March 2020

Water Year 2019 Report for the Santa Clara and Llagas Subbasins

Valley Water

Santa Clara Valley Water District

Water Year 2019 Report for the Santa Clara and Llagas Subbasins

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Valley Water
Clean Water • Healthy Environment • Flood Protection

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EXECUTIVE SUMMARY

The Santa Clara Valley Water District (Valley Water) is the Groundwater Sustainability Agency for the Santa Clara and Llagas subbasins (Basins 2-9.02 and 3-3.01, respectively) in Santa Clara County, which are sustainably managed due to the comprehensive activities described in Valley Water's 2016 Groundwater Management Plan (Plan).[1] This Water Year 2019 Report for the Santa Clara and Llagas Subbasins provides information on groundwater conditions and management as required by the Sustainable Groundwater Management Act (SGMA).[2]

Having previously fully recovered to pre-drought conditions, groundwater elevation and storage remained in healthy condition through Water Year (WY) 2019.[3] Total groundwater pumping was 109,600 acre-feet (AF)[4], providing 37% of the water used by county residents and businesses. WY 2019 was a wet year with adequate surface water supplies were available to support a full managed recharge program with 81,400 AF of local and imported surface water used for groundwater replenishment. Treated water delivered by Valley Water (103,000 AF) and recycled water use (17,100 AF) also provided in-lieu recharge, and countywide water conservation programs reduced water demands by more than 70,000 AF. This comprehensive recharge continues to support a balanced long-term water budget. Inflows exceeded outflows in the Santa Clara and Llagas subbasins, resulting in a net increase in storage of 11,400 and 6,600 AF, respectively.

Valley Water continues to implement the comprehensive activities described in the Plan, and to address the Plan recommendations (as further described in Chapter 4):

- Maintain existing conjunctive water management programs and evaluate opportunities for enhancement or increased efficiency.
- Continue to aggressively protect groundwater quality through Valley Water programs and collaboration with land use agencies, regulatory agencies, and basin stakeholders.
- Continue to incorporate groundwater sustainability planning in Valley Water planning efforts.
- Maintain adequate monitoring programs and modeling tools.
- Continue and enhance groundwater management partnerships with water retailers and land use agencies.
- Evaluate the potential new authorities provided by SGMA.

Valley Water will continue to sustainably manage the Santa Clara and Llagas subbasins as a central part of our mission to provide Silicon Valley safe, clean water for a healthy life, environment, and economy. Implementation of the Plan helps ensure continued sustainability in accordance with SGMA, the Santa Clara Valley Water District Act, and Valley Water Board policy to "aggressively protect groundwater from the threat of contamination and maintain and develop groundwater to optimize reliability and to minimize land subsidence and salt water intrusion."

[1] This Plan was submitted to the Department of Water Resources as an Alternative to a Groundwater Sustainability Plan. Per state requirements, an annual report must be submitted by April 1 of each year following Valley Water adoption of the Plan.
[2] A comprehensive calendar-year based Annual Groundwater Report with detailed information on groundwater levels, storage, land subsidence and groundwater quality conditions is available at: https://www.valleywater.org/groundwater.
[3] October 1, 2018 through September 30, 2019
[4] All values presented in this report are based on best available data (measured and/or estimated) and may be refined as additional data becomes available.

CHAPTER 1 – INTRODUCTION

For 90 years, Valley Water has managed groundwater in Santa Clara County under the Santa Clara Valley Water District Act.[5] In December 2016, Valley Water submitted its Board-adopted 2016 Groundwater Management Plan (Plan)[6] to the Department of Water Resources (DWR) as an Alternative to a Groundwater Sustainability Plan under SGMA. Valley Water's comprehensive groundwater management programs and investments described in the Plan have resulted in sustainable groundwater conditions for many decades and will ensure groundwater resources are sustainable into the future.

Under the California Code of Regulations Title 23, Division 2, Chapter 1.5, Subchapter 2, Article 7, §356.2, each agency shall submit an annual report to DWR by April 1 of each year following adoption of the Plan. This report for Water Year (WY) 2019 is the third annual report submitted to DWR. It covers the Santa Clara Subbasin (DWR Basin 2-9.02) and the Llagas Subbasin (Basin 3-3.01), which are managed in their entirety by Valley Water. Figure 1 shows the location of the two groundwater subbasins.

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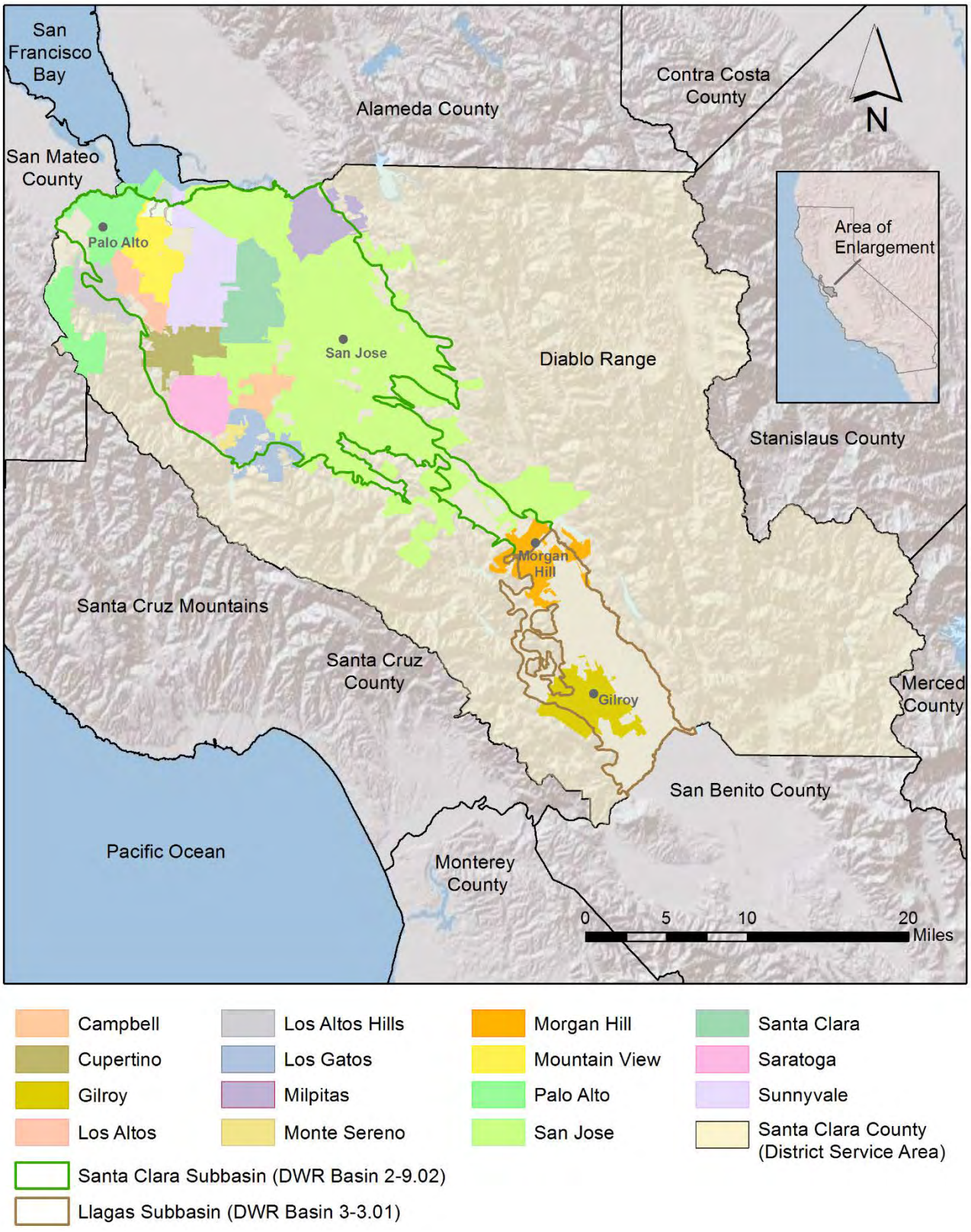
[5] Santa Clara Valley Water District Act, Water Code Appendix, Chapter 60.
[6] https://www.valleywater.org/your-water/where-your-water-comes-from/groundwater

Figure 1. Santa Clara and Llagas Subbasin Location Map



CHAPTER 2 – GROUNDWATER ELEVATION DATA

Valley Water tracks groundwater elevations, groundwater quality, and land subsidence through a countywide groundwater monitoring program. In WY 2019, Valley Water collected monthly groundwater elevation readings at 157 wells in the Santa Clara Subbasin and 61 wells in the Llagas Subbasin. Furthermore, local water retailers shared groundwater elevation data at 114 wells. While this report provides a summary of groundwater elevations based on 11 regional wells, all available countywide groundwater elevation data are accessible through the Valley Water website.[7] Valley Water also regularly uploads groundwater elevation data for Valley Water-owned wells to the California Statewide Groundwater Elevation Monitoring (CASGEM) program database.

Groundwater elevation contour maps for the Santa Clara and Llagas subbasins and related measurement locations are presented in Figures 2 and 3 for Spring 2019 and Fall 2019, respectively.[8] These contours represent the principal aquifer within each subbasin because those aquifers support the vast majority of pumping. Seasonal high groundwater conditions typically occur in March or April, with seasonal lows in September or October. The spring and fall maps (Figures 2 and 3) were created using the water level readings measured closest to March 31, 2019 and September 30, 2019, respectively.

This report also presents groundwater elevation data from 11 regional wells in the Santa Clara and Llagas subbasins (Figure 4); these wells are spatially distributed within the two subbasins and various cities in the county. Hydrographs for these wells show the static water level trend over the period of record, which varies by well (Figure 5).

Due to good water supply conditions, robust managed recharge, and continued water use reduction by the community, groundwater elevations generally returned to pre-drought conditions in WY 2017. In fact, water levels in many wells approached or exceeded historical high levels. Groundwater levels remained sustainable in WY 2018 and 2019 (Figure 5) due to continued managed recharge and water use reduction. Groundwater elevations in WY 2019 were far above the historical minima and levels during the last major droughts of 1987-1992 and 2012-2016, with strong artesian pressures observed in the northern Santa Clara Subbasin. Groundwater elevations were also well above Valley Water thresholds established to minimize the risk of land subsidence in the Santa Clara Subbasin.[9]

[7] https://gis.valleywater.org/GroundwaterElevations

[8] Groundwater elevations in this report use the North American Vertical Datum of 1988 (NAVD 88).

[9] As described in the Plan, land subsidence was a significant issue historically in the central and northern Santa Clara Subbasin. See Valley Water's Annual Groundwater Report for Calendar Year 2018 for a detailed discussion of recent subsidence monitoring: https://www.valleywater.org/groundwater. Note, the CY 2019 report will be available in summer 2020.

