San Benito County Water District

Annual Groundwater Report 2017

TODD GROUNDWATER

ANNUAL GROUNDWATER REPORT

WATER YEAR 2017

DECEMBER 2017

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WATER YEAR 2017

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ES EXECUTIVE SUMMARY

This Annual Groundwater Report for San Benito County Water District (District) describes groundwater conditions in the San Benito County portion of the Gilroy-Hollister basin. It documents water sources and uses, groundwater elevations and storage, and management activities for water year 2017. 2017 was a wet year; precipitation was the highest since 1998 and the imported water allocation was 100 percent of contract, the first time since 2006. The District used this available imported water, providing it to agricultural users, treating CVP water in the newly expanded Lessalt and newly completed West Hill Treatment Plants for municipal users, and—for the first time since 2007—percolating CVP water in off-stream ponds.

The District is continuing with long term water resource management planning, including compliance with the Sustainable Groundwater Management Act (SGMA). In May 2017, the District became the Groundwater Sustainability Agency (GSA) for the San Juan Bautista, Hollister, and Bolsa subbasins within San Benito County. The District will initiate preparation of a Groundwater Sustainability Plan (GSP) for these subbasins in 2018, beginning with outreach to stakeholders and the public. The District will also apply to the Department of Water Resources (DWR) for consolidation of these subbasins into a single groundwater basin; if approved, this will streamline the GSP process. GSP preparation must be completed by January 2022; subsequently, annual reports will continue to provide technical support for groundwater management and information to the public. The Annual Reports over the next few years will evolve through the GSP process to fulfill the annual reporting requirements of SGMA.

This year, a special section addresses the water balance, providing a summary of the last three years. The recovery of the basins over the past three years is clearly shown through the water balance. Most notably, from 2015 to 2017, inflows almost doubled and outflows decreased substantially, reflecting increased precipitation and CVP availability. Future water balances will be evaluated according to SGMA guidelines and with reference to DWR-defined basin boundaries, and will be presented in each GSP annual report. In addition, GSP preparation will include development of a refined hydrogeologic conceptual model, which describes how the groundwater system works and includes a water balance.

The District and Hollister Urban Area (HUA) partners continue to implement programs and projects that allow the available water supply to be used with efficiency. The West Hills Water Treatment Plant (WH WTP) is now operational. It increases the local capacity to treat imported CVP water for municipal use and allows the water agency partners to maximize imported water use when imported water is available. Recycled water continues to be delivered for landscape and agricultural irrigation, providing a consistent source of supply to augment groundwater pumping when imported water is not available.

Fewer wells were monitored in 2017 for both the groundwater elevation and water quality networks. The decreasing coverage and consistency of monitoring data has persisted for several years, with ramifications for tracking groundwater conditions. The District, committed to expanding the network of monitored wells (groundwater elevation and quality), recently took steps to stabilize the monitoring program in terms of consistency and areal coverage.

1 INTRODUCTION

The San Benito County Water District (District) was formed in 1953 by a special act of the State with responsibility and authority to manage groundwater. The special act allows the Board of Directors to require an annual investigation and report on groundwater conditions of the District and, as documented in Appendix A, specifies the minimum content of the report should the District choose to prepare one. Annual Reports focus on portions of the Gilroy-Hollister Basin within San Benito County. Consistent with the 2014 Sustainable Groundwater Management Act (SGMA), the District is the exclusive Groundwater Sustainability Agency (GSA) for these areas. The District, at its discretion, has also directed that specific Annual Reports include focused discussion of selected topics; this year, the focused topic is an update on the water balance.

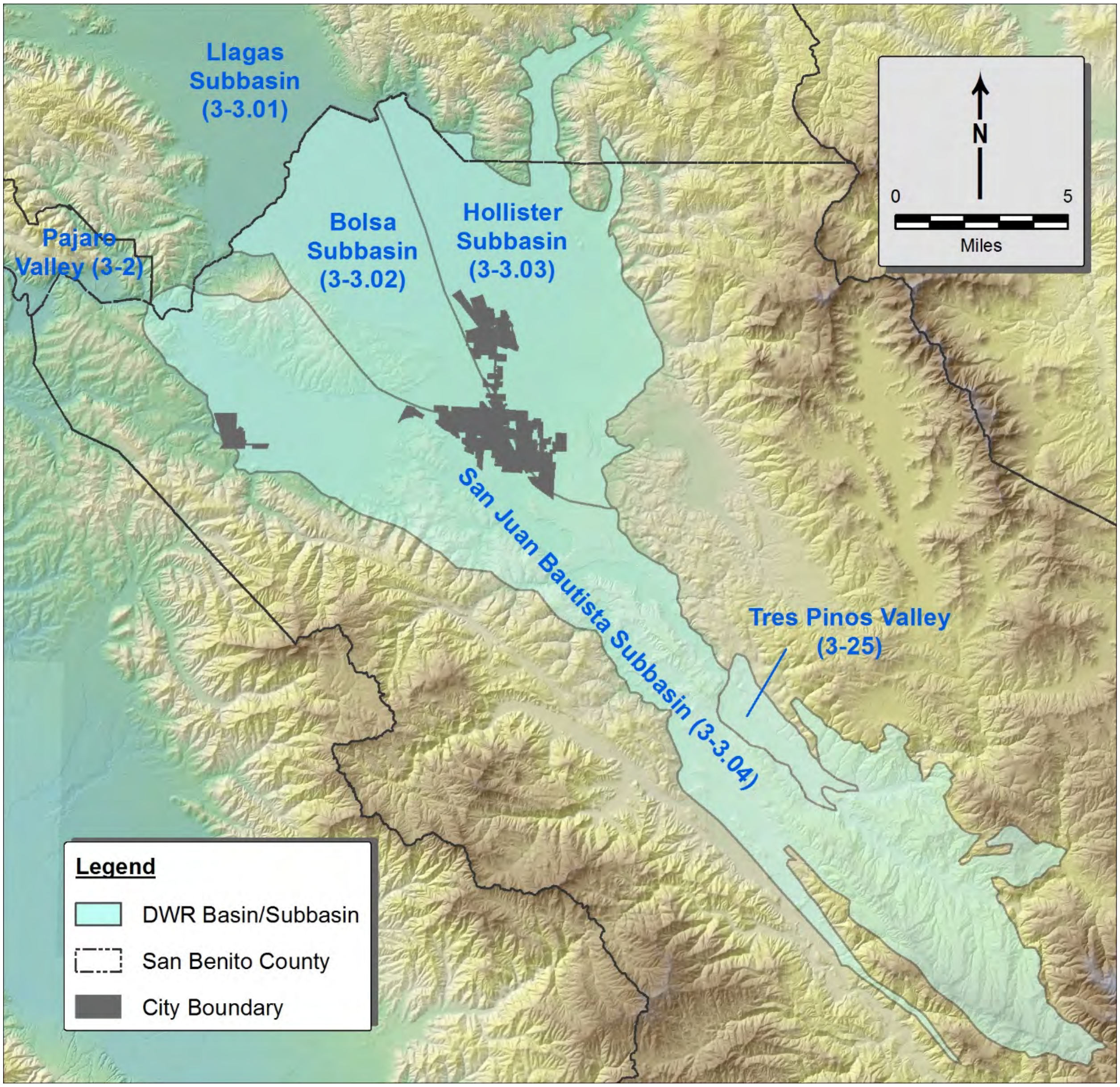
This Annual Report, prepared at the request of the District, documents water supply sources and use, groundwater elevations and storage, and District management activities from October 2016 through September 2017. It presents an overview of the state of the groundwater basin. It also conveys considerable information, including tables and figures, which are provided largely in Appendices B through E. Appendix F provides information on water rates and charges, Appendix G provides information on the methodology behind the water balance, Appendix H contains important SGMA documents, and Appendix I contains a list of acronyms.

Throughout this report, water volumes and changes in storage are shown to the nearest acre-foot (AF). These values are accurate to one to three significant digits (depending on the measurement). All digits are retained in the text to maintain as much accuracy as possible during subsequent calculations, but results should be rounded appropriately.

Acknowledgments

This report was prepared by Iris Priestaf, PhD, Maureen Reilly, PE, Chad Taylor, PG, CHg, and Gus Yates, PG, CHg of Todd Groundwater. We appreciate the assistance of San Benito County Water District staff, particularly Jeff Cattaneo, Garrett Haertel, Dustin Franco, and David Macdonald.

Figure 1. DWR Defined Basins and Subbasins.



Geographic Areas

This report focuses on the northern San Benito County portions of the Gilroy-Hollister groundwater basin, including the Bolsa, Hollister, and northern San Juan Bautista subbasins (Figure 1). The San Benito part of the basin encompasses the City of Hollister, City of San Juan Bautista, unincorporated residential areas, rangeland, and expansive areas of irrigated agriculture. The basin extends into southern Santa Clara County, where it includes the Llagas Subbasin and portions of the San Juan Bautista and Hollister subbasins. Santa Clara Valley

Water District (SCVWD) is the GSA for the basins within its jurisdiction. As respective GSAs, the District and SCVWD have agreed to collaborate in the SGMA management of the shared San Juan Bautista and Hollister subbasins, including preparation of a Groundwater Sustainability Plan (GSP).

