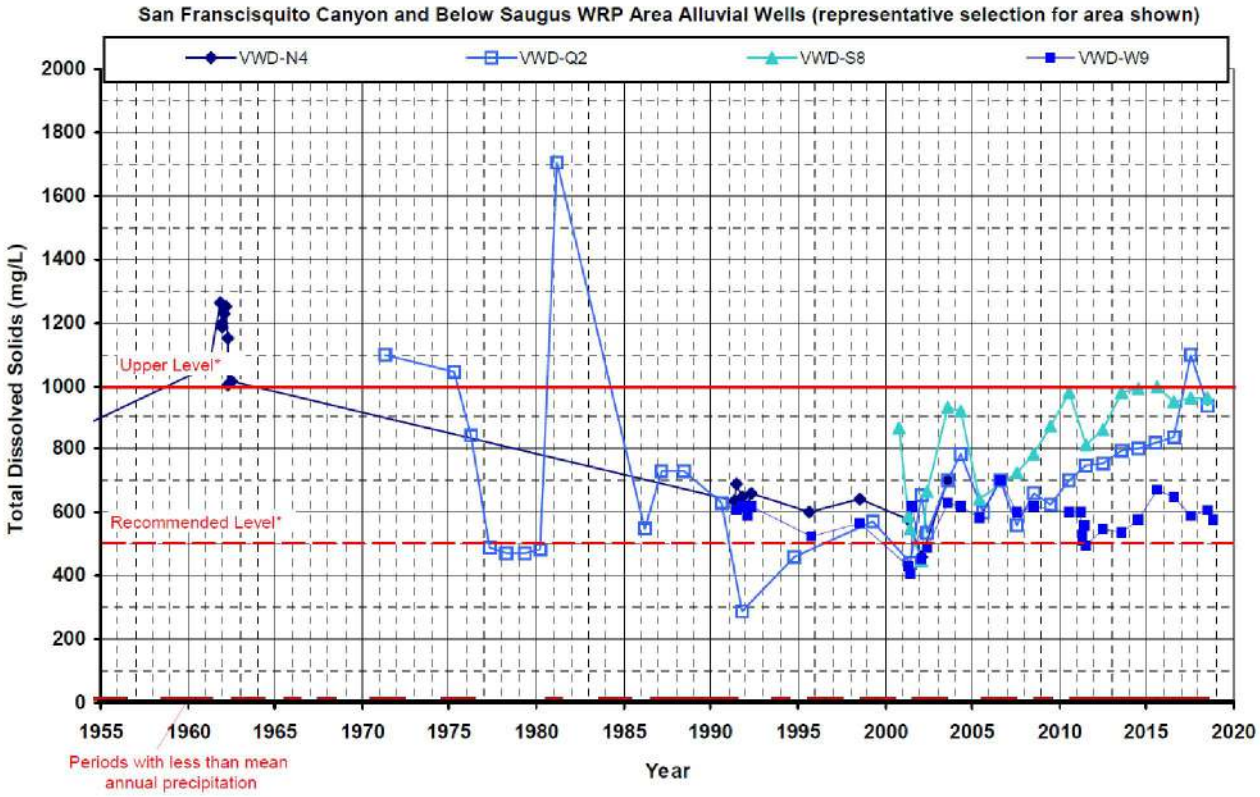
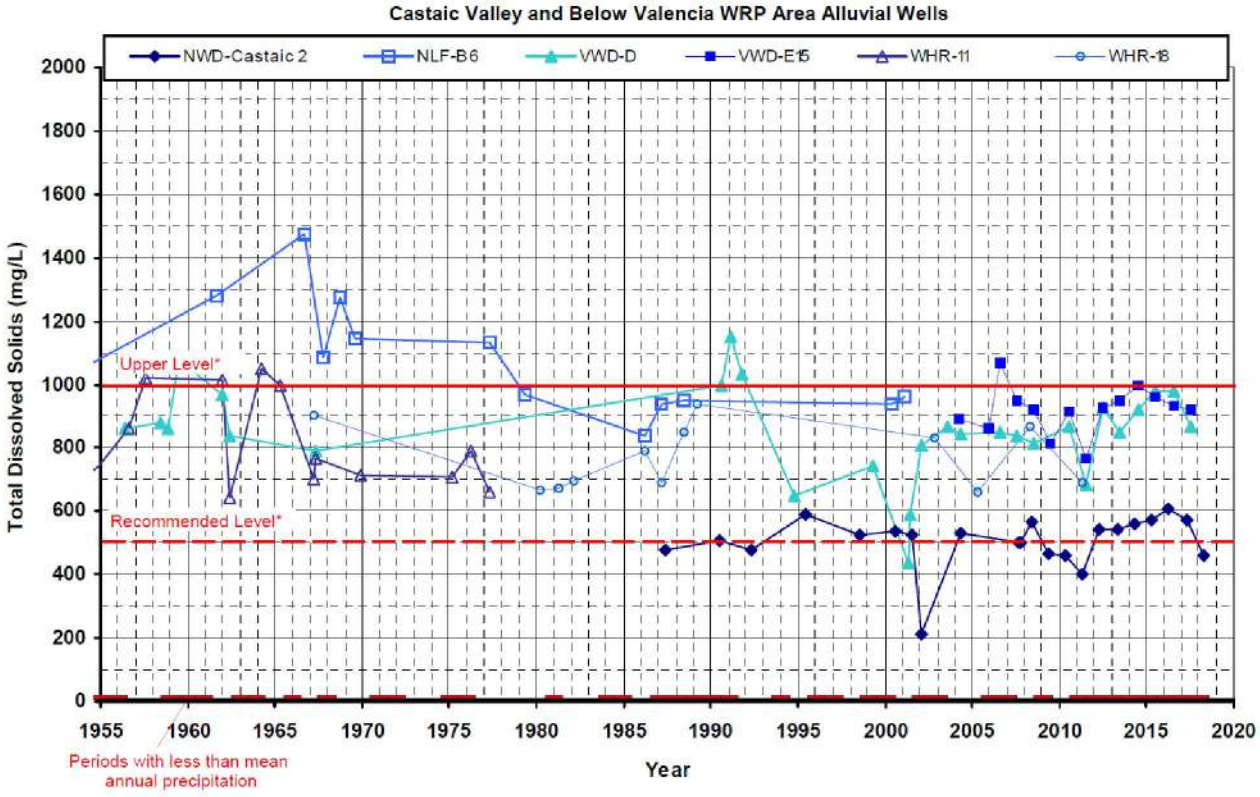
Groundwater Quality in Eastern Santa Clarita Valley Alluvial Wells