Figure 2. Spring 2019 Groundwater Elevation Contours

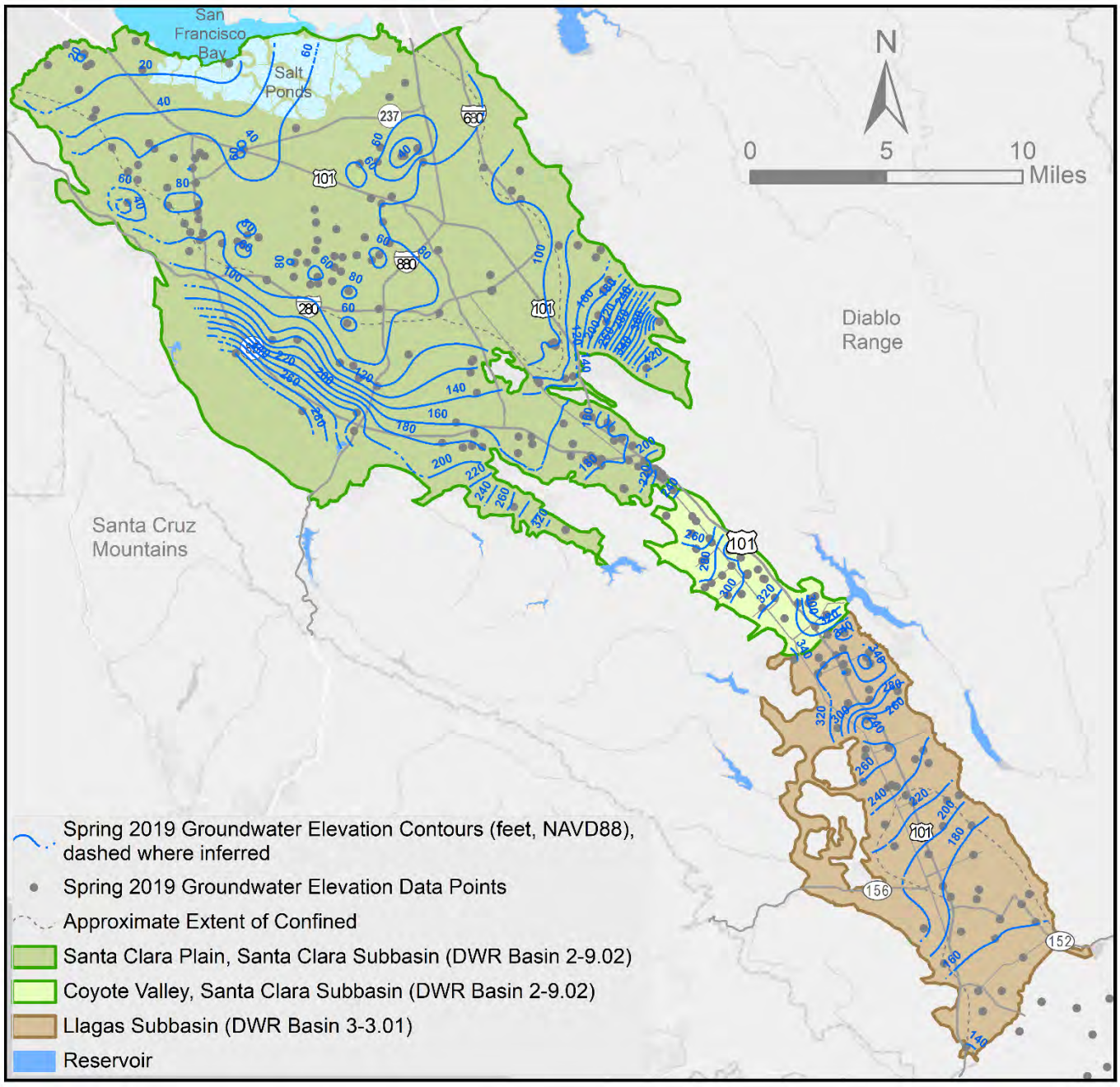


Figure 3. Fall 2019 Groundwater Elevation Contours

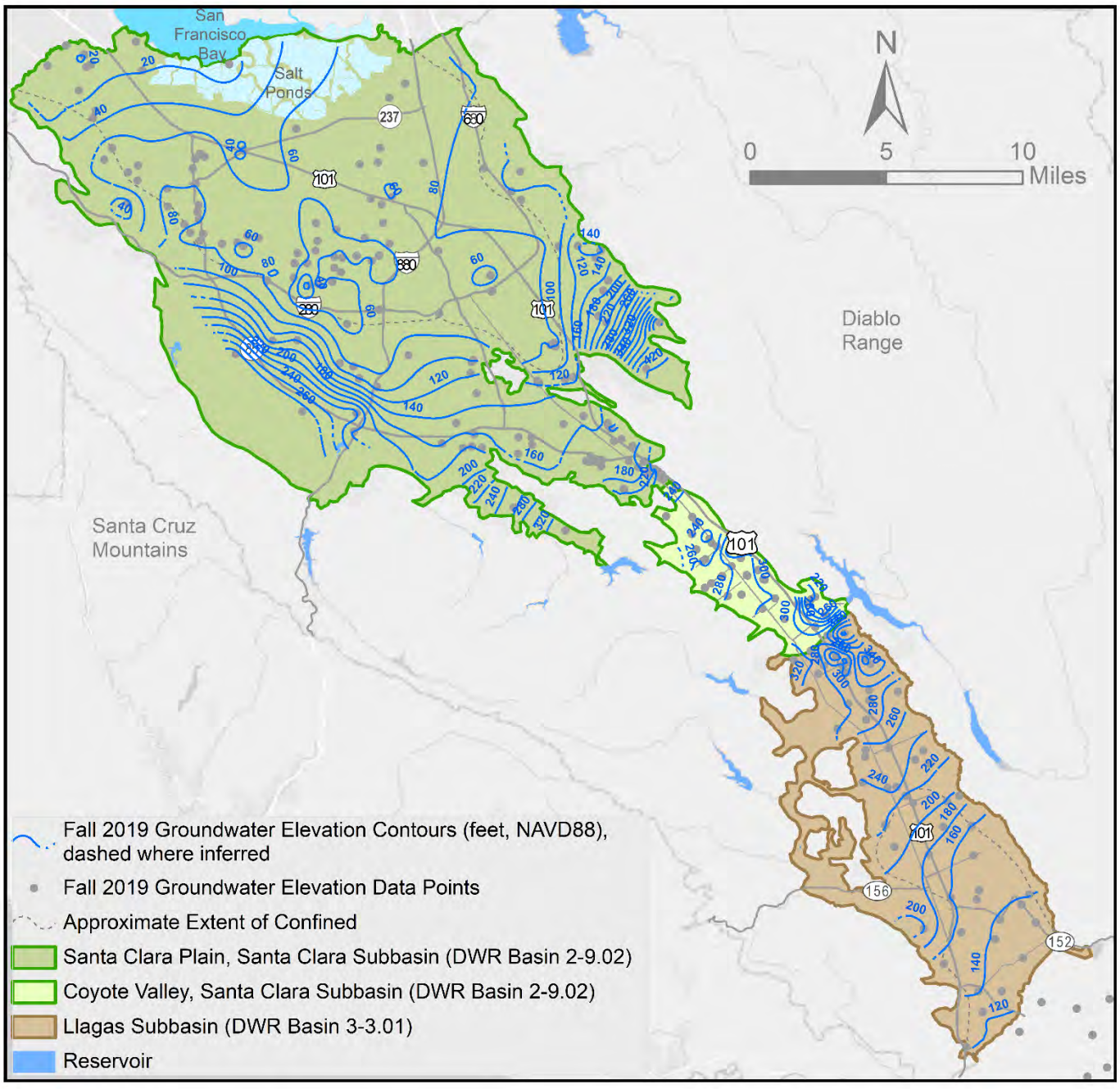


Figure 4. Regional Groundwater Elevation Monitoring Wells

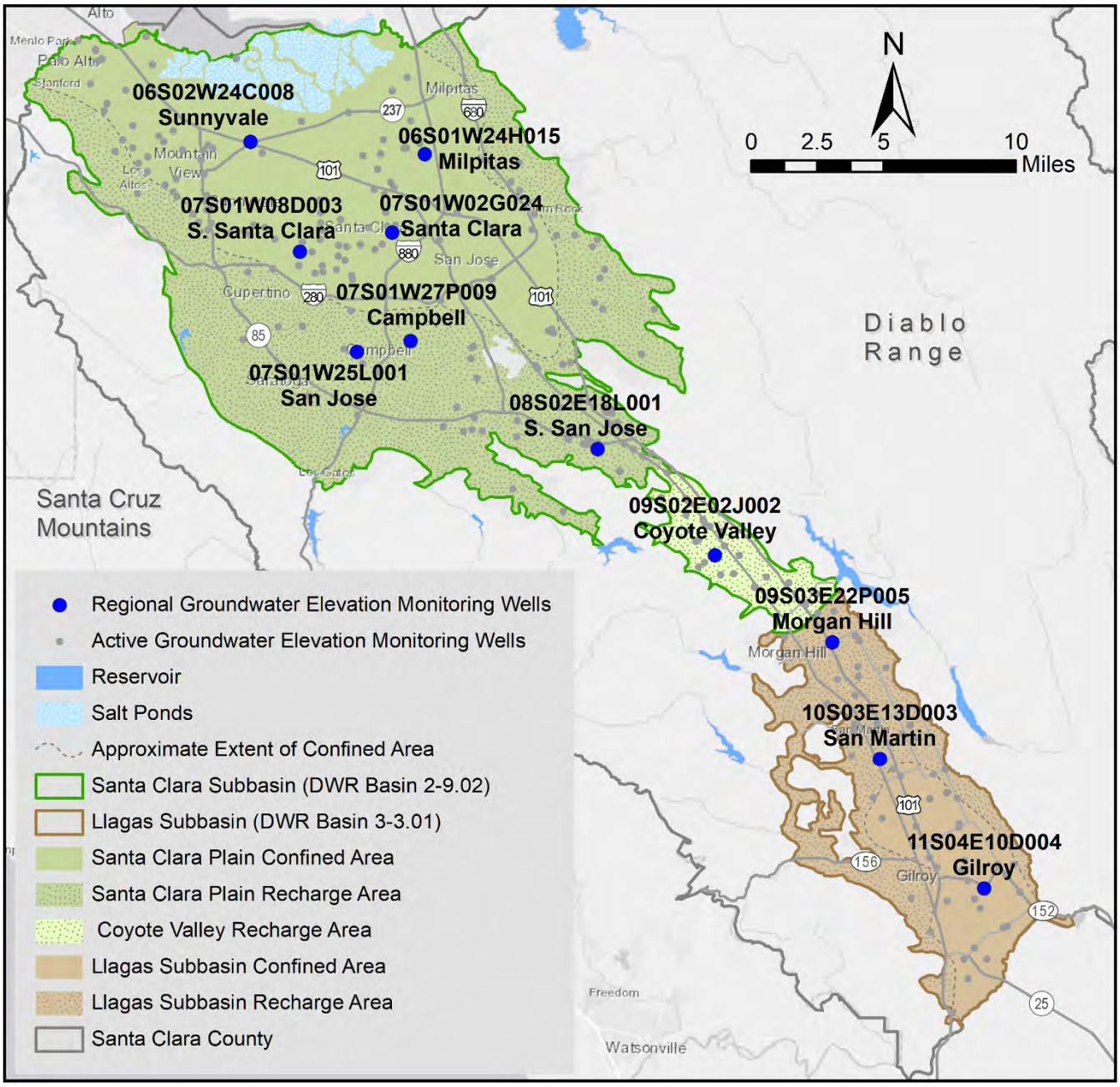
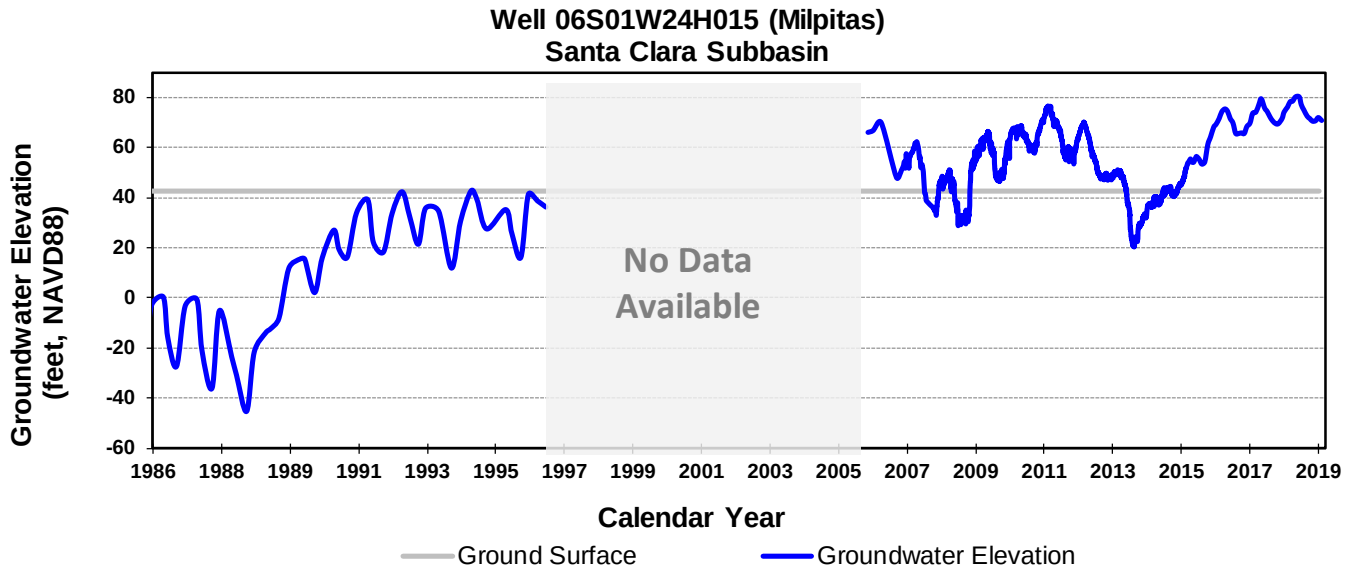
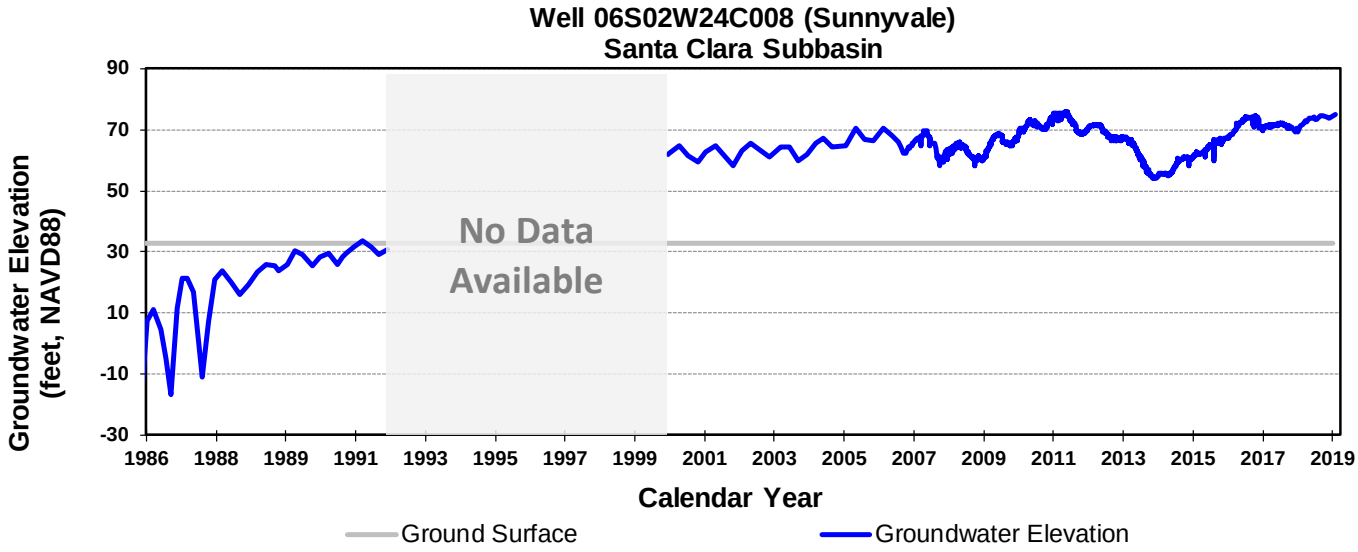