The Department of Water Resources (DWR) originally defined the boundaries of the Bolsa, Hollister, and San Juan Bautista Subbasins largely based on geology (e.g., extent of alluvium). SGMA has established a process for boundary revision, which includes an application for local agencies to request revision of groundwater basin boundaries. The initial round of basin boundary modifications was conducted in 2016 with results published in *California's Groundwater* – Bulletin 118, Interim Update 2016. The next round is scheduled to begin January 1, 2018. The District is seeking consolidation of the three subbasins, and on September 20, 2017 passed Resolution No. 2017-17 to initiate the request process. This consolidation into one basin would be consistent with the intent of the District and SCVWD for collaborative management. This consolidation would continue the historical integrated management of these basins within San Benito County and formally extend this integrated management into SCVWD areas.

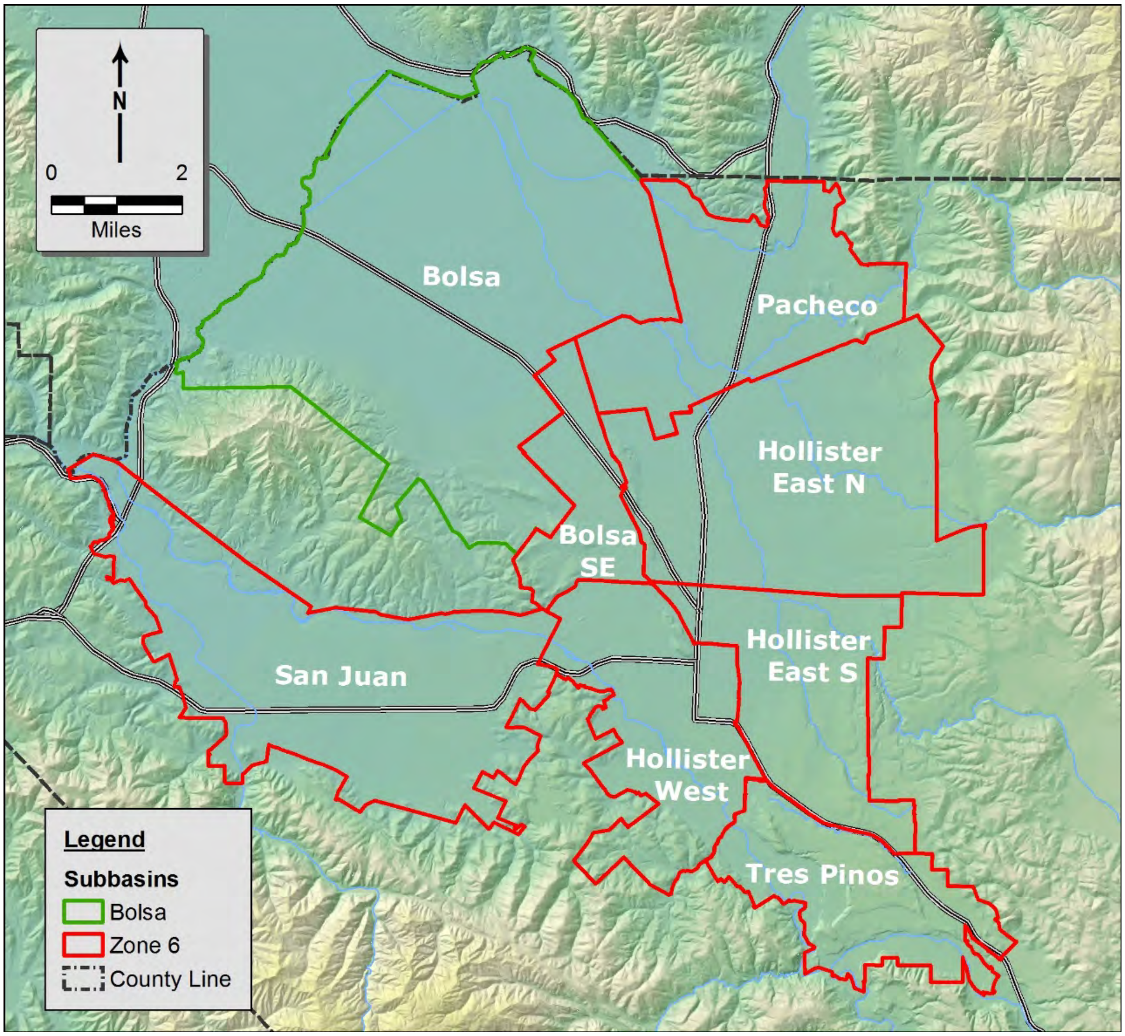
The jurisdiction of the District encompasses all of San Benito County, including all or portions of fourteen groundwater basins (see **Appendix C**). District management of water resources is focused on three Zones of Benefit, listed in **Table 1**.

For the purposes of District groundwater management and annual reporting, seven subbasins of the Gilroy-Hollister Basin were delineated in 1996: Bolsa, Bolsa Southeast (SE), Pacheco, Hollister East (North and South), Tres Pinos, Hollister West, and San Juan subbasins (**Figure 2**). These subbasins were defined based on hydrogeologic and significant local factors (i.e., Zone 6 boundaries) and used effectively for management and data collection for the past 19 years. Of the subbasins shown on **Figure 2**, only the Bolsa subbasin receives no CVP deliveries and relies entirely on local groundwater.

Table 1. District Zones of Benefit

Zone	Area	Provides
1	Entire County	Specific District administrative expenses
3	San Benito River Valley (Paicines to San Juan) and Tres Pinos River Valley (Paicines to San Benito River)	Operation of Hernandez and Paicines reservoirs and related groundwater recharge and management activities
6	San Juan, Hollister East, Hollister West, Pacheco, Bolsa SE, and Tres Pinos subbasins	Importation and distribution of CVP water and related groundwater management activities

Figure 2. Locations of SBCWD Subbasins



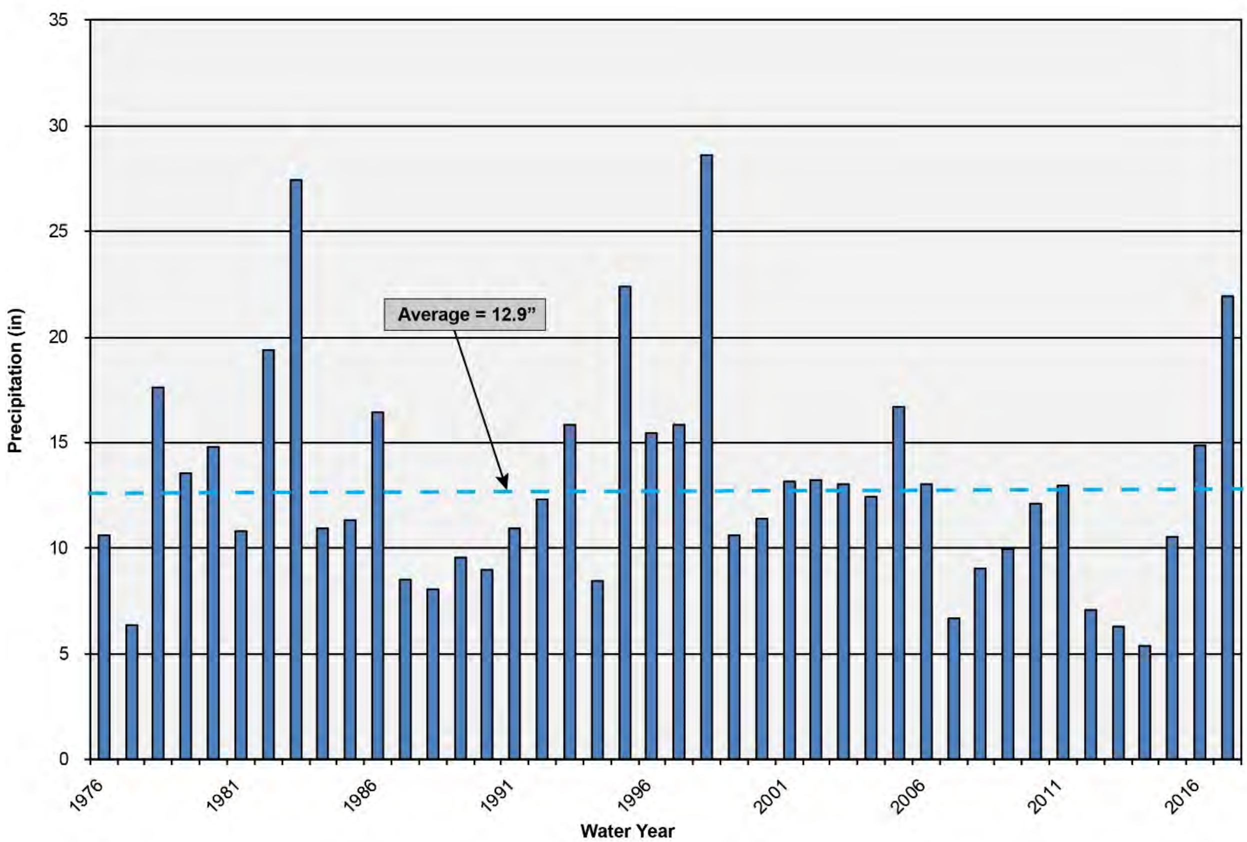
The 1996 subbasins differ from the subbasins defined by DWR and identified for compliance with SGMA. Upcoming GSP preparation will be accomplished in terms of the DWR defined basins and subbasins, recognizing that the Bolsa, Hollister, and San Juan Bautista subbasins may be consolidated. For GSP preparation and subsequent annual reporting, the water supply and demand information and groundwater data will need to be collected and presented consistent with DWR-defined basins.