Santa Clarita Valley Water Report
Santa Clarita Valley, Los Angeles County, California

Figure 3-12





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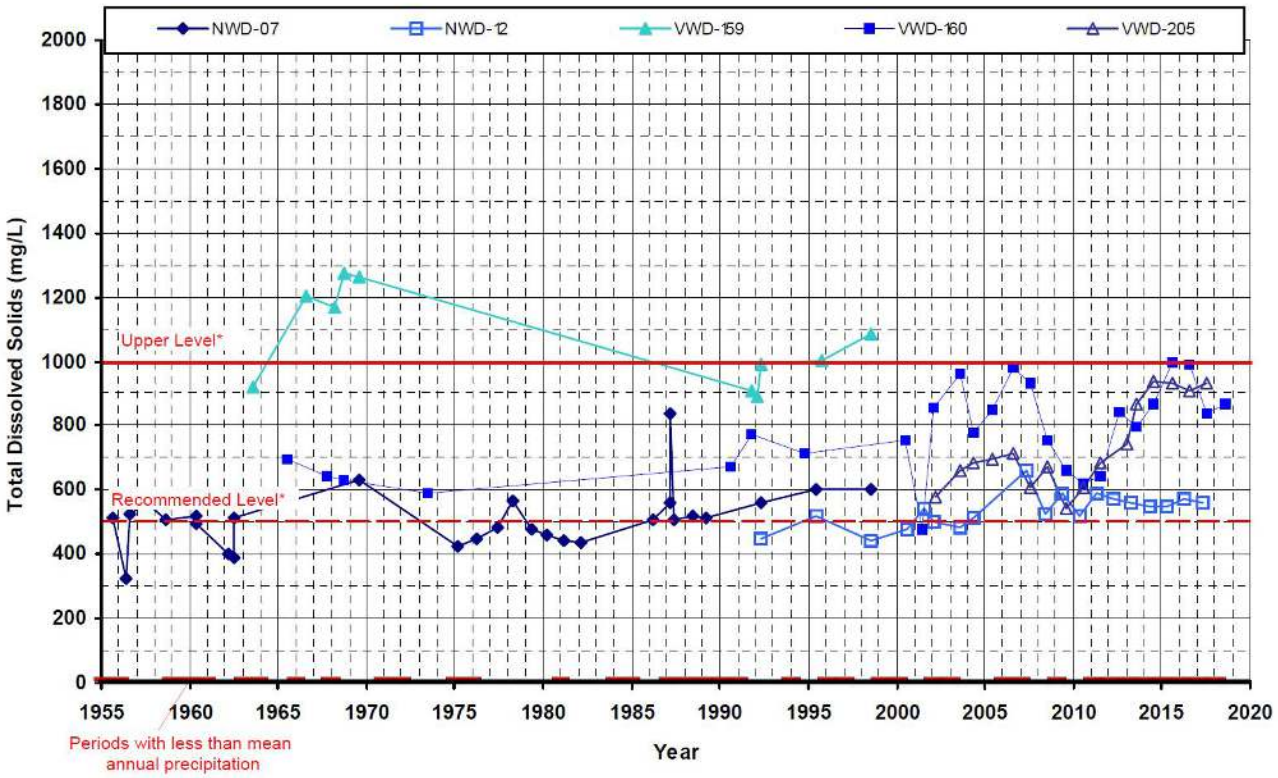
Groundwater Quality in Western Santa Clarita Valley Alluvial Wells

Santa Clarita Valley Water Report
Santa Clarita Valley, Los Angeles County, California

Figure 3-13



*California Department of Public Health Secondary Maximum Contaminant Level

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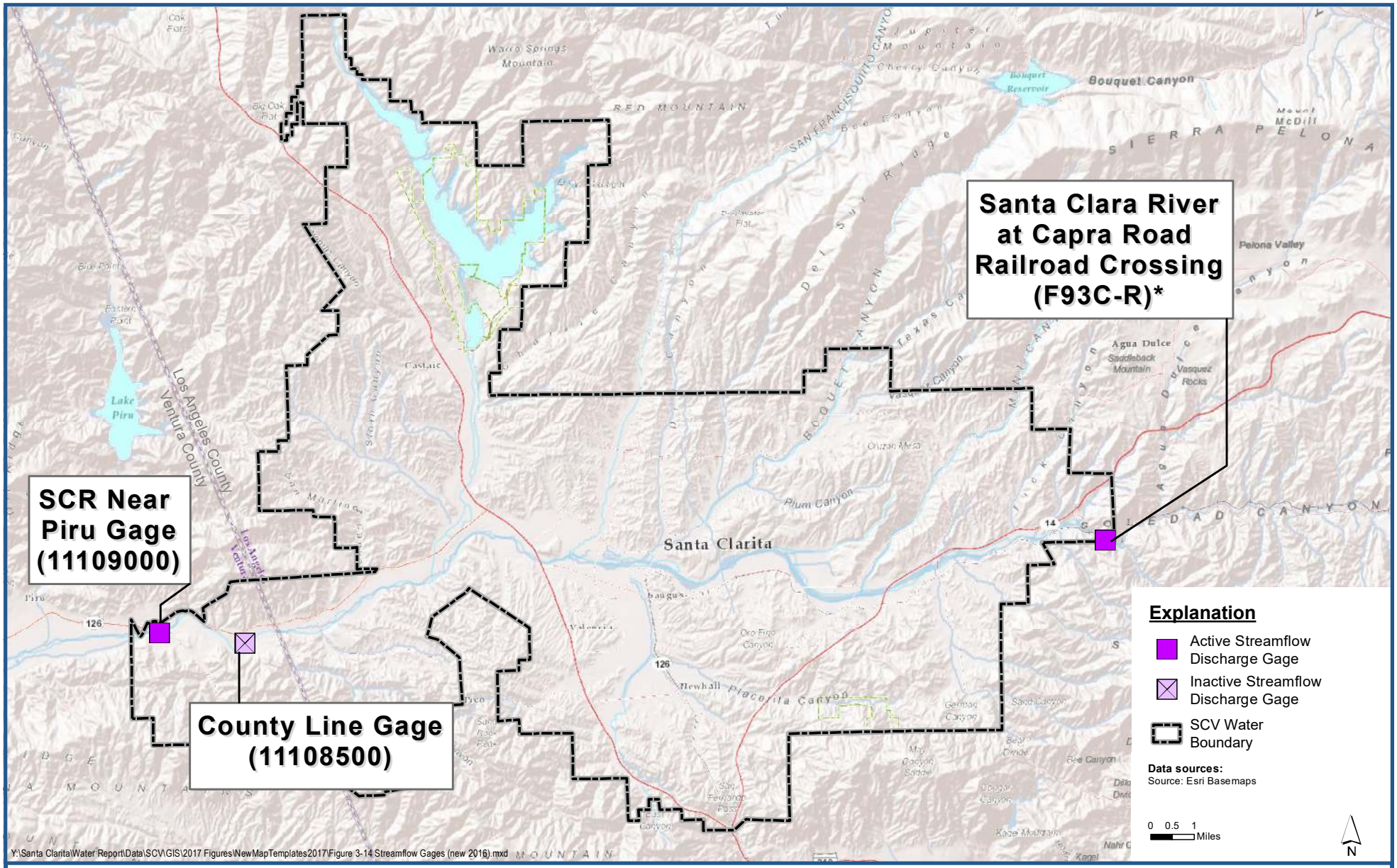
Groundwater Quality in Saugus Wells