Figure 5. Hydrographs at Regional Groundwater Elevation Monitoring Wells

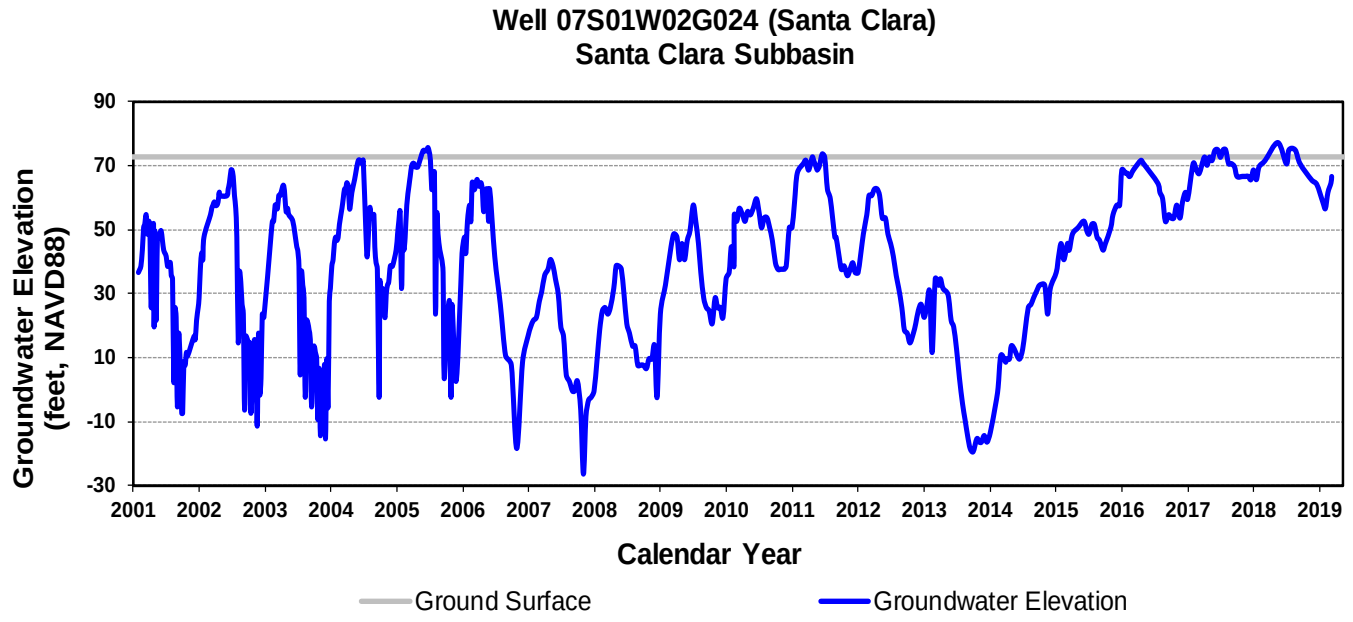


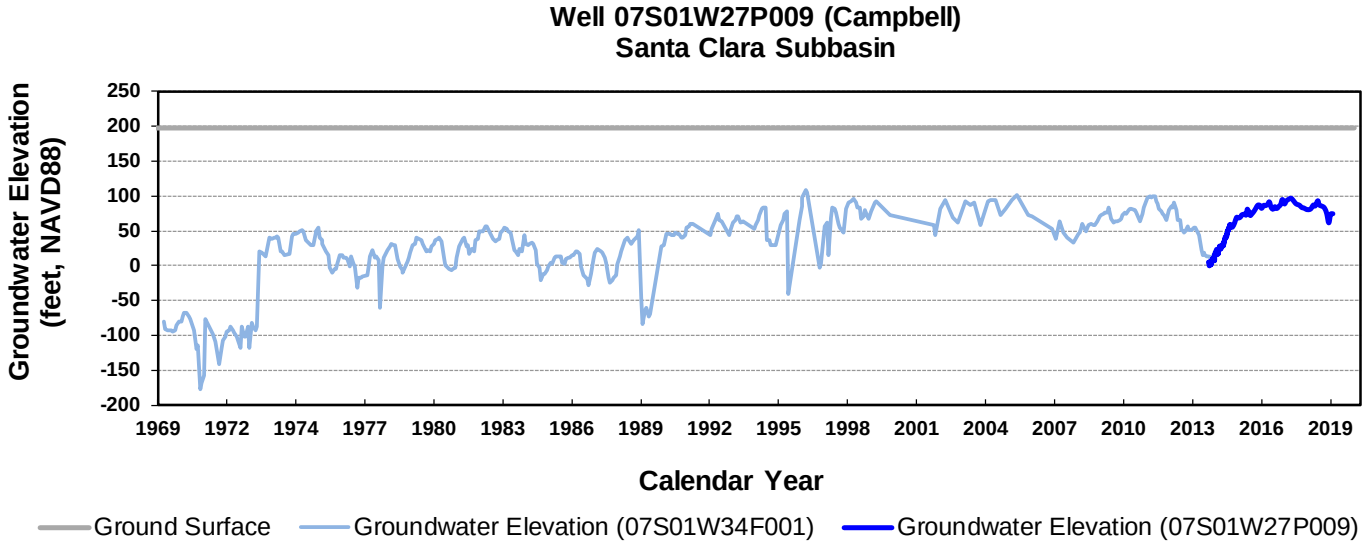
During period with no data available, well was observed to be artesian but there was no pressure gauge installed.



During period with no data available, well was observed to be artesian but there was no pressure gauge installed.

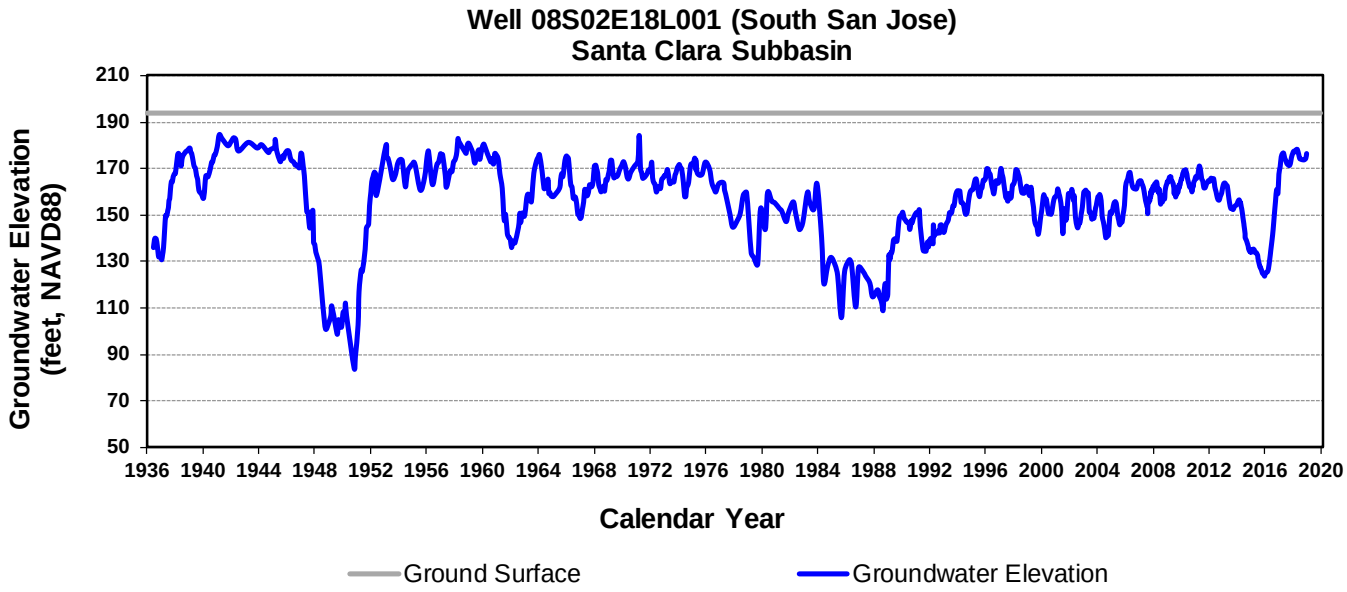
Figure 5. Hydrographs at Regional Groundwater Elevation Monitoring Wells (continued)





The Campbell well was replaced in August 2015 with a nearby well with similar water level history.