Climatic Conditions

Assessment of climatic conditions includes collection of climate data (rainfall and evapotranspiration), which are included in Appendix B. Local rainfall is compiled on a monthly basis and reviewed as an important and variable factor, affecting specific basin inflows (e.g., deep percolation) and outflows (groundwater pumping). Recognizing that drought often is extensive across California, local dry years also may be indicative of regional drought and reduced CVP allocations. Accordingly, dry years often are characterized by increased groundwater pumping for agricultural irrigation to offset lack of rainfall and reduced CVP allocations.

In 2017, overall precipitation was 21.92 inches as shown in **Figure 3** and documented in **Appendix B**. This is the highest precipitation since 1998, amounting to 170 percent of the long-term average (1875-2017) of 12.9 inches. In addition, 2017 was only the second above-average rainfall year since 2011. As shown in **Figure 3**, most years have been below- or near-average rainfall and relatively few years have abundant rainfall, especially since 1998. These few years represent the best opportunity to recover from previous drought through replenishment of groundwater storage and to prepare for the next drought.

Figure 3. Annual Precipitation in Hollister, 1976 – 2017



Recovery of groundwater storage from previous drought has been accomplished historically with increased use of available imported water (with increased return flows) and with direct recharge (percolation) of local surface water. As documented later in this report, in 2017 CVP allocations were 100 percent, the first time since 2006, leading to significant groundwater elevation recovery.

2 MANAGEMENT ACTIVITIES

District water management activities, in addition to import and distribution of CVP water, include water resources planning, water conservation, and managed percolation of local surface water to augment groundwater. To track groundwater basin conditions, the District maintains a comprehensive monitoring program, including regular measurement of groundwater pumping, annual evaluation of groundwater storage change, and assessment of regional water quality.

Water Resources Planning

In 2017, the District was engaged in various projects, programs and planning efforts that address water supply and demand, water quality, and wastewater management.

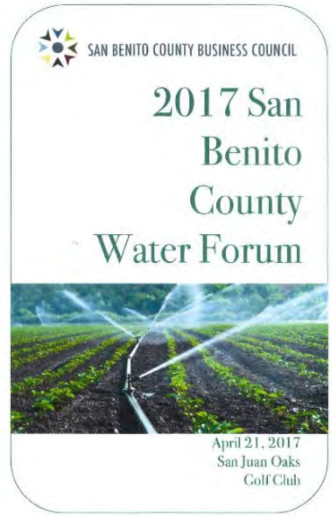
Hollister Urban Area
Water Project
Improving Our Water Future

West Hills Water Treatment Plant (WTP). The Hollister Urban Area Water Project (HUAWP) is a collaborative effort with local agencies to provide a secure and stable water supply to the region. As part of HUAWP, the provision of water treatment allows increased direct use of CVP for municipal and industrial (M&I) purposes; it also allows delivery of improved quality water to customers. West Hills WTP is the second surface water treatment plant to treat CVP imports and allows delivery to urban areas currently not served by the Lessalt Water Treatment Plant. West Hills came online in August 2017, with a design capacity of 4.5 MGD. The new WTP will increase the amount of treated M&I CVP water available to the Hollister Urban Area by 2,520 AFY to a total of 4,760 AFY. Eventually, these two facilities will have a combined capacity capable of treating the entire volume of the M&I CVP contract.


Image Source: Benitolink.org

Urban Water Management Plan, Hollister Urban Area. The Urban Water Management Plan (UWMP), prepared through the collaborative effort of the District, Sunnyslope County Water District (SSCWD) and the City of Hollister, was completed in 2016 and submitted to DWR**.** In September 2017, the HUA agencies received official notice from DWR that the UWMP had been reviewed and found to meet all requirements. The UWMP provides detailed information on the current and future water supply and demand for the Hollister Urban Area, and provides a comparison of supply and demand in normal years plus single-year and multi-year droughts. As documented in the UWMP, the Hollister Urban Area has adequate supplies to meet demands. The UWMP also documents local water conservation measures (see below).

Recycled Water Project. The District has worked cooperatively for years with the County, City of Hollister, and SSCWD to implement recycled water use. Current recycled water use includes City of Hollister landscape irrigation. In June 2016, recycled water also was delivered to agricultural users in the Hollister East subbasin area. A total of 366 AF was delivered in Water Year 2017 for landscape and agricultural irrigation.



Water Forum. In April 2017, the District participated in the 2017 San Benito County Water Forum. The Forum, convened by the San Benito County Business Council, included speakers from the Farm Bureau, local water agencies, political representatives, and more. This collaborative effort facilitates communication among a diversity of basin stakeholders and supports outreach for the SGMA process.

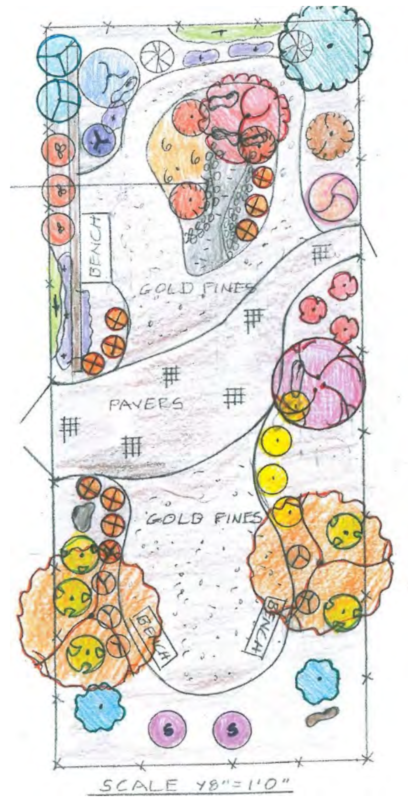
Water Conservation

Water conservation is an important tool to manage demands on the groundwater basin. During the most recent drought, the state mandated that water retailers reduce their demand. This state-ordered demand reduction, together with the expansion of ongoing water conservation efforts, successfully lowered water demand. Water conservation efforts in San Benito County are conducted mostly through the Water Resources Association (WRA), composed of representatives from the District, City of Hollister, City of San Juan Bautista, and Sunnyslope County Water District.

Ongoing Conservation. The State has lifted mandatory water demand reductions for agencies; nonetheless, the Hollister Urban Area continues voluntary demand reductions. The managers at Hollister and SSCWD plan to maintain water demand reductions; their goal for total usage is 15 percent less than 2013 demands. Currently, the Hollister Urban Area is exceeding this goal with about 22 percent less than 2013 demands.

Water Shortage Contingency Plan (WSCP). As part of the Urban Water Management Plan (UWMP), Hollister, SSCWD, and the District developed a joint WSCP. The plan includes many permanent prohibitions on water waste (including using water to clean paved surfaces and watering lawns within 48 hours of rain). In addition, the plan details what water conservation measures are triggered during drought conditions.

Irrigation Education. The District, in collaboration with the WRA, continues to offer a series of classes on irrigation efficiency and other agriculture practices. Since 2009, these workshops provide concepts, tools, and examples for optimizing irrigation and nitrogen management efficiency in row, tree, and greenhouse crop production.



Water Wise Demonstration Garden and Plans. WRA maintains a demonstration garden at Dunne Park in downtown Hollister (corner of 6th & Powell) (see right inset). Their website offers a landscape design and brochure to help educate visitors on drought resistant landscaping. The WRA website also provides three sample Water Efficient Landscape Plans available for download.

Turf Removal Program. The WRA no longer offers Turf removal programs but encourages customers to participate in the State's Save Our Water turf programs.

Public Outreach. WRA continues to educate the public about the regional water system and water use efficiency. Its website is regularly updated and for example, currently includes a video that summarizes the history of local water development, the role of the local groundwater basin, and the benefits of the Hollister Urban Area Water Project. WRA has given presentations to local school and lead school groups to the local WTP and WWTP, reaching over 400 students in autumn 2016 alone. Other outreach programs have provided water conservation outreach to 75 high school students this year.

Other ongoing water conservation programs involve irrigation rebates, toilet replacements, education program and outreach. These water conservation programs, while successfully reducing water demand, are being continued and diversified to encourage the public to continue to use water wisely.

Managed Percolation

Percolation of Local Surface Water. In most years, local surface water released from Hernandez and Paicines Reservoirs is percolated along the San Benito River and Tres Pinos Creek. Releases are managed to maximize percolation along the stream channels of the San Benito River and Tres Pinos Creek and to avoid any losses out of the basin.