Santa Clarita Valley Water Report
Santa Clarita Valley, Los Angeles County, California

Figure 3-14



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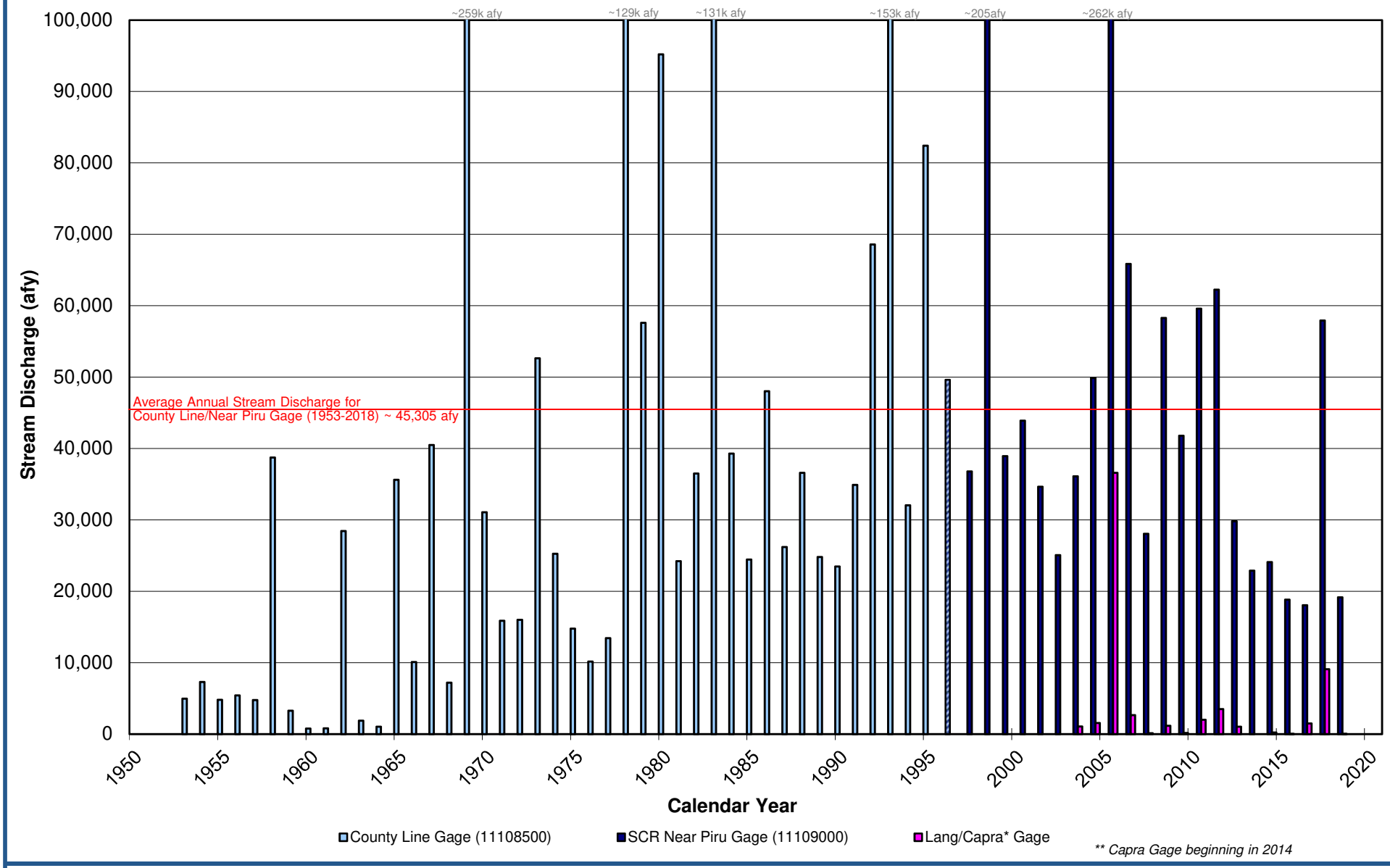
Streamflow Discharge Gage Locations

Santa Clarita Valley Water Report
Santa Clarita Valley, Los Angeles County, California

Figure 3-15



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Annual Stream Discharge

Figure 3-16

Santa Clarita Valley Water Report
Santa Clarita Valley, Los Angeles County, California

4 SUMMARY OF 2018 WATER SUPPLY AND 2019 OUTLOOK

As discussed in the preceding chapters, total water demands in the Santa Clarita Valley were 78,300 af in 2018, or almost two percent higher than in 2017. Of the total demand in 2018, approximately 65,200 af were for municipal water supply (an increase of 1,700 af or almost three percent over 2017), and the balance (13,100 af, a decrease of approximately 400 af from 2017) was for agricultural and other uses, including estimated individual domestic uses. As detailed in Chapter 2, the total demand in 2018 was met by a combination of local groundwater, SWP and other imported water, and a small amount of recycled water.