Figure 5. Hydrographs at Regional Groundwater Elevation Monitoring Wells (continued)



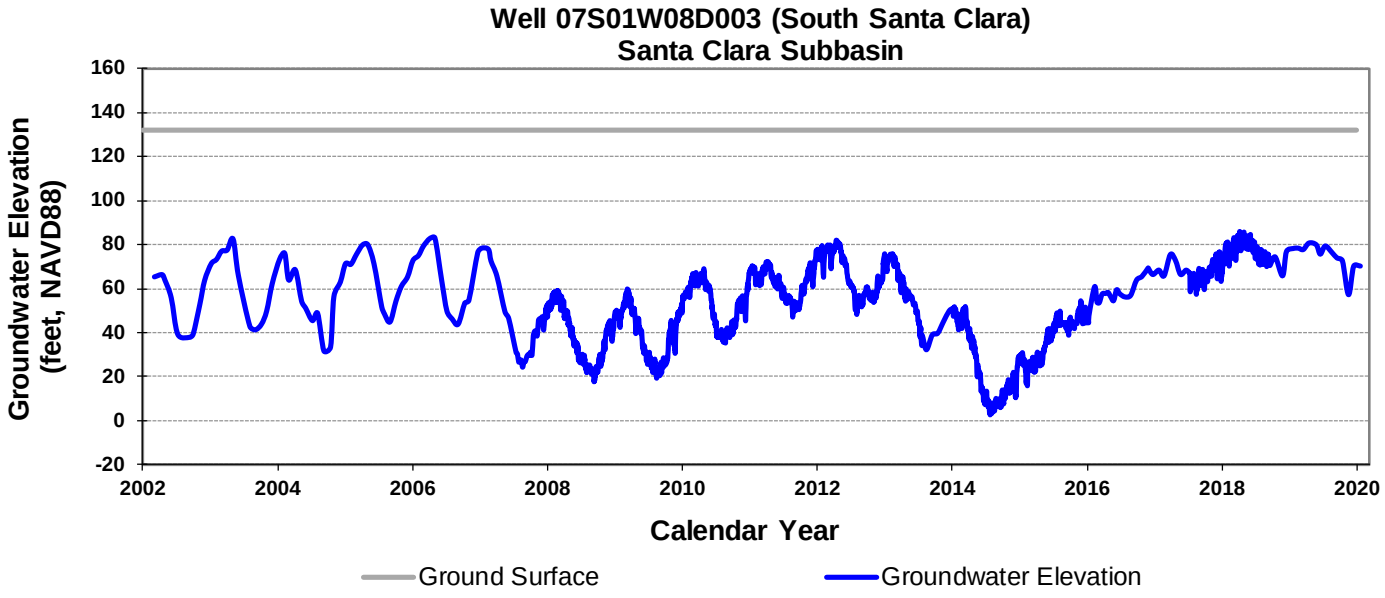
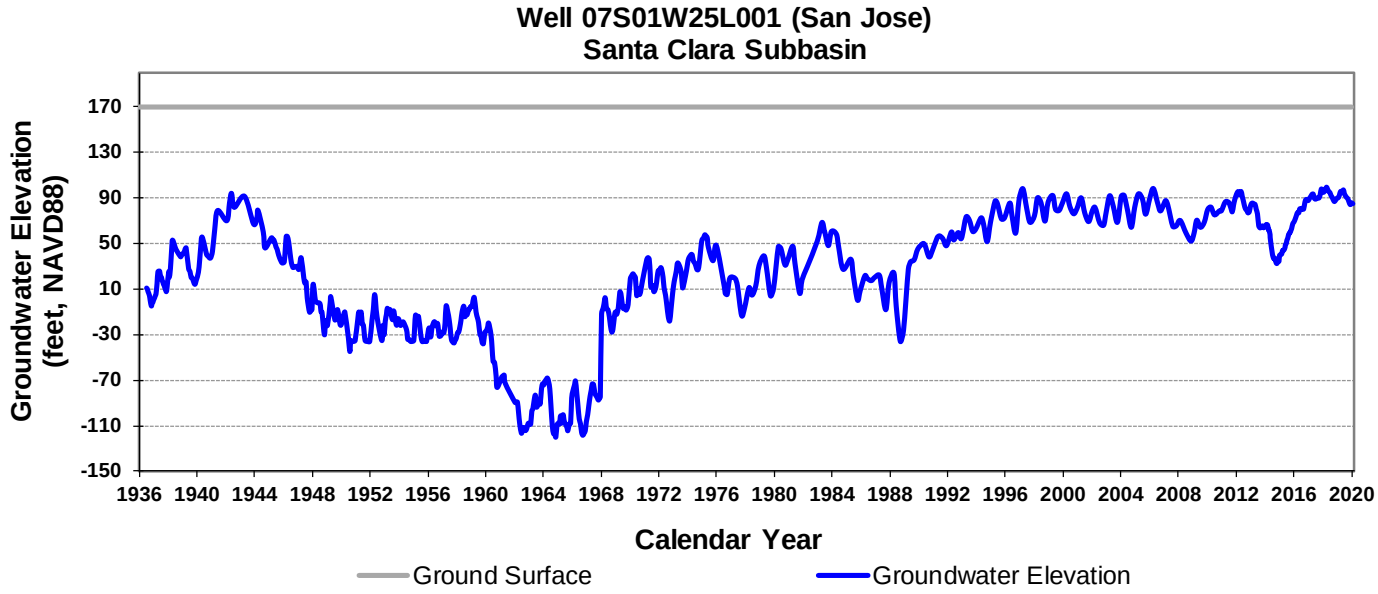


Figure 5. Hydrographs at Regional Groundwater Elevation Monitoring Wells (continued)



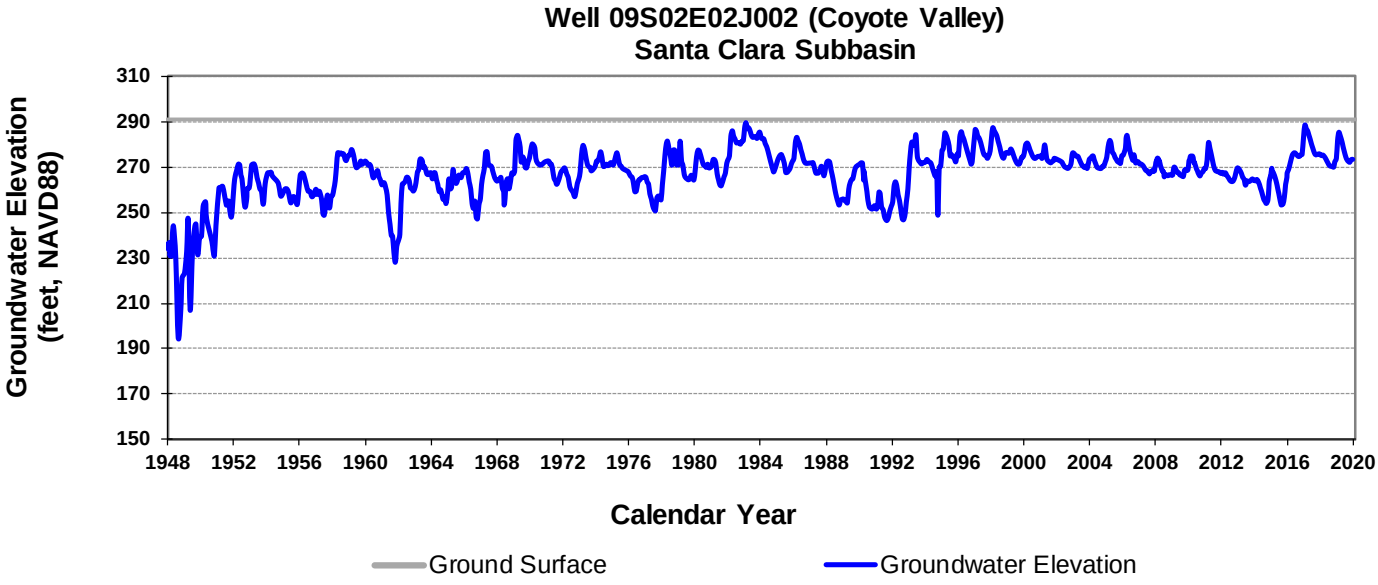
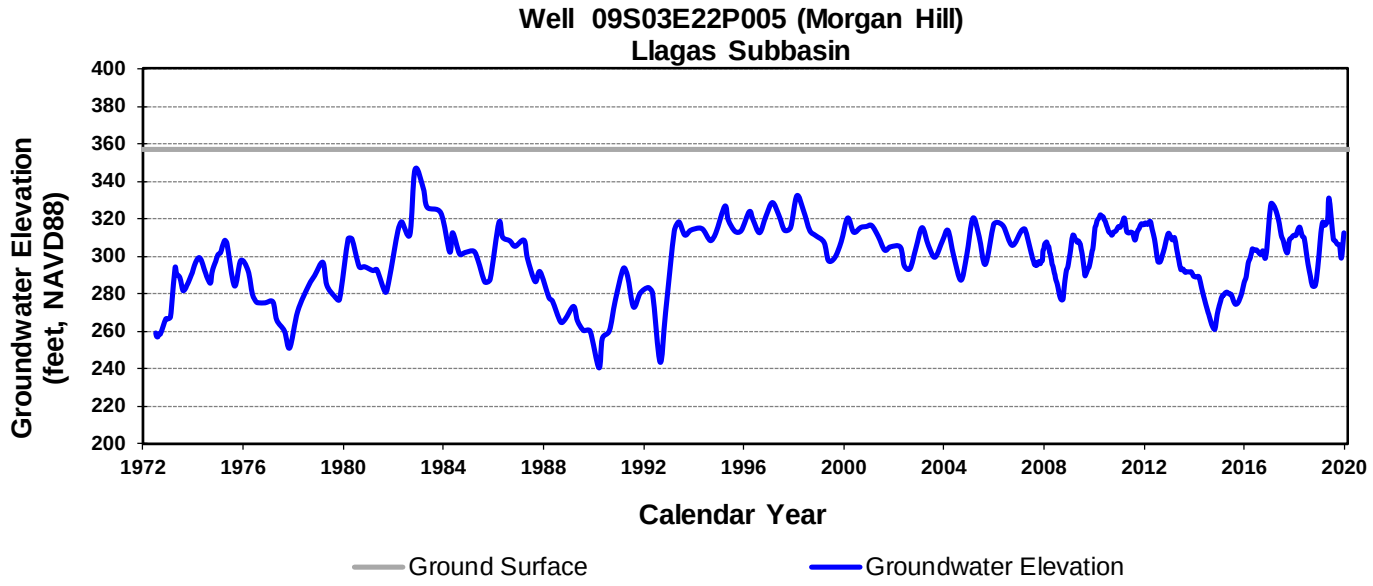


Figure 5. Hydrographs at Regional Groundwater Elevation Monitoring Wells (continued)