In 2017, the District completed preparation of an operations planning tool to create annual plans for operation of SBCWD's Hernandez and Paicines Reservoirs and for re-diversion of Hernandez Reservoir releases to Paicines Reservoir at the San Benito River Diversion. This tool standardizes and facilitates the annual effort to plan Hernandez operations under differing hydrologic and water supply conditions and provides for coordinated management of surface water storage and groundwater storage.

Hernandez Reservoir was filled to near-capacity in 2017 and releases in 2017 were the highest since 1998 with 23,191 AF released. Releases from Paicines were 2,407 AF, the highest since 2010.

Percolation of Wastewater. Wastewater is percolated by the City of Hollister at its Domestic and Industrial plants, by SSCWD at its Ridgemark Facilities, and by Tres Pinos Water District. Recent changes in operation of the wastewater facilities (including increased water recycling) and decreased municipal water use have decreased the volume percolating to the groundwater. Information about the amount of groundwater recharged from these wastewater facilities is found in Appendix D.

Percolation of CVP Water. In 2017, the District percolated CVP imports for the first time since 2008, using two off-stream basins. The Union Road pond (located near the San Benito River in Hollister West subbasin) percolated 2,209 AF beginning in March 2017, while the Frog Pond in Pacheco subbasin was used to percolate 340 AF April through September.

In the past, CVP percolation was used regularly to recharge the groundwater basin. CVP percolation peaked in 1997 and was reduced subsequently in response to the successful recovery of the groundwater basin from overdraft. In 2017, the available groundwater storage, on-hand CVP imports, and suitable off-stream ponds provided a good opportunity to resume percolation activities. Direct in-stream recharge of CVP water is not planned because of concerns for release of invasive Dreissenid mussels. A table of historical percolation is found in Appendix D.

3 SGMA

The Sustainable Groundwater Management Act (SGMA), the most significant groundwater legislation in California history, requires sustainable management by local agencies of DWR-defined groundwater basins. In San Benito County, the basins subject to SGMA are the three subbasins of the Gilroy-Hollister Basin (Bolsa, Hollister and San Juan Bautista subbasins, respectively DWR Nos. 3-3.02, 3-3.03, and 3-3.04) and the Pajaro Valley Groundwater Basin (DWR No. 3-2, mostly in Santa Cruz and Monterey counties; see Figure 1).

The Gilroy-Hollister subbasins must have Groundwater Sustainability Plans (GSPs) in place by 2022, while the Pajaro Valley Basin, which has been designated as critically overdrafted, has a GSP due date of 2020. Pajaro Valley Water Management Agency (PVWMA) historically has managed the Pajaro Valley Basin and has submitted its Basin Management Plan Update to DWR as an alternative plan to fulfill SGMA. The Basin Management Plan Update contains a suite of projects and programs intended to halt seawater intrusion and balance the entire Pajaro Valley Groundwater Subbasin prior to the 2040 SGMA deadline for sustainability.

With regard to the three Gilroy-Hollister subbasins, the District has been actively preparing for SGMA since 2015 and in 2017 made significant progress toward SGMA compliance. The District became the Groundwater Sustainability Agency (GSA) for the Bolsa, Hollister and San Juan Bautista subbasins within San Benito County, developed an agreement with SCVWD for GSP preparation, and applied to DWR for grant funding to support GSP preparation, among other efforts.

San Benito County Water District GSA

On February 8, 2017, the Board of Directors convened a special hearing regarding the District's decision to become the GSA for the Bolsa, Hollister and San Juan Bautista subbasins within San Benito County and approved Resolution No. 2017-03 for the District to become the GSA. The resolution, reproduced in **Appendix H**, summarizes the authority of the District to be a GSA and its continuing commitment to manage surface water and groundwater resources within its jurisdiction.

On February 24, the District posted its notice to become a GSA (including the resolution and other required information) on DWR's SGMA Portal (http://sgma.water.ca.gov/portal/gsa/print/89) and after a required 90-day waiting period, was established as the exclusive GSA for the Bolsa, Hollister and San Juan subbasins within San Benito County.

Similarly, PVWMA is exclusive GSA for its jurisdiction in Pajaro Valley Groundwater Basin and SCVWD is exclusive GSA for groundwater basins in its jurisdiction, including the Llagas Basin (DWR No. 3-3.01) and portions of the Hollister and San Juan Bautista subbasins in Santa Clara County.

Agreement with Santa Clara Valley Water District

As noted above, the District is the GSA for the Bolsa Subbasin. It is also the GSA for the Hollister and San Juan Bautista Subbasins within San Benito County, while SCVWD is the GSA for the portions of the Hollister and San Juan Bautista subbasins in Santa Clara County. On July 5, 2017, the District and SCVWD executed a Memorandum of Understanding (MOU), which establishes their respective roles and responsibilities in preparing a GSP for the two shared subbasins (termed therein as Common Basins). The MOU, attached in **Appendix H,** is important in providing for cooperative management of the subbasins and ensuring that the entirety of the subbasins is within one GSA or the other; this is one of the requirements of SGMA.

While management of the Hollister and San Juan Bautista Subbasins is shared, the Bolsa Subbasin and Llagas Subbasin are neighboring basins that are managed respectively by the District and SCVWD, with ongoing cooperation and data sharing. For example, groundwater elevation data along the Bolsa-Llagas boundary are regularly shared to analyze groundwater flow across the boundary. Regarding SGMA, the District and SCVWD also shared information about basin boundary modifications requested by SCVWD for Llagas Basin and DWR modifications along the San Benito-Santa Clara county line.

Grant Funding

In November 2017, the District applied for a Sustainable Groundwater Management Planning (SGWP) Grant for GSP preparation that would address the three subbasins as defined by DWR (see Figure 1). However, historical groundwater management has focused on highly developed areas that were defined locally as subbasins in 1996 (Figure 2). Comparison of Figures 1 and 2 indicate that use of DWR-defined basins instead of SBCWD-defined basins will effectively double the managed area. The geographic expansion means that funding is needed for extension of the following:

- Data Management System, including GIS mapping and data sets (e.g., soils, land use, wells, climate)
- Water resources monitoring program (e.g., groundwater elevations, pumping, quality)
- Groundwater analyses and maps of historical/current conditions (e.g., change in groundwater storage)
- Numerical groundwater flow model
- Outreach to stakeholders, including DACs who have not yet been engaged in management
- Consideration of issues, objectives, activities, and funding mechanisms for areas not addressed previously.

In addition, while historical management provides a good foundation for a GSP, SGMA entails a quite rigorous, systematic process with significant requirements. Because SGMA is new and necessary and because more extensive basin areas will be involved, collaboration and outreach will need to be amplified. Accordingly, the District applied for a SGWP Grant to assist this effort. The District should be notified of the grant application status as early as December 2017.

Application for Groundwater Basin Consolidation

The three subbasins (Bolsa, Hollister and San Juan Bautista) are defined officially by DWR as separate subbasins, each of which needs to be addressed with a GSP. While recognizing these subbasins, and using its own subbasins for management purposes, the District historically has managed these basins in a unified and comprehensive manner. This recognizes that the subbasins are not only contiguous, but hydraulically connected and linked by management actions that pass over subbasin boundaries. Moreover, the jurisdictions of two major water retailers, City of Hollister and SSCWD, overlap subbasin boundaries. Accordingly, the 1998 and 2004 Groundwater Management Plans (prepared by the District in collaboration with local organizations) addressed the three basins together, with comprehensive and coordinated analyses, monitoring, management, reporting, and outreach. The District's annual groundwater reporting also has addressed the three subbasins in unified reports. Given that historical management that has been effective for decades, preparation of a single GSP for all three subbasins would be consistent with historical management and cost-effective.

Accordingly, on September 20, 2017 the District Board of Directors passed Resolution No. 2017-17 to begin the process of a Basin Boundary Modification Request to DWR for consolidation of the three subbasins into one basin. This process will continue into 2018; the period for submitting a request is open on January 1 for six months, followed by a 30-day public comment period, and decisions by DWR in Fall 2018. Consistent with SGMA, the District is planning preparation of three concurrent GSPs, but will be able to consolidate its GSP preparation if the three basins are united.

The definition of subbasins within a single basin can be useful; it recognizes local conditions and concerns. In fact, the District historically has used such subbasins, as shown in the Annual Reports (see Figure 2). Similarly, SGMA recognizes the importance of local conditions and concerns and thus allows definition of *Management Areas* that can be operated with area-specific minimum thresholds and management objectives, provided basic consistency across the basin. Such management areas will be considered as part of the GSP.

SGMA Concepts

This and previous Annual Groundwater Reports have provided information on the overall process required by SGMA in terms of the identification of groundwater basins subject to SGMA (i.e., the medium-priority Bolsa, Hollister, and San Juan Bautista subbasins), the overall process (e.g., establishing a GSA and preparing a GSP), and the timeline (i.e., preparing the first GSP by 2022, with annual reports and updates on a five-year schedule thereafter). This section introduces basic SGMA concepts about what sustainability is and how it is defined, so that the GSA, local agencies, and stakeholders know what it is, how it is measured, and when it is achieved and maintained.