4.1 2018 Water Demand

The total water demand in 2018 was above the projected water demand in the 2015 UWMP (76,500 af), and below the short-term projected demand that was estimated in the 2017 Water Report (80,000-85,000 af). For a long-term illustration of demand, historical water use from 1980 through 2018 is plotted in **Figure 4-1** along with the currently projected municipal and agricultural water demands in the 2015 UWMP through 2050. Historically, the primary factors causing year-to-year fluctuations in water demands have been related to weather, implementation of conservation efforts, economic conditions and variations in the number of service connections. In the short term, wet years have typically resulted in decreased water demand, and dry years have typically resulted in higher water demand. Extended dry periods, however, have resulted in decreases in demand due to conservation and water shortage awareness related to outreach by the water suppliers. The decline in water demand toward the end of the 1989 to 1992 drought is a good example. Similarly, over the recent multi-year dry period beginning in 2006, total water demands progressively declined from a historical high in 2007 to the lowest in nearly two decades in 2015 (except for a couple of interim wet years that saw a corresponding increase). These low demand levels were influenced in part from a slowing in the rate of growth in service connections that started in 2008, but they were primarily the result of intense conservation efforts following state mandated conservation measures in 2014.

After two consecutive years of decrease in 2014/2015 which saw a total reduction in municipal demand of 26 percent from 2013 and following the easing of state-mandated conservation measures, municipal water use slightly rebounded in 2016/2017 (total 16 percent increase over 2015). The rate of increase in demand lessened in 2018 (almost 3 percent increase from 2017). The 2018 municipal water demand is now similar to demand last seen in the early 2000s even though the number of service connections is more than 40 percent greater; this is due in part to the carry over effect of SWRCB mandated reduction in water demands, and updated plumbing codes, and other conservation efforts.

4.2 Projected 2019 Water Demand and Supplies

With the above average rainfall conditions in early 2019, municipal water requirements in the first quarter of 2019 were less than the first quarter of 2018. Recognizing those early-year conditions, the potential impact of additional conservation, and continued growth in the Valley, total water demand in 2019 is estimated to be about 80,000 af.

It is expected that both municipal and agricultural water demands in 2019 will continue to be met with a mix of water supplies as in previous years, notably local groundwater, SWP and other supplemental imported water supplies, complemented by recycled water that will continue to supply a small fraction of total water demand.

On November 30, 2018, the initial allocation of water from the SWP for 2019 was 10 percent. On January 25, 2019, it was increased to 15 percent. On February 20, 2019, the allocation was increased to 35 percent. On March 20th, the allocation was increased to 70 percent of its total Table A Amount of 95,200 af. Combined with local groundwater from the two aquifer systems (approximately 40,000 af), actual carryover SWP water from 2018 (3,608 af) available in 2019, annual acquisition from BVWSD and RRBWSD (combined 11,000 af), 6,060 af of Flexible Storage, Yuba Accord Water (709 af), and recycled water (500 af), the total available water supplies for 2019 are potentially 128,517 af. Due to continuing water conservation efforts and diversified sources of water supply, SCV Water anticipates having more than adequate supplies to meet all water demands in 2019. Projected 2019 demand, available water supplies, and banked water supplies are summarized in **Table 4-1**.

4.3 Supplemental Water Supply Sources

In addition to the water supplies described above, and as described in Chapter 3, SCV Water has dry-year supplemental water supply of more than 151,000 af of recoverable water outside the groundwater basin at the end of 2018. Through five long-term groundwater banking and exchange programs, as itemized in the lower half of Table 4-1, these additional dry-year supplies include: nearly 41,000 af of recoverable water stored in the Semitropic Groundwater Storage Bank (SWRU) in Kern County, 100,000 af in the RRBWSD, a separate two-for-one exchange with RRBWSD with more than 9,400 af of total recoverable water, and another two-for-one exchange program with the WKWD in Kern County that has 500 af of recoverable water at the end of 2018. Additionally, there are 750 af stored with the Central Coast Water Authority. These components of overall water supply are separately reflected in **Table 4-1** because they are intended as a future dry-year supply. There are no anticipated extractions from the Rosedale-Rio Bravo, and Semitropic exchange programs in 2019.

4.4 Water Supply Reliability

4.4.1 SWP Delivery Capability

A federal court in August 2007 ruled that certain operational changes were required of the SWP in order to protect the endangered Delta smelt. With the objective of protecting endangered fish such as the Delta smelt and spring-run salmon, the court order resulted in the preparation of new Biological Opinions (BiOps) requiring DWR to implement mitigation requirements with resultant impacts on SWP water supply reliability. The current SWP Draft Delivery Capability Report 2017 (DWR, 2017), maintains the restrictions on SWP operations according to the BiOps of the U.S. Fish and Wildlife Service and the National Marine Fishery Service issued on December 15, 2008 and June 4, 2009, respectively. In December 2010, a federal judge overruled most of the 2008 federal BiOp and invalidated several of the criteria that reduced SWP's water supply. These matters were appealed to the U.S. Court of Appeals for

Table 4-1
2019 Water Demand and Water Resources
(acre-feet)