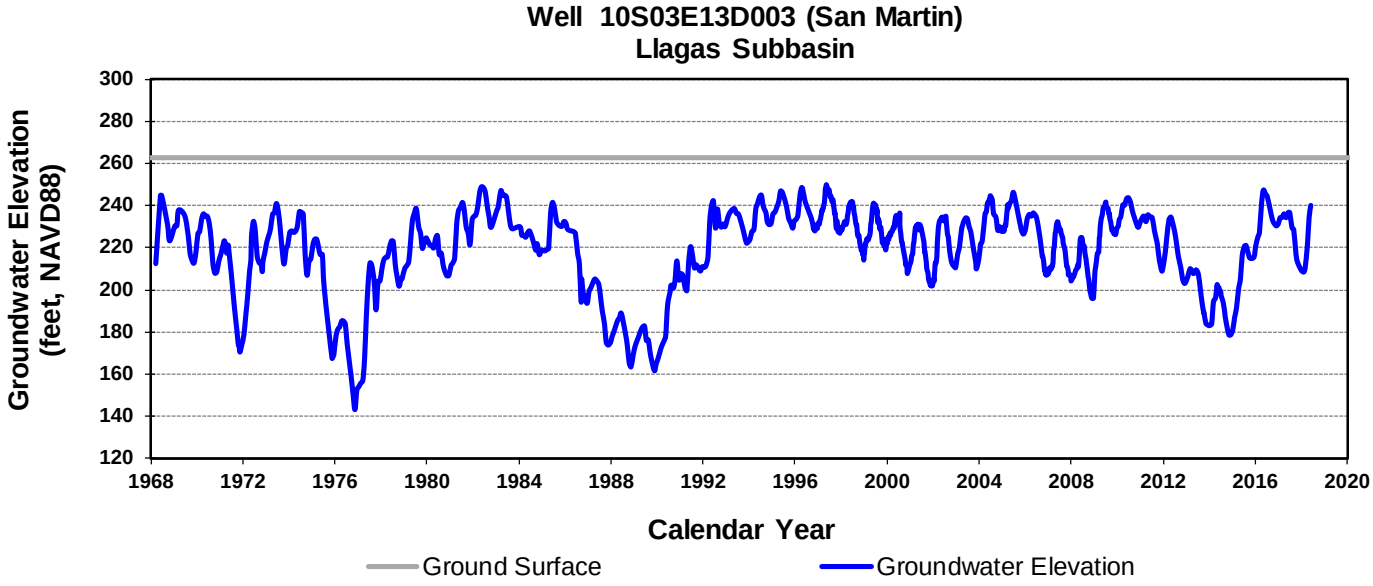
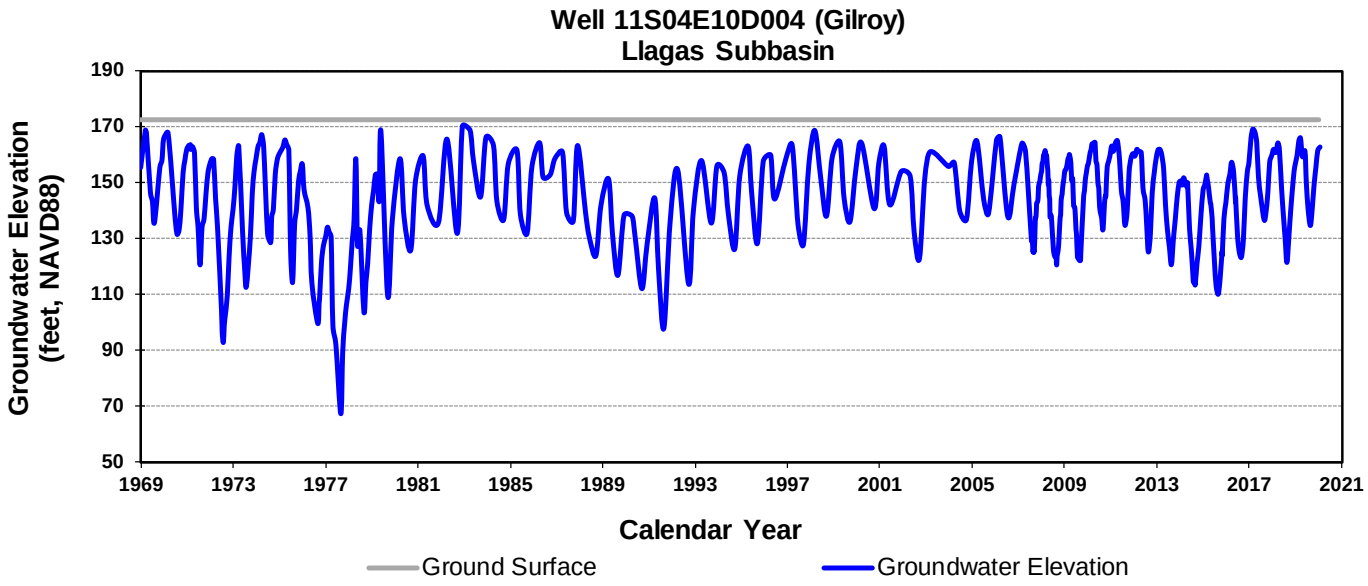


Figure 5. Hydrographs at Regional Groundwater Elevation Monitoring Wells (continued)



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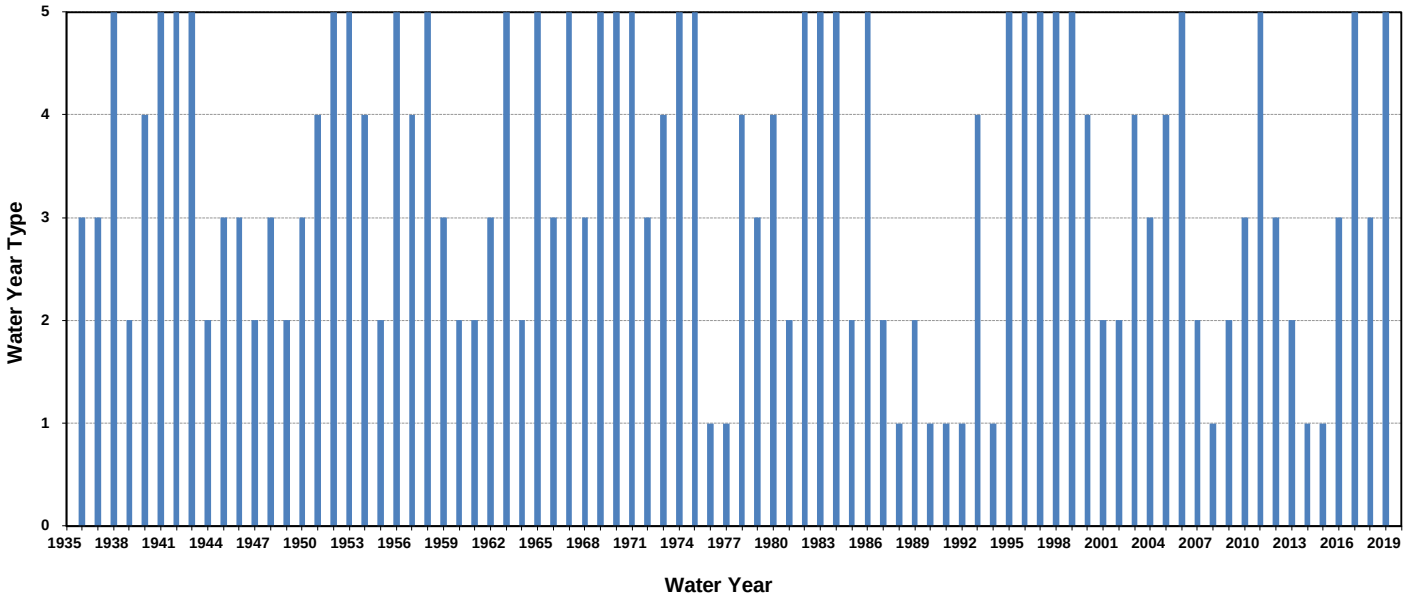
Chapter 2 – Groundwater Elevation Data

WY 2019 was a wet year based on the DWR Sacramento River Index (SRI) (Figure 6). Valley Water uses historical SRI water year types to model hydrologic conditions in Santa Clara County as it reflects conditions in the Sierra and the Sacramento-San Joaquin Delta that influence Valley Water's imported water deliveries. Rainfall stations within Santa Clara County confirm that the rainfall season from July 1, 2018 to June 30, 2019 was above the historical average. For instance, rainfall in downtown San Jose (Station 131) was approximately 15.7 inches or 131% of average.

Figure 6. Water Year Types from WY 1936 to 2019 – Sacramento River Index (SRI)



Water Year Types per DWR SRI: 1 (Critical); 2 (Dry); 3 (Below Normal); 4 (Above Normal); 5 (Wet)

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CHAPTER 3 – WATER SUPPLY AND USE

Valley Water manages a diverse water supply portfolio, with sources including groundwater, local surface water, imported water, and recycled water. About half of the county's water supply comes from local sources with the other half from imported sources. Imported water includes Valley Water's State Water Project (SWP) and Central Valley Project (CVP) contract supplies and supplies delivered by the San Francisco Public Utilities Commission (SFPUC) to northern Santa Clara County. Local sources include natural groundwater recharge and surface water supplies. A smaller but growing portion of the county's local water supply is recycled water.

Valley Water distributes local and imported surface water supplies to managed recharge facilities, three drinking water treatment plants, local creeks for environmental needs, or directly to water users. The conjunctive management of surface water and groundwater maximizes water supply reliability, allowing Valley Water to store surface water in local groundwater basins to help balance pumping and provide reserves for use during dry years or water shortages.

3.1 Groundwater Extraction

Total groundwater pumping in WY 2019 was 109,600 AF, providing 37% of the water used by county residents and businesses. Figure 7 shows the location and volume of groundwater pumping, and Table 1 summarizes pumping by subbasin, water use category, and measurement method and accuracy.

About 67,200 AF of groundwater was pumped in the Santa Clara Subbasin, with almost 95% of that supporting municipal and industrial (M&I) uses (Table 1). Agricultural and domestic use totaling 4,100 AF was mostly in the more rural Coyote Valley in the southern Santa Clara Subbasin. Total pumping in the Llagas Subbasin was 42,400 AF. In this subbasin, agricultural use was more significant (23,500 AF), accounting for 55% of the total pumping. M&I groundwater use was 17,000 AF or 40% of subbasin pumping. While the quantity of groundwater used for domestic purposes was relatively small in the Llagas Subbasin (1,800 AF or 4%), over 2,600 individual domestic wells reported groundwater use in WY 2019.

Groundwater pumped from the subbasins is recorded in accordance with the Santa Clara Valley Water District Act. This act requires well owners and operators to register all wells within the county and to file monthly, semi-annual, or annual production statements for water-producing wells within Valley Water's groundwater benefit zones, with reporting frequency dependent on the amount of water produced. By Valley Water Board Resolution, meters are only installed at those sites determined to be economically feasible per approved criteria or as required to facilitate the complete and accurate collection of groundwater production revenue. In the northern Zone W-2, which essentially overlaps the northern Santa Clara Subbasin (Santa Clara Plain groundwater management area), meters are required for facilities producing more than 4 AF of agricultural water or more than 1 AF of non-agricultural water annually. Within Zone W-5 (essentially coincident with the Coyote Valley groundwater management area of the Santa Clara Subbasin, and the Llagas Subbasin), meters are required for facilities producing more than 20 AF of agricultural water or more than 2 AF of non-agricultural water.

Metered wells extracted the vast majority (97,900 AF or 89%) of the groundwater pumped in WY 2019. Where meters were not used, crop factors were used to determine agricultural water use, whereas domestic use was estimated from a table of average uses.