This is a very brief introduction, and for more information, the interested reader is directed to the Department of Water Resources website http://www.water.ca.gov/groundwater/sgm/index.cfm and the Best Management Practice (BMP) document regarding Sustainable Management Criteria: http://www.water.ca.gov/groundwater/sgm/pdfs/BMP_Sustainable_Management_Criteria_2017-11-06.pdf. This BMP document currently is draft and is the topic of a series of DWR workshops, but provides useful definitions, which are summarized below.

First, SGMA defines ***sustainable groundwater management*** as the management and use of groundwater in a manner that can be maintained without causing undesirable results. ***Undesirable results*** are defined as one or more of the six effects illustrated on the following page. All six are shown, but it is recognized that seawater intrusion is not applicable to the inland Gilroy-Hollister subbasins.

A ***minimum threshold*** is the quantitative value that represents the groundwater conditions at a representative monitoring site that, when exceeded individually or in combination with minimum thresholds at other monitoring sites, may cause an undesirable result(s) in the basin. GSP preparation will need to set minimum thresholds at representative monitoring sites for each applicable sustainability indicator after considering the interests of beneficial uses and users of groundwater, land uses, and property interests in the basin. Minimum thresholds will be set at levels that do not impede adjacent basins (i.e., Llagas) from meeting their sustainability goals.

The six icons represent ***sustainability indicators***, which are the effects caused by groundwater conditions occurring throughout the basin that, when significant and unreasonable, become undesirable results. The significant and unreasonable occurrence of any of the six sustainability indicators constitutes an undesirable result; a GSP must define and document the conditions at which each of the six sustainability indicators become significant and unreasonable, including the reasons for those definitions. Sustainability indicators are subject to quantification and the respective metrics are defined in the GSP Regulations.

Sustainability Indicators

Chronic lowering of **groundwater levels** indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon. Groundwater decline during drought is not considered chronic if extractions and groundwater recharge are managed to ensure that reductions in groundwater levels or storage during drought are offset by increases during other periods. This is measured by groundwater levels.

Significant and unreasonable reduction of **groundwater storage**; the metric is volume of groundwater storage.

Significant and unreasonable **seawater intrusion**, measured by a chloride concentration isocontour.

Significant and unreasonable degraded **water quality**, including the migration of contaminant plumes that impair water supplies. This is measured by the migration of plumes, number of water supply wells affected, the volume of contaminated groundwater, and/or the location of a contaminant isocontour.

Significant and unreasonable land **subsidence** that substantially interferes with surface land uses; this is measured as the rate and extent of land subsidence.

Depletions of **interconnected surface water** that have significant and unreasonable adverse impacts on beneficial uses of the surface water. The metric is the volume or rate of surface water depletion.

Measurable objectives are quantitative goals that reflect the basin's desired groundwater conditions and allow the GSA to achieve the sustainability goal within 20 years. Measurable objectives are set for each sustainability indicator at the same representative monitoring sites and using the same metrics as minimum thresholds. Avoidance of the defined undesirable results must be achieved within 20 years of GSP implementation. SGMA recognizes that some basins may experience undesirable results within the 20-year period (particularly if the basin has existing undesirable results as of January 1, 2015); however, that does not, by itself, necessarily indicate that a basin is not being managed sustainably, or that it will not achieve sustainability within the 20-year period. Nonetheless, GSPs must clearly define a planned pathway to reach sustainability in the form of interim milestones, and show actual progress in annual reporting.

In addition to the measurable objective, ***interim milestones*** must be defined in five-year increments at each representative monitoring site using the same metrics as the measurable objective. These interim milestones are used by GSAs and DWR to track progress toward meeting the basin's sustainability goal. Interim milestones will be coordinated in the GSP with projects and management actions proposed by the GSA to achieve the sustainability goal.

A GSA may wish to define ***management areas*** for portions of its basin to facilitate groundwater management and monitoring. Management areas may be defined by natural or jurisdictional boundaries, and may be based on differences in water use sector, water source type, geology, or aquifer characteristics. Management areas may have different minimum thresholds and measurable objectives than the basin at large and may be monitored to a different level. However, GSAs in the basin must provide descriptions of why those differences are appropriate for the management area.

Lastly, the ***sustainability goal***, developed as part of the GSP, will succinctly state the management objectives and desired conditions of the groundwater basin, how the basin will get to that desired condition, and why the measures planned will lead to success.

Agency Coordination and Public Outreach

Recognizing the collaborative nature of SGMA, the District has continued its discussion of SGMA issues with other agencies, including water retailers in San Benito County (City of Hollister, Sunnyslope County Water District, City of San Juan Bautista, Aromas Water District, and Pacheco Pass Water District), GSAs in nearby basins (e.g., SCVWD and PVWMA), and the San Benito County Board of Supervisors, among others. The District website at www.sbcwd.com provides announcements, reports, newsletters, and basic information on San Benito County water resources. Public outreach included the preparation and presentation of the 2016 Annual Groundwater, discussions with non-governmental organizations such as the San Benito County Farm Bureau, and presentations as part of the San Benito County Water Forum, a regular gathering sponsored by the San Benito County Business Council. The April 21, 2017 Forum included presentations on Our Groundwater, Groundwater Sustainability Planning, and the Hollister Urban Area Water Project.

Groundwater Sustainability Plan (GSP) Preparation

The District has developed a work plan, schedule, and budget for systematic GSP preparation in collaboration with local water providers, SCVWD, stakeholders and the public. This will be a multi-year effort that will begin in early 2018. The main elements of a GSP will include:

Outreach and Stakeholder Engagement. A Communication Plan will describe how the District will make decisions as part of the GSP, engage and inform the public, and recognize beneficial uses and users in relation to the GSP. This is planned to include creation of a SGMA website and establishment of a SGMA Advisory Forum (SAF). In addition, a series of public workshops is planned to engage the larger community.

Compilation and Review of Data. The District has been collecting and compiling groundwater data annually including groundwater elevations, water quality, and water use for the Annual Groundwater Reports. These data are compiled in a relational database, including capabilities for queries to quickly check and summarize data. The effort for the GSP will be to review and update the current data management system (with respect to SGMA requirements and DWR Best Management Practices), to identify data gaps, and to support the GSP monitoring program. Available information will support the entire GSP including analysis of the hydrologic setting, groundwater conditions, sustainability criteria, and potential projects and management actions.

Hydrogeologic Conceptual Model. The hydrogeologic conceptual model (HCM) provides a description of the structural and physical characteristics that govern groundwater occurrence, flow, storage, and quality. In brief, the HCM describes how the local surface water-groundwater system works. The HCM and an accompanying analysis of current groundwater conditions will address the entire area of the three subbasins (Bolsa, Hollister, and San Juan Bautista).

Water Budget. Water budgets will be quantified for historical and current conditions per SGMA regulations. This will involve use of past studies, the existing numerical model, and recent monitoring data and investigations. Water balances developed by SCVWD for the adjacent Llagas Basin also will be reviewed to promote a consistent approach. The GSP Water Budget will build on past Annual Report water balances and include use of available data and best available science to quantify inflows, outflows, and change in storage, including sustainable yield and potential overdraft.

Update and Extension of Existing Groundwater Model. SGMA recognizes that groundwater models are valuable tools to explore how the groundwater systems works, to assess potential management actions and projects, and to demonstrate how a GSP will achieve sustainable basin operation. The District has a numerical model that has been developed, periodically updated, and used for various scenarios (Yates, 2001). This existing MODFLOW model (and linked surface hydrology model and pre-processing utility programs) will be updated, expanded to entirely cover all three subbasins, and improved for application in the GSP.

Sustainability Criteria. While the District has a long history of groundwater management, such management has not included systematic quantification of undesirable results, minimum thresholds, or measurable objectives to the extent required by SGMA. Defining these specific sustainability criteria, eliciting input from the SGMA Advisory Forum and stakeholders, and creating a detailed plan for future sustainability will be a focused effort.

Describe Management Actions and Projects. As part of the GSP process, the District will describe management policies, programs, and projects for sustainable management. Already recognized and proposed/planned actions and projects will be summarized in terms of applicability to sustainability criteria. Additional actions and projects likely will be identified through the GSP process as local agencies and stakeholders consider undesirable results and thresholds.

Develop Monitoring Networks and Protocols. This District will establish the GSP monitoring network and protocols that will: 1) provide data to the hydrogeologic conceptual model and water budget and future model updates, 2) provide tracking and early warning regarding groundwater conditions and undesirable results, and 3) demonstrate progress toward and achievement of sustainability. Consistent with monitoring BMPs, the monitoring network will collect data of sufficient quality, distribution, and frequency to characterize groundwater and related surface water conditions and to track changes, including short-term, seasonal, and long-term trends. The overall approach will involve development of a comprehensive monitoring program that can be subdivided by subbasin if required for evaluation.

4 WATER USE

Water Supply Sources

Four major sources of water supply are available for municipal, rural, and agricultural land uses. These are summarized below; for more data and graphs see Appendix E.