Projected 2019 Demand [1]		**80,000**
Available 2019 Water Supplies		
Local Groundwater		40,000
Alluvium [2]	*30,000*	
Saugus Formation [3]	*10,000*	
Imported Water		88,017
Table A Amount [4]	*66,640*	
Total Carryover from 2018 [5]	*3,608*	
Buena Vista/Rosedale-Rio Bravo[6]	*11,000*	
Flexible Storage Account (SCV Water/Ventura County) [7]	*6,060*	
Yuba Accord[8]	*709*	
Recycled Water		500
Total Available 2019 Supplies		**128,517**
Balance of Banking and Exchange Programs [9]		
Semitropic (SWRU) Groundwater Banking Program[10]		40,776
Rosedale-Rio Bravo Water Banking Program[11]		100,000
2005/2006 Buena Vista/Rosedale-Rio Bravo Water Acquisition Agreement[12]	*22,000*	
2005/2006 Banking of Table A[13]	*34,292*	
2007/2010-2012/2016 Rosedale Rio-Bravo Banking[14]	*43,865*	
Two-for-One Exchange Programs		9,941
2011/2012 Rosedale-Rio Bravo Water Storage District[15]	9,441	
2011 West Kern Water District[16]	500	
Central Coast Water Authority[17]	750	750
Total Additional Dry Year Supplies		**151,467**

1. Estimate based on 2019 year-to-date actual use through March, with demand for the rest of 2019 similar to 2017/2018, with increase to account for growth.

2. The Alluvium represents 30,000 to 40,000 afy of available supply under local wet-normal conditions, and 30,000 to 35,000 afy under local dry conditions. Available supply in 2019 is shown to be reflective of dry year production (for 2018) under the Current Operating Plan described in the Updated Basin Yield Analysis, August 2009.

3. The Saugus Formation represents 7,500 – 15,000 afy of available water supply under non-drought conditions, and up to 35,000 afy under dry conditions, dependent on available well capacity. Estimated supply for 2019 takes into consideration current available capacity and dry year conditions in 2018.

4. SCV Water's SWP Table A amount is 95,200 af. The initial 2019 allocation on November 30, 2018 was 10 percent (9,520 af). On January 25, 2019, the allocation was increased to 15 percent (14,280 af). On February 20, 2019, the allocation was increased to 35 percent (33,320 af). On March 20, 2019, the allocation was increased to 70% (66,640 af).

5. At the beginning of 2019, a total of 39,211 af of carryover supplies were available. 3,608 af were delivered in January, February, and March, 2019 whereupon the rest "spilled" (reallocated to the State Water Project), and is no longer available.

6. 2019 annual supply from 2007 Buena Vista/Rosedale-Rio Bravo Water Acquisition Agreement.

7. As provided in the Monterey Amendment of its SWP Contract, SCV Water can directly utilize up to 4,684 af of flexible storage capacity in Castaic Lake. SCV Water can also utilize 1,376 af of Ventura County SWP contractors' flexible storage capacity in Castaic Lake for a total of 6,060 af of flexible storage. The original agreement in 2005 was for 10-year term, and the agreement was extended by 10 years in 2015. In 2014, 4,424 af was recovered and 4,339 af was backfilled in 2015; and the remaining 85 af was refilled in 2017. No utilization of flexible storage is anticipated in 2019.

8. As a result of agreements among DWR, Yuba County Water Agency, and the U.S. Bureau of Reclamation regarding settlement of water rights issues on the Lower Yuba River (Yuba Accord), this non-SWP water supply may be available to SCV Water each year depending on hydrology, subject to availability and cost. In 2019, 709 af are available to SCV Water. SCV Water has opted not to take delivery of this water supply in 2019.

9. Does not include other reliability measures available to SCV Water. These measures include short-term exchanges, participation in DWR's dry-year water purchase programs, and other future groundwater storage programs.

10. CLWA initially banked 24,000 af and 32,522 af in 2002 and 2003 (the latter banked in 2004), respectively. This is the current balance (40,776 af) after accounting for program losses, recovering 4,950 af in 2009/2010, and withdrawing 4,950 af in 2014 through the first priority extraction capacity of Newhall Land and Farming Company, now Five Point Holdings, LLC (and giving Newhall Land/Five Point 5,000 af of water in consideration for this use), and banking 5,340 af in 2017 (with 4,806 af of that recoverable). In 2015, CLWA entered into an agreement with Semitropic to participate in the Stored Water Recovery Unit (SWRU). Under this agreement, the two short-term accounts containing 35,970 af were transferred into this new program, and SCV Water can now store and recover additional water within a 15,000 af storage account. The term of the Semitropic Banking Program extends through 2035 with the option of a 10-year renewal. SCV Water may withdraw up to 5,000 afy from its account. No utilization of Semitropic banked water is anticipated for 2019.

11. The total banked amount is 100,157 af, however the contract limit is 100,000 af. Efforts are currently underway to increase the withdrawal capacity by 7,000 afy to a total of 10,000 afy by mid-2019.

12. Water stored in Rosedale-Rio Bravo Water Banking Program back-credited in 2007 for 2005 and 2006 pursuant to the Buena Vista/Rosedale-Rio Bravo Water Acquisition Agreement executed in 2007, not subject to losses.

13. Net recoverable water balance is 34,292 af comprising the following transactions:
    - 17,146 af after banking 20,000 af in 2005;
    - 17,146 af after banking 20,000 af in 2006.

14. Net recoverable water balance is 43,865 af comprising the following transactions:
    - 7,323 af after banking 8,200 af (Table A) in 2007;
    - 30,948 af after banking of 33,668 af (25,418 af Table A and 8,250 af of BV/RRB) in 2010;
    - 880 af after banking of 986 af (SWP) in 2011;
    - 5,729 af after banking of 6,031 af (BV/RRB) in 2012;
    - recovery of 2,824 af in 2014;
    - recovery of 2,998 af in 2015;
    - 4,807 af after banking 5,060 af (BV/RRB) in 2016.

15. Net recoverable water balance is 9,441 af comprising the following transactions:
    - 7,555 af after exchanging 15,602 af in 2011;
    - 1,886 af after exchanging 3,969 af in 2012.

16. Net recoverable water balance is 500 af comprising the following transactions:
    - 2,500 af after exchanging 5,000 af in 2011;
    - recovery of 2,000 af in 2014.