Figure 7. WY 2019 Groundwater Pumping in the Santa Clara and Llagas Subbasins

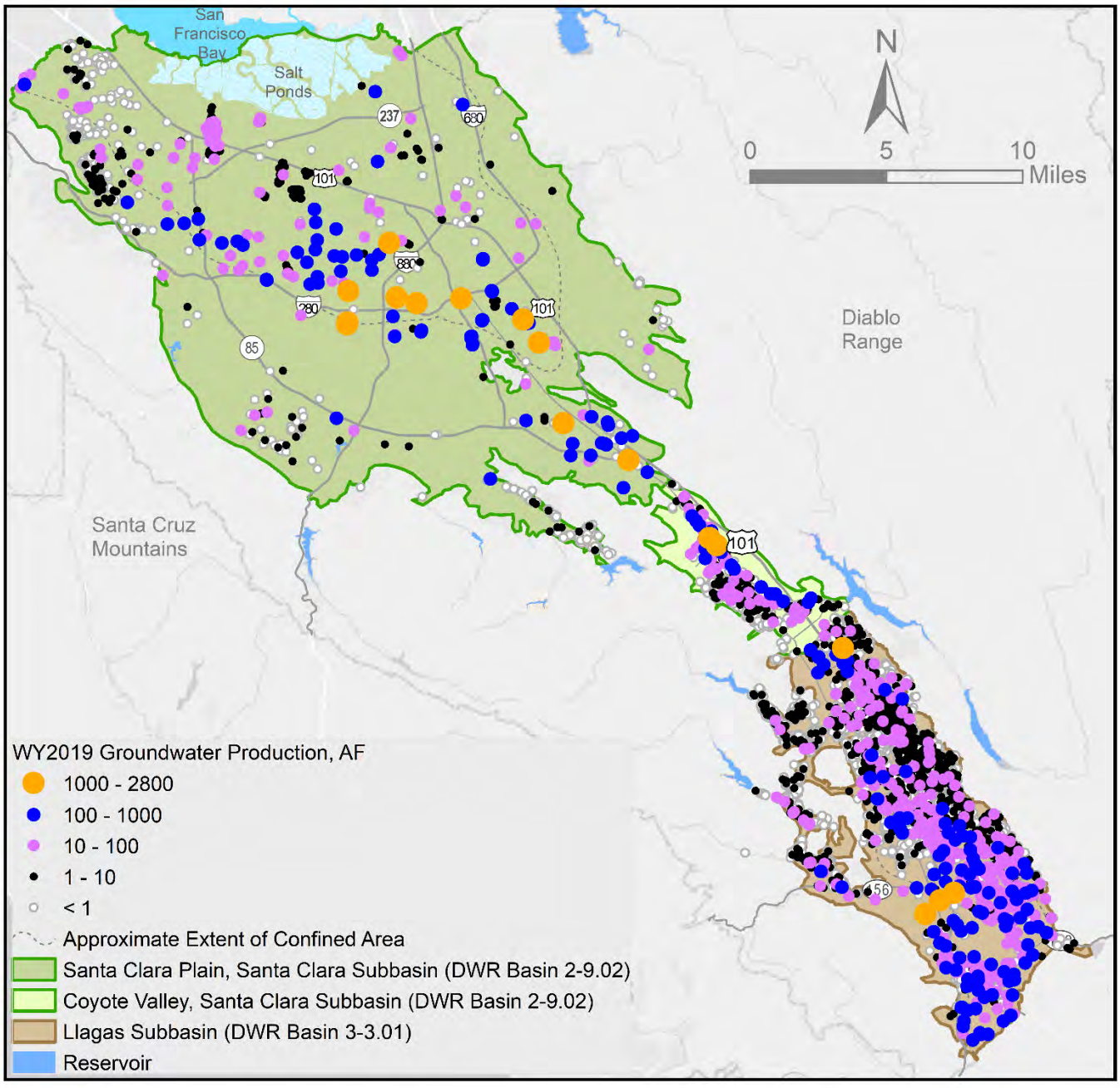

Table 1. WY 2019 Groundwater Pumping (AF) by Water Use

Water Use Sector	Measurement Method	Santa Clara Subbasin	Llagas Subbasin	Total Pumping	Accuracy
M&I	Metered	61,600	16,400	78,000	Within 2%
	Estimated	1,500	600	2,100	N/A
Domestic	Metered	100	200	300	Within 2%
	Estimated	400	1,700	2,100	N/A
Agricultural	Metered	2,700	16,900	19,600	Within 2%
	Estimated	900	6,600	7,500	N/A
Total		**67,200**	**42,400**	**109,600**	

Notes:

- As shown above, the majority of groundwater pumping is metered. Smaller pumpers are required to report production semi-annually or annually on a fiscal year (July 1 – June 30) basis. Non-metered pumpers report groundwater pumping based on crop factors (agricultural use) or table of average uses (domestic use). In this table, estimated pumping shown for the water year is based on fiscal year reporting and typical pumping patterns.
- All values are rounded to the nearest hundred.

3.2 Surface Water Supply Used

In WY 2019, Valley Water actively recharged about 81,400 AF of imported and local surface water in the Santa Clara and Llagas subbasins. Valley Water also provided about 105,000 AF of in-lieu recharge in the form of treated surface water deliveries to retailers (cities and water companies) and raw surface water deliveries to customers (Table 2). This is in addition to SFPUC deliveries to eight water retailers overlying the Santa Clara Subbasin and recycled water deliveries by Valley Water and four recycled water producers in the county, which totaled 60,400 AF countywide (Table 2). Valley Water's long-term water conservation programs also saved more than 70,000 AF, which further reduced the demand on groundwater.

Valley Water Managed Recharge

Valley Water replenishes the groundwater subbasins with imported water and watershed runoff captured in 10 local reservoirs. Valley Water's recharge facilities include more than 300 acres of recharge ponds and over 90 miles of creeks. Imported sources include the SWP and the federal CVP. The volumes of imported or local water used for managed recharge each year depend on many factors including hydrology, imported water allocations, treatment plants demand, and environmental needs. In general, a greater percentage of local water is used for recharge in wet years due to increased capture of storm runoff in local reservoirs. In WY 2019, Valley Water recharged about 58,400 AF of local and imported water in the Santa Clara Subbasin and about 23,000 AF in the Llagas Subbasin.

In-Lieu Use of Surface Water Supplies

Valley Water's treated and raw surface water deliveries, SFPUC supplies to local retailers, and recycled water programs play a critical role in maintaining groundwater elevations and storage by reducing demands on groundwater. Table 2 summarizes the supplies from these categories in areas that were historically primarily or solely served by groundwater.

3.3 Total Water Use

Total water use in Santa Clara County in WY 2019 is summarized in Table 2, which includes water use categories, measurement methods and accuracy, water sources, and use sectors. While the county boundary extends beyond the subbasins, the vast majority of the population and associated water use coincides with the subbasins.

Table 2. Santa Clara County Total Water Use in AF for WY 2019

Water Use[1]	Santa Clara Subbasin	Llagas Subbasin	County-wide	Measurement Method	Accuracy	Source	Sector
Groundwater Pumped	67,200	42,400	109,600	Metered (89%) and estimated[2]	Within 2% (metered)	Natural recharge, managed recharge of local runoff and imported (SWP/CVP) water	M&I, domestic and agricultural[3]
Valley Water Treated Water Deliveries	103,000	0	103,000	Metered	Within 2%	Local runoff and imported (SWP/CVP) water	M&I
Valley Water Raw Surface Water Deliveries	700	1,300	2,000	Metered (95%) and estimated[2]	Within 2% (metered)	Local runoff and imported (SWP/CVP) water	M&I, domestic and agricultural
SFPUC Supplies to Local Retailers[4]	43,300	0	43,300	Metered	Within 1.5%	Surface water reservoirs[5]	M&I
Recycled Water	15,200	1,900	17,100	Metered	Variable[6]	Treated wastewater	M&I and agricultural
Total[7]	**229,400**	**45,600**	**275,000**				

[1] All water use values are rounded to the nearest hundred.
[2] Production from some smaller wells and raw surface water users is estimated using a table of average uses or crop factors.
[3] Groundwater use by sector is shown in Table 1.
[4] San Francisco Public Utilities Commission (SFPUC) supplies water to eight (8) retailers in Santa Clara County and NASA-AMES (https://sfwater.org/index.aspx?page=355).
[5] SFPUC primary sources are surface water reservoirs with runoff mainly from the Hetch Hetchy watershed and also from the Alameda and Peninsula watersheds. More information is available at: https://sfwater.org/index.aspx?page=355.
[6] Recycled water meter accuracy varies as each of the four producers within the county uses different methods to measure production and delivery of recycled water.
[7] Local water rights used by the San Jose Water Company (SJWC) and Stanford within the Santa Clara Subbasin are not reflected in the total because their local water rights have historically amounted to <3% of the total for the Santa Clara Subbasin.

3.4 Change in Groundwater Storage

Due to good water supply conditions, robust managed recharge, and continued lower groundwater use since the drought, Valley Water estimates a net increase in countywide groundwater storage of 18,000 AF in WY 2019 compared to WY 2018. Storage increased by 11,400 AF in the Santa Clara Subbasin and by 6,600 AF in the Llagas Subbasin. Groundwater storage is the primary trigger for action under Valley Water's Water Shortage Contingency Plan, and storage remained well in the "Normal" stage (e.g., no shortage response required) in WY 2019.

Figure 8 depicts the change in groundwater elevation from October 2018 to September 2019 at more than 200 principal aquifer water level wells in the Santa Clara Subbasin and more than 45 wells in the Llagas Subbasin, respectively. The corresponding change in storage of 18,000 AF for the Santa Clara and Llagas subbasins, as estimated from Valley Water's calibrated groundwater flow models, is also shown in Figure 8.

Figures 9 and 10 present the water year type, groundwater use, annual change in groundwater storage, and cumulative change in groundwater storage for the Santa Clara and Llagas subbasins, respectively, from WY 1991 through WY 2019. These figures show that over this period, the annual change within each basin has most frequently been an increase in groundwater storage. The most notable exceptions, also evident in hydrographs, occur during droughts, as expected. However, Valley Water programs to recharge and manage groundwater support fairly rapid recovery of water levels and storage, helping ensure long-term sustainability. As mentioned previously, groundwater levels and storage in the Santa Clara and Llagas subbasins recovered from the 2012-2016 drought, with groundwater elevations far above historical minima and drought levels, and strong artesian pressures observed in the northern Santa Clara Subbasin.