- **Local Groundwater.** Groundwater is pumped by private irrigation and domestic wells and by public water supply retailers. The District does not directly produce or sell groundwater, but has the responsibility and authority to manage groundwater throughout San Benito County. This report focuses on the portion of the Gilroy-Hollister groundwater basin (DWR Basin 3-3) within San Benito County and, consistent with previous Annual Reports, addresses the six District-defined subbasins (San Juan, Bolsa SE, Pacheco, Hollister East and West, and Tres Pinos) with measured supplies. Bolsa Subbasin relies solely on groundwater, which is not measured there.
- **Imported Water.** The District purchases Central Valley Project (CVP) water from the U.S. Bureau of Reclamation (USBR). The District has a 40-year contract (extending to 2027) for a maximum of 8,250 AFY of M&I water and 35,550 AFY of agricultural water.
- **Recycled Water.** Water recycling began in 2010 with landscape irrigation at Riverside Park. Recycled water currently is provided to selected landscape irrigation and agricultural users and recycled water use amounted to 366 AF in WY 2017. This source is reliable during drought and helps secure a sustainable water supply.
- **Local Surface Water.** Surface water is not used directly for potable or irrigation use in the basin, but creek percolation is a significant source of groundwater recharge. Releases from the District's Hernandez and Paicines reservoirs were substantial in 2017. Stormwater capture is effectively limited to some diversion to the Hollister Industrial WWTP (via a combined sewer system) with subsequent treatment and discharge to percolation and evaporation ponds. This is included in percolation totals in Appendix D.

Available Imported Water

The District distributes CVP water to agricultural and M&I customers in Zone 6. For USBR contract year 2017 (March 2017 - February 2018), both agriculture and M&I customers were provided the full contract allocation, for the first time since 2006. **Table 2** shows the contract entitlements and recent allocations (SLDMWA 2017). Note that USBR contract years are March through February, so water year 2017 overlapped two contract years.

Table 2. CVP Entitlements and Allocations, USBR Contract Years 2016-2017

March 2016 - February 2017

	Contract Amount	% Allocation	Allocation Volume (af)
Agriculture	35,550	5%	1,912
M&I	8,250	55%	4,538
TOTAL	**43,800**		**6,450**

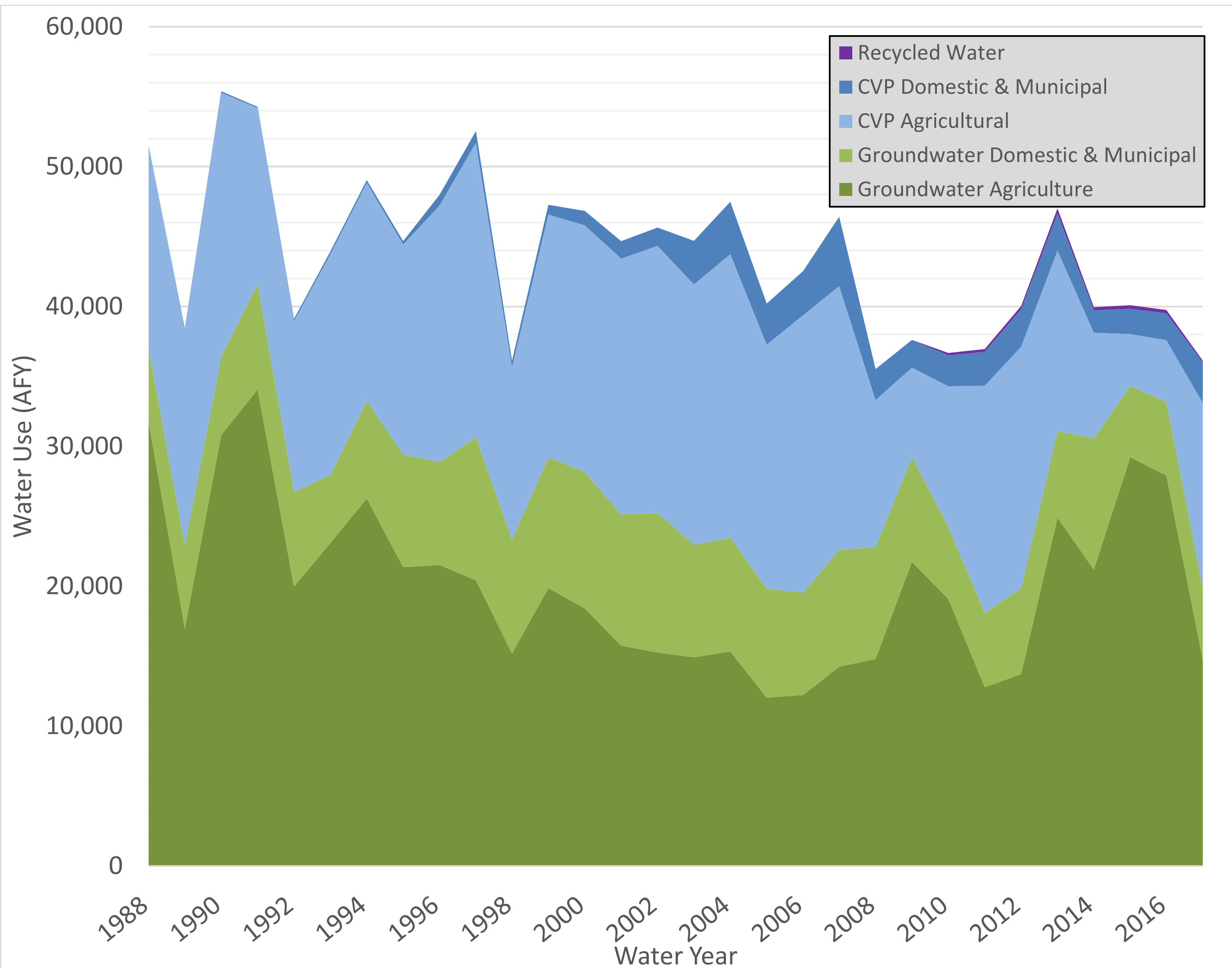
March 2017 - February 2018

	Contract Amount	% Allocation	Allocation Volume (af)
Agriculture	35,550	100%	35,550
M&I	8,250	100%	8,250
TOTAL	**43,800**		**43,800**

Water Use

In 2017, Zone 6 total water use decreased from water year 2016, most likely due to higher-than-average precipitation and lower evapotranspiration. Total water use was 36,378 AF, a nine percent decline from 2016. **Figure 4** shows significant changes in the portion of supply from imported water and groundwater in recent years. For example, in 2016 only 16 percent of supply was from CVP, and in 2017, CVP supply increased to 45 percent. Such changes are expected and represent conjunctive use of supplies, as groundwater pumping by agricultural users increases during dry years when import allocations are low and decreases in wet years when imported water is available.

Figure 4. Total Zone 6 Water Use by Source and Use 1988-2017 (AFY)



Distribution of Demand by Source and Use

Water year 2017 saw a significant increase in the use of CVP water, increasing to 2.5 times last year's total volume. Recycled water deliveries remained generally consistent at one percent of total supply. **Table 3** shows the total Zone 6 water supplied by CVP, groundwater, and recycled water sources.

Table 3. Total Zone 6 Water Use by Source for Water Years 2016 and 2017 (AF)

	CVP		Groundwater		Recycled Water		Total	
	2016	2017	2016	2017	2016	2017	2016	2017
Agriculture	4,434	13,288	27,912	14,727	246	258	32,591	28,273
M&I	1,914	2,909	5,251	5,088	253	108	7,417	8,105
TOTAL	**6,347**	**16,197**	**33,162**	**19,815**	**499**	**366**	**40,008**	**36,378**

Agricultural water use declined slightly. Municipal and domestic use increased slightly, but remained lower than the average over the period of record, mostly because of water conservation. In 2017, groundwater represented 54 percent of total supply, mostly reflecting increases in CVP imports for agricultural use. **Figure 5** illustrates that since 1993, groundwater has averaged 62 percent of supply with periodic increases due to drought and reduced CVP allocations.