17. In 2016, 1,500 af of SWP supply was sold to Central Coast Water Authority on behalf of the Santa Barbara County Flood Control and Water Conservation District in an unbalanced exchange agreement. They must return 750 af to SCV Water by December 2026. Central Coast may return the balance of 750 af to SCV Water in 2019.

the Ninth Circuit. The Ninth Circuit ruling upheld the BiOps of the federal agencies. Therefore, the operational rules defined in these BiOps continue to be legally required and were used by DWR in the analyses supporting its SWP Draft Delivery Capability Report 2017. The SWP Draft Delivery Capability Report 2017 also considers the impacts on SWP delivery reliability due to climate change, sea level rise, and multiple Delta-specific concerns. Further consideration is also given to the major Delta policy planning efforts currently underway: The Delta Plan and the Bay Delta Conservation Plan (in 2018 called CA Water Fix). With these factors, the Delivery Capability Report projects that the average annual delivery of Table A water is estimated at 62 percent (unchanged from the 2015 estimate). SCV Water staff has assessed the impact of the current SWP Draft Delivery Capability Report 2017 on the SCV Water reliability analysis contained in the Agency's 2015 UWMP that current and anticipated supplies are available to meet projected water supply needs through the year 2050. The preceding discussion of SWP supply should be considered by noting that, while the SWP Capability Report represents a reasonable scenario with respect to long term reliability, recent reductions in supply reduce the difference between available supply and demand in the future, thereby making the SCV Water service area more subject to shortages in certain dry years. Accordingly, the reduction in SWP supply reinforces the need to continue diligent efforts to conserve potable water and increase the use of recycled water to maximize utilization of potable water supplies.

More recently, DWR has entered into a revised SWP-CVP Coordinated Operating Agreement and is advancing a Voluntary Settlement Agreement relating to the State Water Resources Control Board's Bay-Delta Water Quality process. Further, under the direction of Governor Newsom, DWR recently took formal steps to withdraw proposed permits for the California Water Fix (twin tunnels) and begin a renewed environmental review and planning process for a smaller, single tunnel Delta Conveyance project. The outcome of these efforts is not known but is not expected to result in reliability outcomes below the range of those that have been modeled under the Water Fix analysis.

As discussed in Chapter 5, SCV Water has worked with Los Angeles County and the City of Santa Clarita to aggressively implement water conservation in the SCV Water service area. In terms of short-term water supply availability, however, SCV Water has determined that even with operational changes of the SWP in effect, there are sufficient supplemental water supplies, including SWP water, to augment local groundwater and other water supplies such that overall water supplies will be sufficient to meet projected water requirements. SCV Water, Los Angeles County, and the City of Santa Clarita have formed the Santa Clarita Valley Water Committee (formerly convened as the Santa Clarita Drought Committee). The specific purpose of the committee is to work collaboratively to manage the conjunctive use of the Valley's water supplies, respond to drought conditions and ensure the progressive implementation of water use efficiency programs in the Santa Clarita Valley.

4.4.2 Water Supply Reliability Plan

In addition to the 2015 UWMP water supply analysis, SCV Water undertook an update of the CLWA 2011 Water Supply Reliability Plan. Completed in 2017, the report (conducted by Nancy Clemm and Kennedy/Jenks Consultants) analyzed and modeled four different supply and demand scenarios from

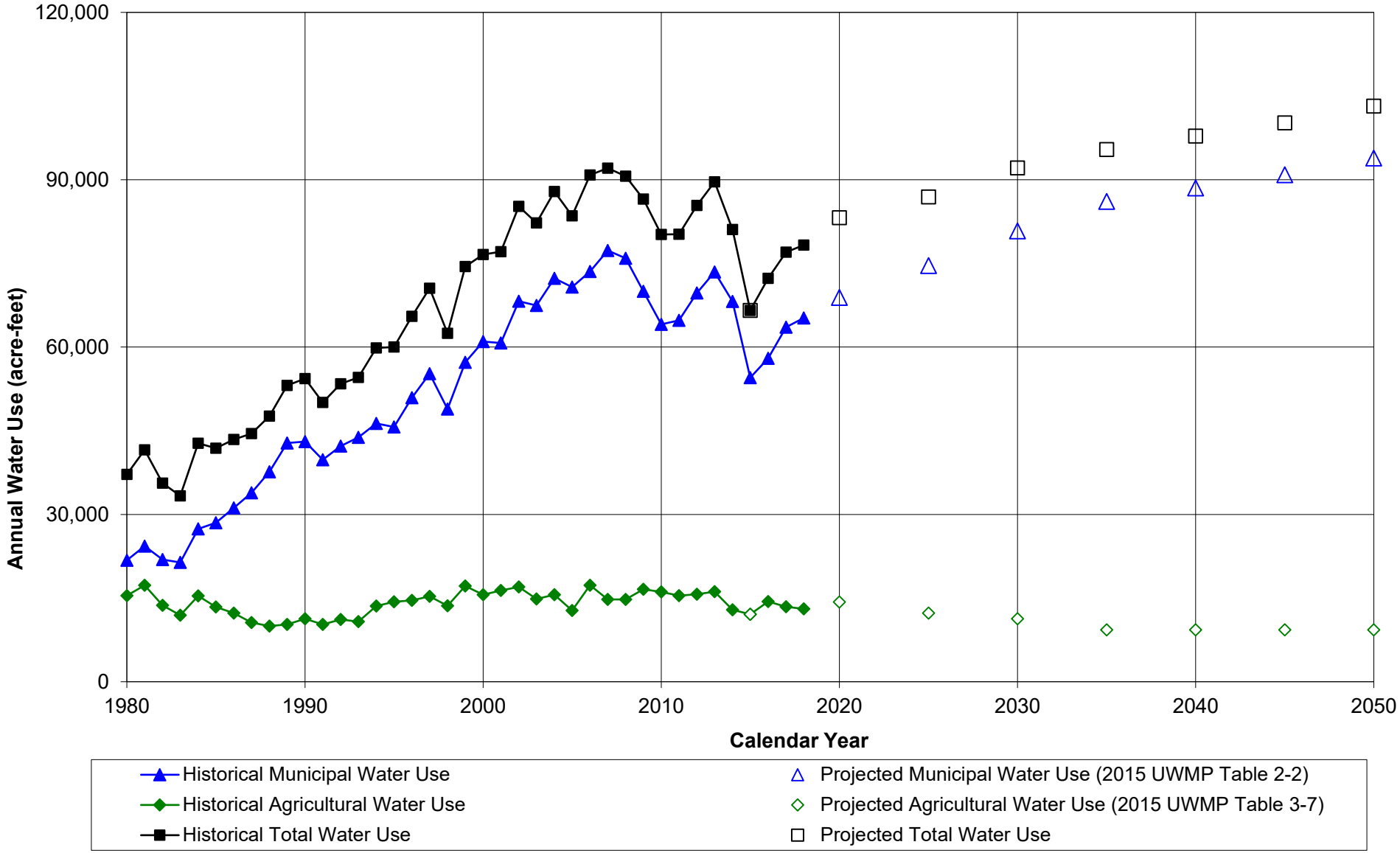
2017 to 2050 to determine the overall reliability of the water supply in the Santa Clarita Valley. The scenarios reflect a wide range of water supply assumptions on the availability of groundwater for pumping, imported water deliveries, planned increases in recycled water, and potential California Water Fix facilities. Under the most challenging scenario, SWP and groundwater supplies were reduced and improvements in Rosedale Banking Program and Saugus dry-year pumping were suspended. Under such reduced supply conditions, the analysis concluded that planned improvements to the Rosedale Banking Program as well as conjunctive use of Saugus Formation storage were necessary.