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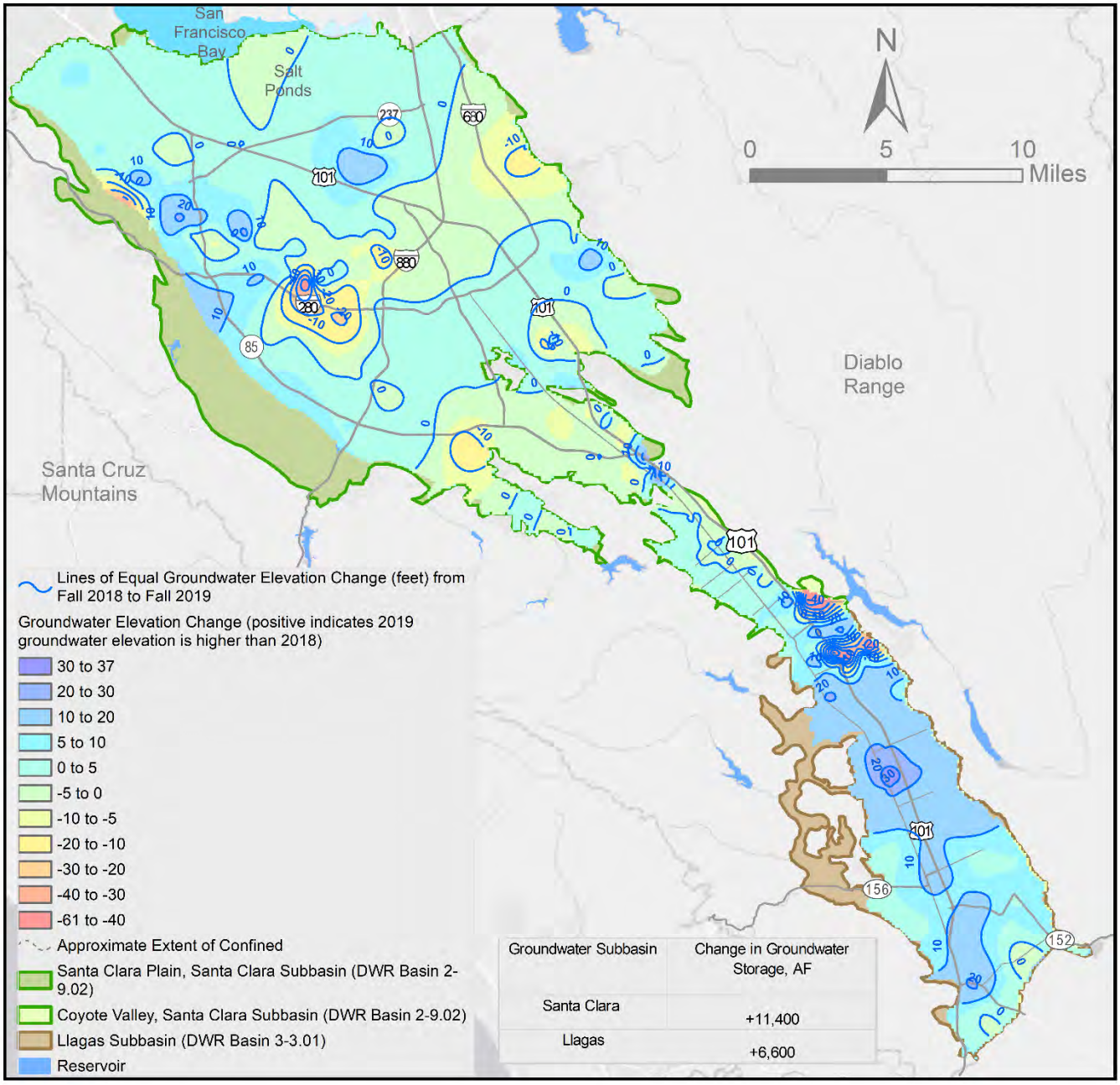
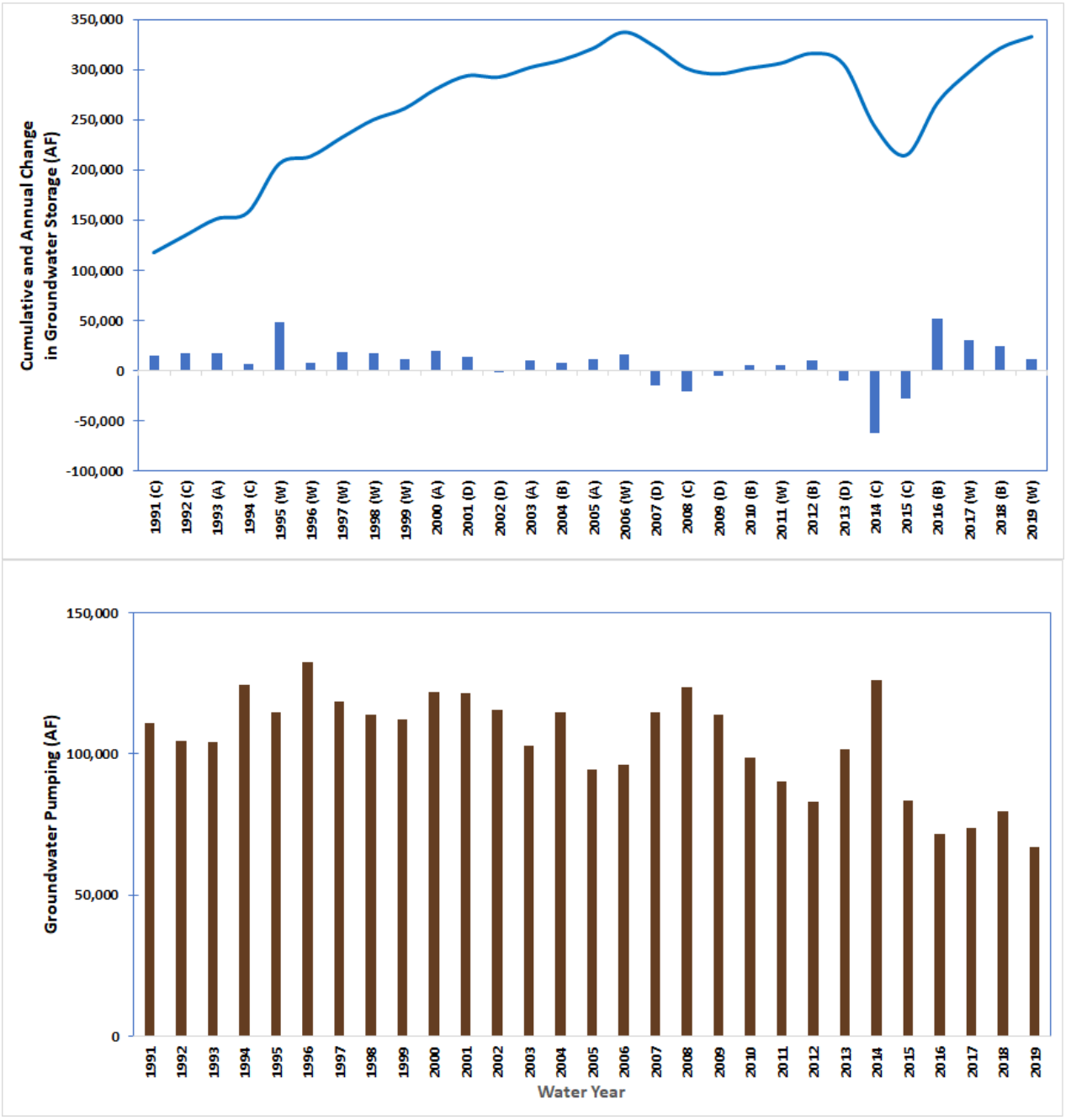
Figure 8. Change in Groundwater Elevation and Storage from October 2018 to September 2019



Groundwater Subbasin	Change in Groundwater Storage, AF
Santa Clara	+11,400
Llagas	+6,600

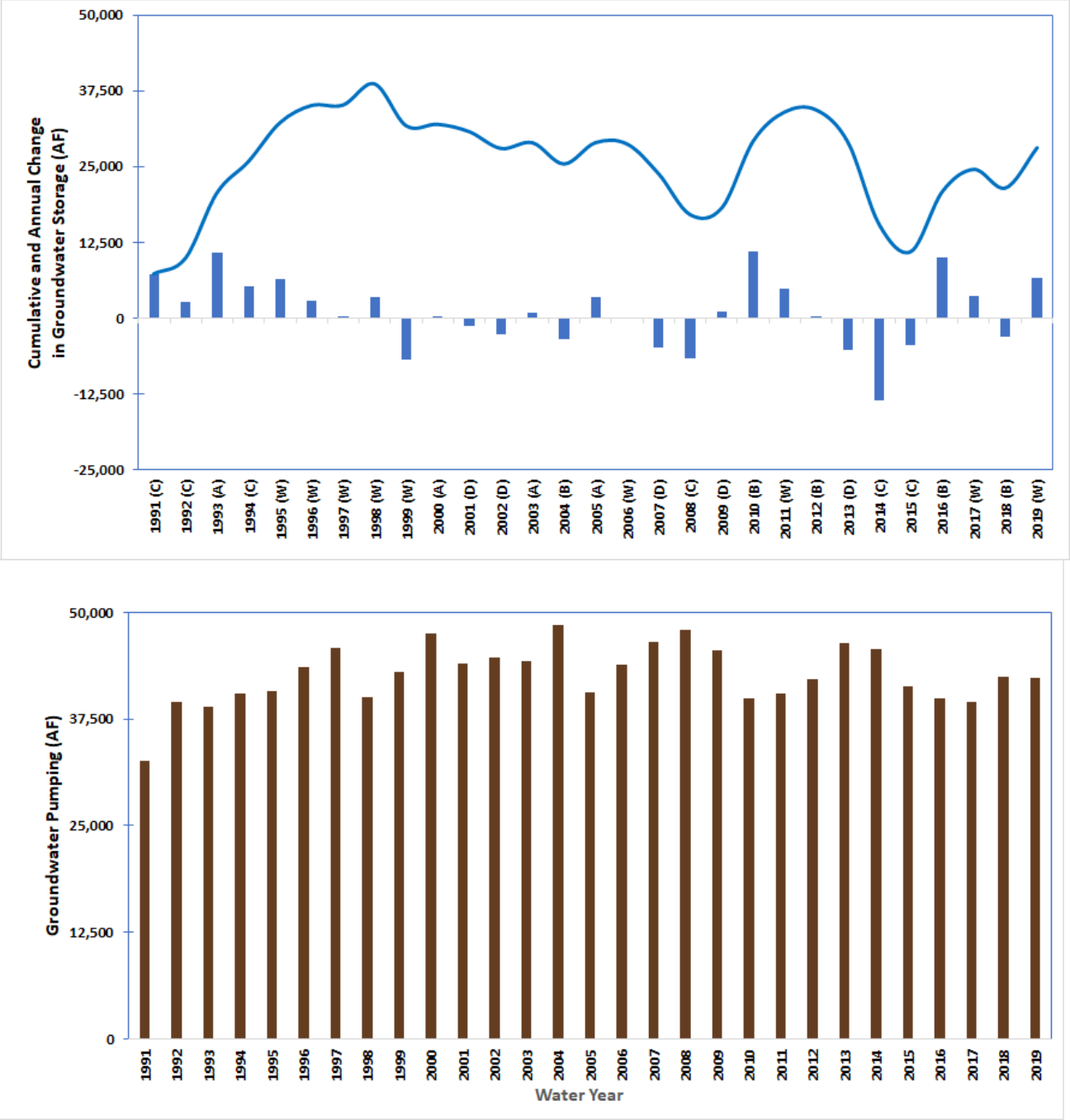
Figure 9. Groundwater Use and Change in Storage in the Santa Clara Subbasin



Notes:

- DWR SRI water year types are: Critical (C), Dry (D), Below Normal (B), Above Normal (A), and Wet (W).
- The storage graph begins in 1991 because Valley Water estimates Santa Clara Subbasin storage using two numerical models. The Santa Clara Plain model for the northern Santa Clara Valley begins in 1970 while the Coyote Valley model for the southern part of the subbasin begins in 1991 as Valley Water did not begin managing that area until the late 1980s.
- Most groundwater pumping is reported monthly and is reported here by water year. However, pumpers that report semi-annually or annually provide data based on the fiscal year (July 1 to June 30). For these reporters, groundwater pumping shown in this figure represents the fiscal year, which is presumed to be similar to the water year.

Figure 10. Groundwater Use and Change in Storage in the Llagas Subbasin



Notes:

- DWR SRI water year types are: Critical (C), Dry (D), Below Normal (B), Above Normal (A), and Wet (W).
- The storage graph begins in 1991 because Valley Water estimates Llagas Subbasin storage using a numerical model that begins in 1991 as Valley Water did not begin managing that area until the late 1980s.
- Most groundwater pumping is reported monthly and is reported here by water year. However, pumpers that report semi-annually or annually provide data based on the fiscal year (July 1 to June 30). For these reporters, groundwater pumping shown in this figure represents the fiscal year, which is presumed to be similar to the water year.

CHAPTER 4 – PLAN IMPLEMENTATION

Valley Water continues to implement the comprehensive conjunctive management, groundwater monitoring, and groundwater protection programs described in the Plan. As a result, groundwater levels and storage in the Santa Clara and Llagas subbasins fully recovered to pre-drought conditions and remain healthy and sustainable.

The Plan presents six major recommendations to maintain the long-term viability of groundwater resources. A summary of the status of each recommendation is below.

1. **Maintain existing conjunctive water management programs and evaluate opportunities for enhancement or increased efficiency.**

   This Plan recommendation has several sub-recommendations, including items related to infrastructure reliability, high-priority capital project implementation, and securing imported water sources, among others. Valley Water continues to focus on extensive groundwater recharge through direct replenishment and in-lieu recharge. Updates relative to this Plan recommendation are presented below.

   Capital Projects Supporting Conjunctive Management

   Valley Water continues to implement a comprehensive Capital Improvement Program (CIP). Valley Water's Fiscal Year Draft 2021-25 Five-Year CIP was approved for release on February 25, 2020.[10] With a significant portion of Valley Water's water supply infrastructure approaching fifty to sixty years of age, maintaining and upgrading the existing infrastructure to ensure each facility functions as intended for its useful life became the focus of the Water Supply CIP in recent years. Other CIP projects focus on expanding in-lieu and direct recharge through recycled and purified water projects. Major water supply capital improvements identified in the CIP include:

   Storage:
   - Almaden Dam Improvements
   - Anderson Dam Seismic Retrofit
   - Calero Dam Seismic Retrofit
   - Guadalupe Dam Seismic Retrofit
   - Pacheco Reservoir Expansion

   Transmission:
   - 10-Year Pipeline Rehabilitation
   - Fisheries and Aquatic Habitat Collaborative Effort (FAHCE) Implementation
   - Vasona Pumping Plant Upgrade
   - Almaden Valley Pipeline Replacement

[10] The draft 2021-25 CIP is available at: https://www.valleywater.org/how-we-operate/five-year-capital-improvement-program

Treatment:
- Penitencia Water Treatment Plant Residuals Management
- Rinconada Water Treatment Plant Reliability Improvement
- Santa Teresa Water Treatment Plant Filter Media Replacement
- Water Treatment Plant Electrical Improvement

Recycled Water:
- Expedited Purified Water Program
- South County Recycled Water Pipeline

Detailed information on each of these water supply capital projects, including related description, costs, and schedule, is available in the CIP.