Figure 5. Percent of Supply by Source, 1993- 2017

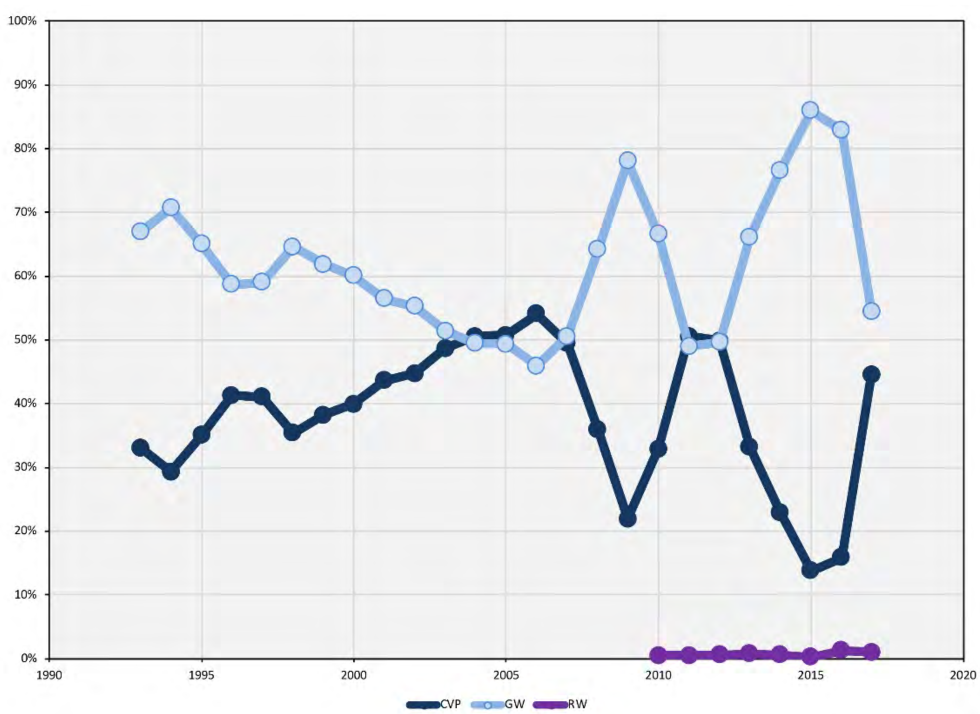
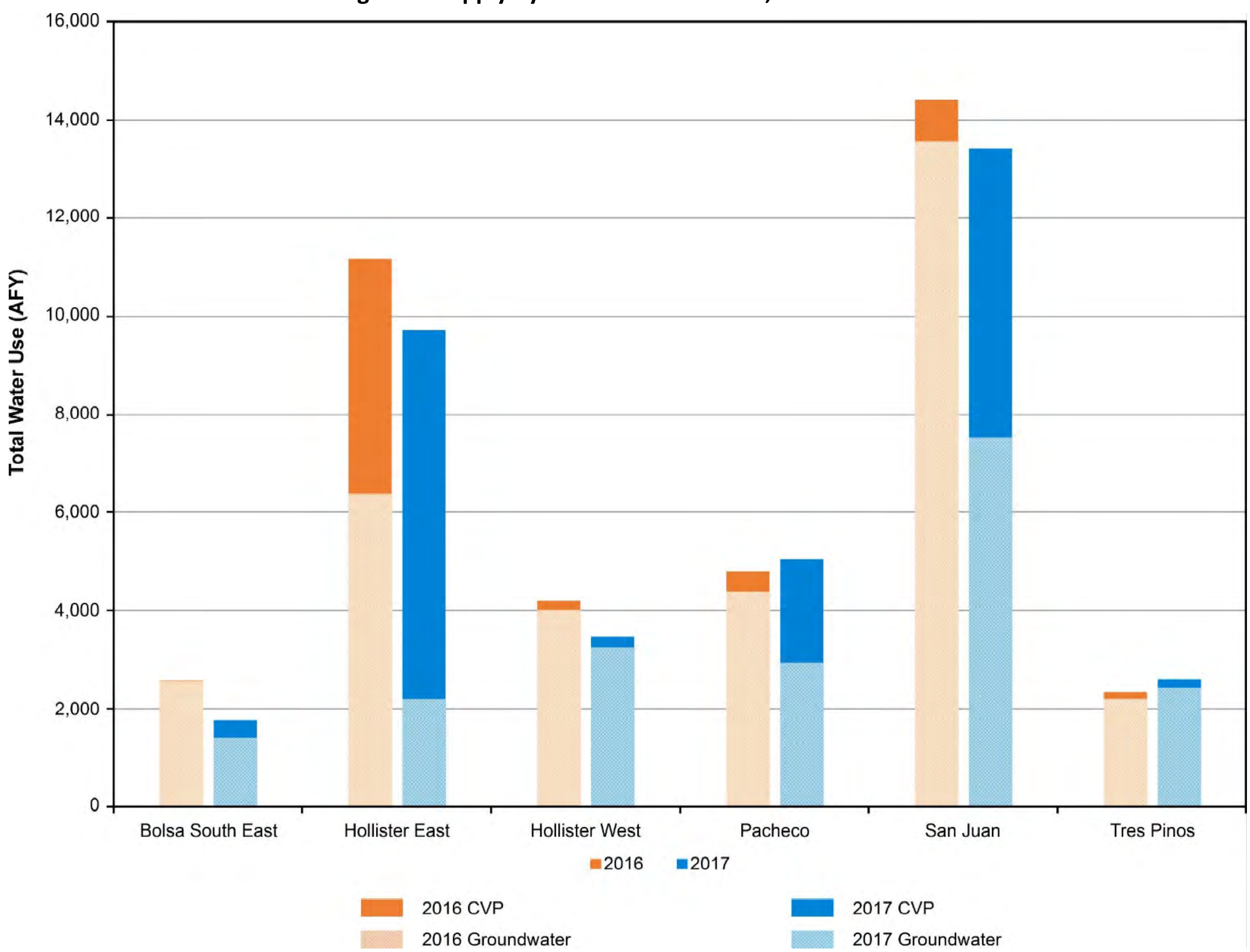


Figure 6 illustrates the change from 2016 to 2017 in water supply source by subbasin. The Bolsa Subbasin is not depicted because its sole source is groundwater and is not measured. The orange bars represent water supply for water year 2016 and the blue bars represent water supply for 2017. The lower portion of each bar represents groundwater as a source of supply and the upper portion is CVP supply. Recycled water is a relatively limited supply and is not included in this graph. In 2016, when CVP allocations were lower, groundwater made up 84 percent of total supply. In 2017, when CVP allocations were 100 percent of contract, many subbasins show a high portion of supply from CVP imports. This change in the source of supply is particularly evident in Hollister East and San Juan, two intensively farmed subbasins. Both subbasins saw a significant decrease in groundwater levels during the drought when growers relied on the groundwater supply to make up for the limited CVP imports. In wet years when imports are available, these basins should maximize CVP use; this type of conjunctive use, termed "in-lieu recharge," allows the groundwater reserves to replenish.

Figure 6. Supply by Source and Subbasin, 2016 and 2017



Distribution by Subbasin

Relative water use in the six subbasins remained similar as in previous years, with groundwater making up a large portion of supply in Bolsa Southeast, San Juan, and Tres Pinos subbasins. **Table 4** shows the water use by user, and water type for each subbasin. Graphs showing total water use by water source are available in Appendix E.

Table 4. Zone 6 Water Use in Water Year 2017 (AF)

	CVP Water		Groundwater		Recycled Water	
Subbasin	Agriculture	Domestic & Municipal	Agriculture	Domestic & Municipal	Agriculture	Landscape Irrigation
Bolsa Southeast	365	0	1,399	14	66	0
Hollister East	5,372	2,115	2,192	17	192	0
Hollister West	14	203	1,324	1,931	0	108
Pacheco	2,060	36	2,904	45	0	0
San Juan	5,354	499	6,562	980	0	0
Tres Pinos	121	56	347	2,100	0	0
TOTAL	**13,288**	**2,909**	**14,727**	**5,088**	**258**	**108**

5 GROUNDWATER ELEVATIONS

In October 2017, groundwater elevations increased in most areas of the basin, for the first time since 2008. While some subbasins showed small groundwater elevation decreases, overall groundwater in storage increased. Groundwater elevation increases were greatest in the Bolsa, Pacheco, Bolsa SE, and Hollister West subbasins.

In reviewing groundwater elevations and trends, it is important to recognize the conjunctive use of imported water and groundwater supplies and the role of groundwater storage. In dry years, like 2012 through 2015 with reduced CVP imports, groundwater pumping provides most of the supply, but groundwater storage is reduced. In the less-frequent wet years, like 2017, the District must replenish groundwater reserves to prepare for the next drought. This has been achieved since the 1970s mostly through provision of imported CVP water instead of groundwater pumping (in-lieu recharge) and through the District's percolation activities. However, CVP water is likely to become less dependable (for example, due to climate change), which presents a challenge to long-term sustainability.

To track groundwater storage changes, the analysis of groundwater elevations depends on a consistent network of reliable wells. The number of wells in the District's groundwater monitoring program for the autumn was at an all-time low, increasing the uncertainty of a subbasin-wide storage change calculations. In addition, the set of wells monitored was different from that monitored in previous years in some key locations. This means that storage change cannot be computed reliably. The District currently is assessing the monitoring network and increasing efforts to record groundwater elevations in a stable network of wells on a quarterly basis. In 2018, along with SGMA outreach, the District will begin searching for new wells to add to the network in areas not currently managed by the District. If for some reason, wells are no longer part of the network, they should be replaced as soon as possible with a nearby, comparably-constructed well that can serve as a permanent addition to the network.