4.5 Water Supply Strategy

SCV Water has implemented a number of projects that are part of an overall program to provide facilities needed to firm up imported water supplies during times of drought. These involve water conservation, surface and groundwater storage, water transfers and exchanges, water recycling, additional short-term pumping from the Saugus Formation, and increasing the reliability of SCV Water's imported supply. This overall strategy is designed to meet increasing water demands while assuring a reasonable degree of supply reliability.

Part of the overall water supply strategy is to conjunctively use groundwater and imported water to area residents to ensure consistent quality and reliability of service. The actual blend of imported water and groundwater in any given year and location in the Valley is an operational decision and varies over time due to source availability and operational capacity of SCV Water facilities. The goal is to conjunctively use the available water resources so that the overall reliability of water supply is maximized while utilizing local groundwater at a sustainable rate. Such is the case in 2019, where the large amount of available SWP supplies, provided operational flexibility in reducing groundwater pumping in the Valley to address drought impacts on groundwater levels in the eastern portion of the subbasin.

For long-term planning purposes, water supplies and facilities are added on an incremental basis and ahead of need. It would be economically unsound to immediately, or in the short term, install and implement all the facilities and water supplies needed for the next twenty to thirty years. This would unfairly burden existing customers with costs that should be borne by future customers. There are numerous ongoing efforts to produce an adequate and reliable supply of good quality water for Valley residents, including increased recovery capacity at both Semitropic and RRBWSD Banking Programs and new and replacement wells in the Saugus Formation to increase groundwater recovery. Water consumers expect their needs will continue to be met with a high degree of reliability and quality of service. To that end, SCV Water's stated reliability goal is to deliver a reliable and high quality water supply for their customers, even during dry periods. Based on conservative water supply and demand assumptions contained in the 2015 UWMP for a planning horizon to 2050, in combination with conservation of non-essential demand during certain dry years, SCV Water believe implementing their water plan will successfully achieve this goal.



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Historical and Projected Water Use

Santa Clarita Valley Water Report
Santa Clarita Valley, Los Angeles County, California

Figure 4-1

5 WATER CONSERVATION

5.1 Historical Conservation Efforts

The California Urban Water Conservation Council (CUWCC) was formed in 1991 through the Memorandum of Understanding Regarding Urban Water Conservation in California (MOU). The urban water conservation Best Management Practices (BMPs) included in the MOU are intended to reduce California's long-term urban water demands. Over the course of the subsequent 20 years, all Santa Clarita Valley purveyors signed onto the MOU.

In 2007, an MOU with CLWA and the other retail water purveyors was executed that led to the preparation of the Santa Clarita Valley Water Use Efficiency Strategic Plan (2008 SCVWUESP). The purpose of the effort was to prepare a comprehensive long-term conservation plan for the Santa Clarita Valley by adopting objectives, policies and programs designed to promote proven and cost-effective conservation practices. The preparation of the 2008 SCVWUESP included input from stakeholders and the community at large and was completed in 2008. The 2008 SCVWUESP provided a detailed study of residential and commercial water use, and recommended programs designed to reduce overall Valley-wide water demand by ten percent by 2030. Following the completion of the 2008 SCVWUESP, Senate Bill SB X7-7 was passed in November 2009. SB X7-7 included requirements for reductions in per capita water use by 2020 of 20 percent which exceeded the targets outlined in the 2008 SCVWUESP.

While previous editions of this report referenced the CUWCC Best Management Practices (BMPs), the CUWCC no longer exists and implementation of the BMPs are no longer required. In late 2016, it was reorganized into the California Water Efficiency Partnership, and it is anticipated that the new organization will provide assistance to the water industry to help meet the goals established in SB X7-7.

5.2 Recent Conservation Efforts

In 2015, an updated Water Use Efficiency Strategic Plan (WUE SP) was finalized that incorporated the SB X7-7 targeted reductions. The updated WUE SP was supported by a thorough economic analysis that will guide local water conservation efforts planned and implemented by SCV Water in the coming years. The economic analysis concluded that water conservation measures are more economically feasible as compared to the economic benefit of adding recycled water infrastructure in meeting a portion of future water demands. The WUE SP is consistent with SCV Water's Strategic Plan Objectives including:

- Ensure long-term average water supply meets current and future demand.
- Meet local water demands.
- Achieve the water conservation target of 20 percent per capita by 2020.

SCV Water is committed to a water conservation program comprising several conservation measures that will lower projected demand by 2020, similar to what has already been implemented over the past two decades. The conservation measures incorporate education, incentives, and conservation

mandates among all the various customers present in the Valley. Some of these measures are summarized below.