2. Continue to aggressively protect groundwater quality through Valley Water programs and collaboration with land use agencies, regulatory agencies, and basin stakeholders.

Sub-recommendations from the Plan include continued groundwater quality monitoring, action when potentially adverse trends are identified, and continued/enhanced collaboration with local partners and stakeholders.

Groundwater quality is typically very good in the county, with no treatment beyond disinfection required at major retailer wells. However, nitrate remains an ongoing groundwater protection challenge, particularly in the more rural Coyote Valley and Llagas Subbasin. Valley Water continues to conduct extensive groundwater quality monitoring, evaluate long-term trends, and compare current conditions against regulatory standards and projected concentrations (such as from Salt and Nutrient Management Plans). Detailed information and analysis of all monitoring data is presented in Valley Water's Annual Groundwater Report, which is calendar-year based and published each summer.[11]

Long-term trends are favorable for nitrate, with about 90% of wells tested showing stable or decreasing concentrations. However, since a significant number of domestic wells in the Llagas Subbasin still contain nitrate above the drinking water standard, more work remains to be done. Valley Water offers rebates of up to $500 for nitrate treatment systems and will continue to engage with regulatory and land use agencies to address existing nitrate contamination. For nitrate and other water quality issues, Valley Water will work to build and enhance this collaboration to protect high-quality groundwater and expedite the restoration of impacted groundwater.
In 2019, Valley Water worked with land use agencies to finalize a Stormwater Resources Plan[12] that will increase infiltration while ensuring pollutants from urban runoff are not merely transmitted from surface water

[11] The comprehensive Annual Groundwater Report for each calendar year is available at www.valleywater.org/groundwater.
[12] Santa Clara Basin Stormwater Resource Plan, Final August 2019 is available at https://scvurppp.org/wp-content/uploads/2019/08/SCB_SWRP_FINAL_8-20-19.pdf

to groundwater. Similarly, Valley Water continues to engage with various entities to ensure that recycled water expansion or the use of purified water for recharge will be protective of groundwater quality.

Engaging with land use and regulatory agencies on proposed policy, legislation, and projects that may impact groundwater remains a key strategy for protecting groundwater. For example, Valley Water tracks the progress of major contaminant release sites, interacting with regulatory agencies to promote expedited and thorough cleanup. Valley Water also engages with land use agencies on relevant projects and policies such as development, stormwater infiltration devices, septic systems, and small water systems.

Public outreach continues to be an important component of Valley Water's groundwater protection efforts. In WY 2019, Valley Water celebrated Groundwater Awareness Week by highlighting groundwater on the Valley Water website and posting related social media messages. Valley Water also maintained its status as a Groundwater Guardian through a program sponsored by the non-profit Groundwater Foundation. This is an annually earned designation for communities and affiliates that take voluntary, proactive steps toward groundwater protection.

To provide information on well sampling by Valley Water and local water suppliers, Valley Water prepared the 2018 Groundwater Quality Summary.[13] This annual report is similar to water retailer consumer confidence reports and provides basic groundwater quality information to domestic well owners who do not typically receive water from a water retailer.

Other groundwater-related public outreach conducted by Valley Water in WY 2019 included:

- Interaction with thousands of students through the Education Outreach program.
- Direct communication with well owners on groundwater quality, well maintenance, and treatment systems under the Domestic Well Testing and Nitrate Treatment System Rebate programs.

3. Continue to incorporate groundwater sustainability planning in Valley Water planning efforts.

This Plan recommendation focuses on continued, thoughtful water supply planning and investments. In November 2019, Valley Water completed an update to the Water Supply Master Plan 2040[14], which explains Valley Water's strategy for providing a reliable and sustainable water supply into the future. The Water Supply Master Plan 2040 informs investment decisions and provides a framework for annually monitoring the water supply strategy to ensure it will meet the water needs of Santa Clara County. Staff held multiple workshops with water retailers and stakeholders and presented information to the Board and the Board's Water Conservation and Demand Management Committee on numerous occasions. These presentations have included information on the proposed level of service goal and potential water supply investment strategies. The Valley Water

[13] The 2018 Groundwater Quality Summary Report is available at https://www.valleywater.org/sites/default/files/2019-07/2019%20Groundwater%20Quality%20Report%20Shell_Web_Version_0.pdf

[14] Santa Clara Valley Water District, Water Supply Master Plan 2040 is available at https://www.valleywater.org/sites/default/files/Water%20Supply%20Master%20Plan%202040_11.01.2019_v2.pdf

investment strategy includes securing existing supplies, expanding water conservation and reuse, and optimizing the system. Projects approved by the Board for planning include advanced metering infrastructure, leak repair incentives, expansion of Valley Water's graywater program, a model water-efficient ordinance for new developments, decentralized stormwater capture (e.g., incentives for rain barrels, cisterns, and rain gardens), and centralized stormwater capture (e.g., flooding of agricultural lands), 24 thousand acre-feet of potable reuse, the Delta Conveyance Project, expanding Pacheco Reservoir, and the Transfer-Bethany Pipeline. Details about each of these projects can be found in Appendix H of the Water Supply Master Plan 2040.

Groundwater sustainability also remains an important factor during the planning and implementation of multi-benefit projects under Valley Water's One Water Plan[15]. The Sustainable Groundwater and Water Quality objectives of the One Water Plan align with the Plan outcome measures and the process to identify individual projects on the watershed scale (e.g., Coyote Watershed) accounts for groundwater conditions and sustainability.

To support managed response to climate change, Valley Water is developing a Climate Change Action Plan (CCAP) that will be completed in 2020. The CCAP will include comprehensive review of climate change as it relates to Valley Water core services and include goals, strategies, and possible actions to respond to climate change. The CCAP will identify potential future climate change vulnerabilities and risks to all core service areas, including water supply and groundwater management. The CCAP will provide goals and strategies to reduce risks to Valley Water core services and its mission. The strategies will be incorporated into existing Valley Water plans, budgets, and long-term financial forecasts as appropriate.

4. Maintain adequate monitoring programs and modeling tools.

This Plan recommendation focuses on improving monitoring networks by identifying and addressing gaps, redundancies, and access issues; identifying and implementing improvements to the numerical groundwater flow models; and improving Valley Water's understanding of surface water/groundwater interaction and groundwater dependent ecosystems (GDEs). In addition to the comprehensive, calendar-year based Annual Groundwater Report, Valley Water produces high-level monthly Water Tracker[16] and groundwater condition reports[17] help keep stakeholders informed about current groundwater conditions including groundwater pumping, recharge, and water levels.

Valley Water continues to offer free basic well testing for domestic well owners to supplement regional groundwater quality monitoring, which emphasizes the use of consistent wells. Through this voluntary program, Valley Water obtains valuable data on nitrate and other contaminants while providing important water quality data to about 200 private well owners each year. Valley Water is evaluating the recycled water and recharge

[15] https://onewaterplan.wordpress.com/
[16] https://www.valleywater.org/your-water/water-supply-planning/monthly-water-tracker
[17] https://www.valleywater.org/your-water/where-your-water-comes-from/groundwater/groundwater-monitoring

water quality monitoring networks to ensure they meet monitoring objectives in terms of frequency, locations, and constituents analyzed.

Valley Water uses three calibrated groundwater flow models – one for each groundwater management area (Santa Clara Plain, Coyote Valley, and the Llagas Subbasin). These models are used to evaluate groundwater storage and levels to inform operational decisions and long-term planning efforts. Staff is assessing each model to identify related improvements or enhancements that may be needed or desired to improve the use of these tools.

Regarding surface water/groundwater interaction, Valley Water staff has begun to evaluate existing available data for stream gauging and groundwater levels. Valley Water is also evaluating whether existing wells adjacent to creeks may be useful in collecting additional data to better understand the interaction. Staff has attended workshops organized by DWR and reviewed both relevant literature and how other GSAs are working to better understand groundwater-surface water interaction. Staff has also performed preliminary experiments to measure the flux between surface water and groundwater. Valley Water will continue to explore the complex and dynamic interaction between surface water and groundwater and will engage interested stakeholders. This issue will be further documented in the five-year Groundwater Management Plan update, which is due by January 1, 2022.

5. Continue and enhance groundwater management partnerships with water retailers and land use agencies.

This Plan recommendation focuses on continued collaboration and strong partnerships with water retailers and land use agencies. Valley Water continues to interact regularly with water retailers through quarterly Water Retailer meetings, including the Groundwater Subcommittee. In addition to these regular meetings, Valley Water and water retailers collaborate on various issues that arise regarding groundwater, treated water, wells, and water measurement.

Valley Water also continues to coordinate with local land use agencies on General Plans, water supply assessments, Urban Water Management Plans, stormwater management, and various individual land use projects. Land use decisions fall under the authority of the local cities and the County of Santa Clara. Valley Water reviews land use and development plans related to Valley Water facilities and watercourses under Valley Water jurisdiction and provides technical review for other land use proposals as requested by the local agency. When provided by land use agencies, water supply assessments for new developments are also reviewed and evaluated in the context of Valley Water's long-term water supply plans. For all reviews, Valley Water's groundwater-related comments focus on potential impacts to groundwater quality and sustainability.

6. Evaluate the potential new authorities provided by SGMA.

The Santa Clara Valley Water District Act provides broad authorities, but there are additional authorities under SGMA including the ability to regulate pumping or impose various types of fees. This Plan recommendation focused on the evaluation of these new SGMA authorities in cooperation with water retailers and other interested stakeholders to consider what conditions might necessitate their implementation to sustainably manage groundwater into the future.

As first described in the WY 2017 Annual SGMA Report submitted to DWR, Valley Water has explored new SGMA authorities with interested stakeholders through the Board's Water Conservation and Demand Management Committee (Committee). Nine publicly noticed Committee meetings between December 2016 and December 2017 provided a transparent forum for discussion with interested stakeholders on how and when these authorities might be used.

The potential regulation of pumping or well construction is a complex and controversial topic, which was discussed extensively through Committee meetings. Existing groundwater management programs and strong partnerships with large pumpers are expected to result in continued sustainable conditions and are the preferred way to address future challenges. However, pumping regulation may be needed in the future to address undesirable results. The primary SGMA-related work product from the Committee meetings was a process that describes the fundamental approach to respond to potential worsening basin conditions. This includes the steps that would be taken prior to implementing SGMA authorities to regulate groundwater pumping, with a focus on providing some certainty on the process, while avoiding prescriptive requirements that may not be effective in addressing a future issue. This process was memorialized via a resolution adopted by Valley Water Board on February 27, 2018. This resolution was included as Attachment 2 in the WY 2018 Annual SGMA report to DWR.

Valley Water also explored the potential to implement a fixed charge as a component of groundwater production charges, which are currently volumetric charges. This could potentially reduce volatility in rates and revenues based on changes in water use. Valley Water engaged a consultant to develop a fixed charge proposal and assist with implementation. However, major water retailers expressed significant concerns, including redundancy with other charges or charge adjustment mechanisms, equity in applying the charge to all well users, and potential cost recovery impacts to retailers regulated by the California Public Utilities Commission. After discussing these concerns with the Committee and the full Board, Valley Water is unlikely to further pursue a fixed charge at this time.

NEXT STEPS

Valley Water will continue to submit annual reports required under SGMA to DWR by the April 1 deadline. In addition to this brief report, Valley Water will also continue to publish a comprehensive, calendar-year based Annual Groundwater Report each summer with more detailed information on pumping, recharge, water balance, groundwater levels and storage, land subsidence and groundwater quality. The most recent report, the Annual

Groundwater Report for Calendar Year (CY) 2018, is posted on the Valley Water website, and will be replaced with the CY 2019 Report in the summer of 2020.[18]

Ensuring continued groundwater sustainability is central to the Valley Water mission to provide Silicon Valley a safe, clean water supply for a healthy life, environment, and economy. As such, Valley Water will continue to "aggressively protect groundwater from the threat of contamination and maintain and develop groundwater to optimize reliability and to minimize land subsidence and salt water intrusion," in accordance with Board policy.

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[18] https://www.valleywater.org/your-water/where-your-water-comes-from/groundwater

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