On January 17, 2014, as a response to drought conditions, the Governor of the State of California declared a drought emergency and asked that all Californians take voluntary action to reduce their 2013 water use by 20 percent. In February 2014, the Santa Clarita Valley Family of Water Suppliers approved the Water Conservation Action Plan that provided a series of water conservation guidelines customers could implement to reduce their water use by 20 percent. In July 2014, the SWRCB adopted temporary emergency water conservation regulations that required water agencies to implement the actions of their water shortage contingency plans that imposed mandatory restrictions on outdoor irrigation of ornamental landscapes or turf with potable water and prohibited the following actions:

- the application of potable water to outdoor landscapes in a manner that causes runoff,
- 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,
- the application of potable water to driveways, sidewalks, and other hardscape,
- failure to repair a leak within 24 hours of detection or notification,
- irrigating lawns, turf, or vegetated areas during and within 48 hours following measurable rainfall and between the hours of 9:00 am to 5:00 pm,
- the use of potable water in a fountain or other decorative water feature except where the water is part of a recirculating system,
- Restaurants can only serve water to customers on request,
- Hotels must provide guests with the option of choosing not to have towels and linens laundered daily.

On May 9th, 2016 Governor Brown issued an Executive Order B-37-16, which modified the previous Executive Order calling for reductions in water use. Executive Order B-37-16 called for adjustments to be made to water conservation regulations through January 2017 in recognition of the differing water supply conditions across the state, discontinuing specific mandatory water conservation programs to voluntary efforts (Executive Department State of California).

In August 2014, the Santa Clarita Valley Water Committee declared a second phase of the Water Conservation Action Plan that formally recommended that local water retail agencies adopt the SWRCB Prohibitive Measures and Mandatory Outdoor Watering Restrictions, which provided restricted watering days for outdoor landscaping. This restriction was lifted in May 2016. The statewide water reduction mandate was modified to allow local agencies to evaluate their water supply using specific criteria established by the State Board. Local agencies were required to determine their own mandatory water restrictions. This allowed for the removal of restrictions on the number of days customers are able to water their landscapes. Additionally, and as a result of the water conservation measures described in the Water Conservation Action Plan, the SCV Family of Water Suppliers put forth a valley wide communication plan that included outreach efforts.

As described in the 2015 UWMP, each retail purveyor (now division) must demonstrate SB X7-7 compliance by an interim Daily Per Capita Water Use Target. As summarized in **Table 5-1**, all three of the divisions met their 2018 Interim Water Use Target in addition to their 2020 Target. LA36 met the 2020 GPCD target in 2017.

Table 5-1: 20x2020 Compliance GPCD Targets and Current Levels

Division	Baseline[a]	2015 Target[a]	2020 Target[a]	Interim 2018 Target	Actual 2018
LA36[b]	235	212	188	145	138
NWD	238	214	190	200	176
SCWD	251	226	201	211	183
VWD	334	300	267	281	244
Valley-wide[c]	277	249	221	229	204

Source: Water Use Efficiency Strategic Plan (2015)

a. Targets are consistent with 2015 UWMP (2016). GPCD values represent potable per capita water use only and do not include any recycled water use. Recycled water is included in VWC total production and demand graphs. However, for potable GPCD calculations and associated GPCD graphs, recycled water is not included to allow for comparison with potable GPCD water use targets mandated per the definition provided in SB X7-7.

b. Since Los Angeles County Waterworks District 36 does not have 3,000 AF served or 3,000 connections, SB X7-7 does not apply.

c. Valley-wide GPCD values are based on a weighted average using population estimates as reported in the 2015 UWMP. Though SB X7-7 does not apply to LACWD, the valley-wide GPCD calculation includes both water production and population from the LACWD service area to examine the regional water use.

SCV Water provides additional information on their website regarding water conservation tips, gardening classes, and rebates. The agency website provides steps residents can take to conserve water for both indoor and outdoor use, along with a calendar for upcoming gardening classes. Rebates for water efficient products and services are provided for individual residence, businesses, and areas with large landscapes or HOA's. This includes pool covers, soil moisture sensors, smart irrigation controllers, and lawn replacement. More information on these services and rebates can be found on the SCV Water website (https://yourscvwater.com/save-water-money/#_rebates).

5.3 2018 Water Use

2017 put an end to five consecutive years of drought conditions for most of California, but the Santa Clarita Valley saw below average precipitation that year, and again in 2018 for the eighth straight year. In 2018, there was an increase in water consumption in the Santa Clarita Valley compared to 2017 levels. This was likely due to the lower than normal precipitation in 2018, lifting of state-mandated conservation targets to voluntary efforts, and an increase in the supply of imported water.

Although more water was consumed in 2018 compared to 2017, the amount was less than the amount used in 2013. 2018 municipal water use was approximately a 11 percent reduction compared to 2013 levels which the State of California has used as the baseline year in the emergency water conservation regulations. As detailed in Table 2-1, the breakdown of water savings from 2013 to 2018 by service area included:

- VWD – 3,181 af (1,037 million gallons)
- SCWD –3,384 af (1,103 million gallons)
- NWD –1,588 af (517 million gallons)
- LAC36 –87 af (28 million gallons)

As noted in **Table 5-1**, each division in the valley is on track to meet its respective SB X7-7 20 percent by 2020 reduction in GPCD requirement. However, changes to the State's overall conservation strategy have been approved and are currently in development. In 2018, the State Legislature and Governor Brown enacted AB 1668 and SB 606 in support of continuing efforts to "make water conservation a California way of life." The legislation recognizes that the efficient use of water is both cost-effective and critical to ensuring water supply reliability during drought and non-drought conditions. Water agencies will be required to implement a series of urban efficiency standards including indoor and outdoor efficiency targets, with consideration for local weather conditions, and distribution system water losses. Beginning in 2023, SCV Water will be required to comply with its urban water use objective on an annual basis. The SWRCB may issue informational or conservation orders to agencies failing to meet their objectives. Details specific to AB 1668 and SB 606 standards and protocols are scheduled for release in 2022.

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