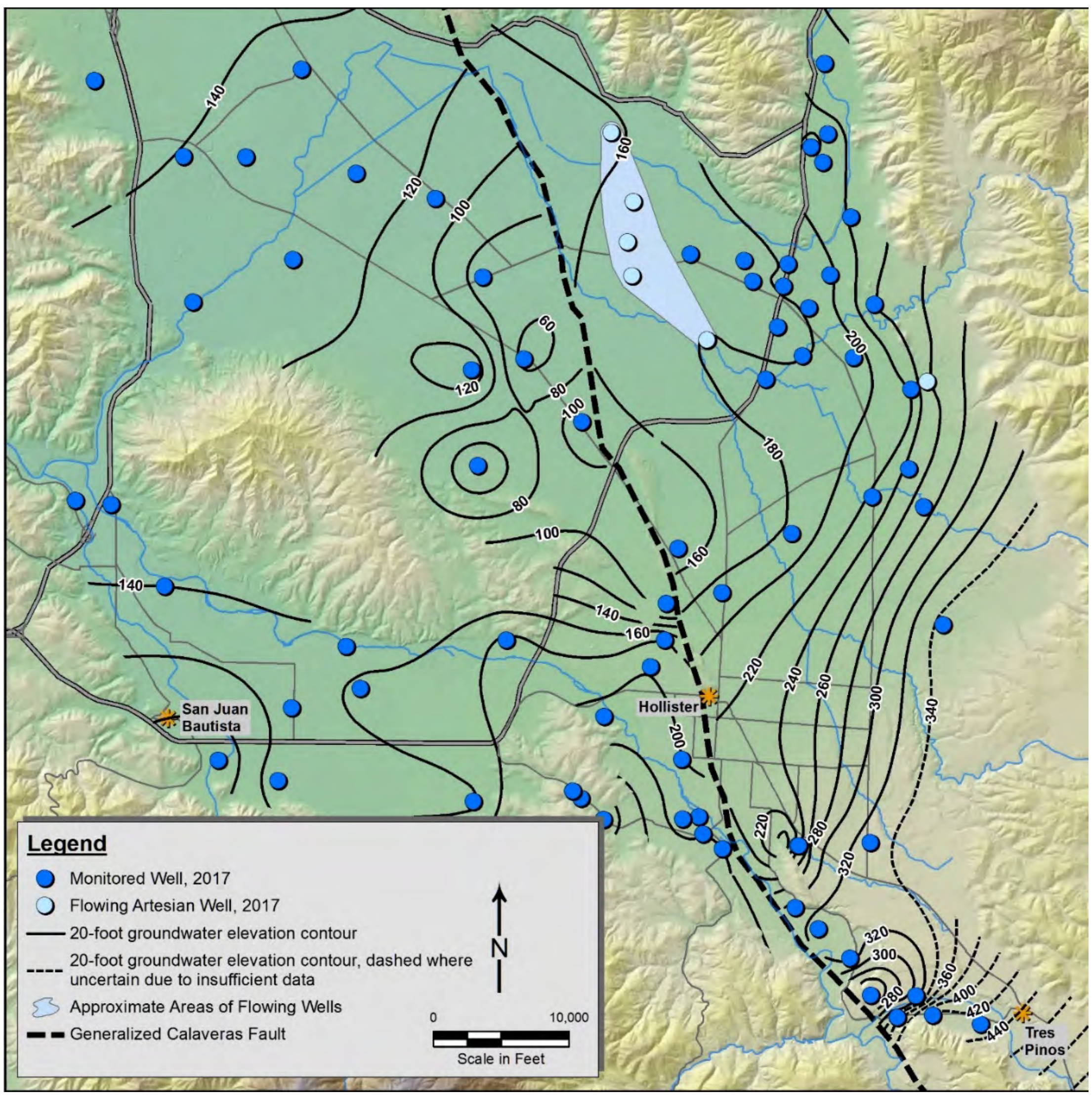
The District should continue to manage groundwater resources for substantial and rapid recovery in wet years, recognizing that most years are average to dry and wet years are much less frequent (see Figure 3). Additional information on groundwater elevations (including profiles of basin cross sections and depth to water contours) are included in Appendix C.

Groundwater Elevations

Groundwater elevation data were examined from 91 wells in the District's quarterly groundwater elevation monitoring program. Generally, October groundwater elevation data are used for preparing groundwater elevation contour maps. However, this year some of the measurements were collected in early November. Groundwater elevations in the fall, including those shown in **Figure 7**, are assumed to represent the lowest levels for the water year. As in previous years, the groundwater elevation contouring methods incorporate the effects of the Calaveras Fault on groundwater elevations by splitting the area into eastern and western portions and then generating contours for each. The resulting contours are then evaluated for consistency and reasonableness and any necessary refinements are made. The contours indicate a general flow from southeast to northwest in San Benito County and a flow from Llagas Subbasin in Santa Clara County toward the Bolsa.

Profiles of historical groundwater elevations are provided in Figure C-5 in Appendix C. These profiles show groundwater elevations for 2017 and 2016 plus historic groundwater lows and the range of historical groundwater elevations. Review of Figure C-5 indicates a new localized historic low in the Bolsa (Profile B-B'). Previous annual reports (2014, 2015, 2016) also indicated new historic lows. Additional groundwater elevation data are presented in Appendix C, including maps, summary tables, and groundwater elevation data.

Figure 7. Groundwater Elevations, October 2017



The relative changes in groundwater elevations from October 2016 to October 2017 are shown on **Figure 8.** The map was prepared by calculating and contouring the differences between mapped groundwater elevations for the two periods. The accuracy of this map was checked by examining groundwater elevation changes in individual wells that were monitored in the fall quarter of both years. **Figure 9** shows the cumulative drawdown over the recent drought to present (2011 through 2017). The groundwater elevation changes over this period are uneven, and there are some areas where elevations were higher in 2017 than in 2011. However, on average groundwater elevations in all subbasins were still 10 feet lower in the fall of 2017 compared to the fall of 2011.

Figure 8. Change in Groundwater Elevations 2016-2017

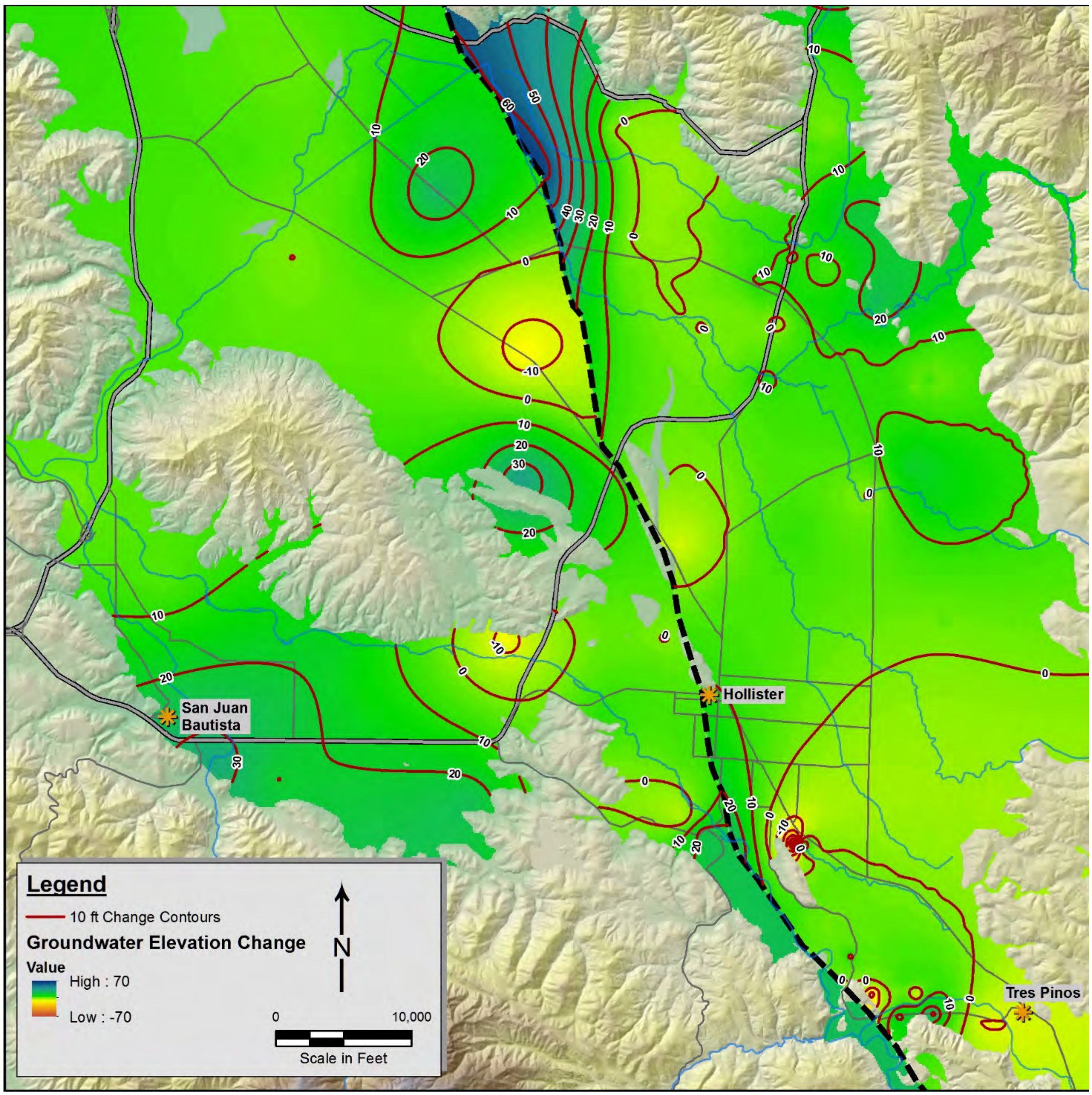
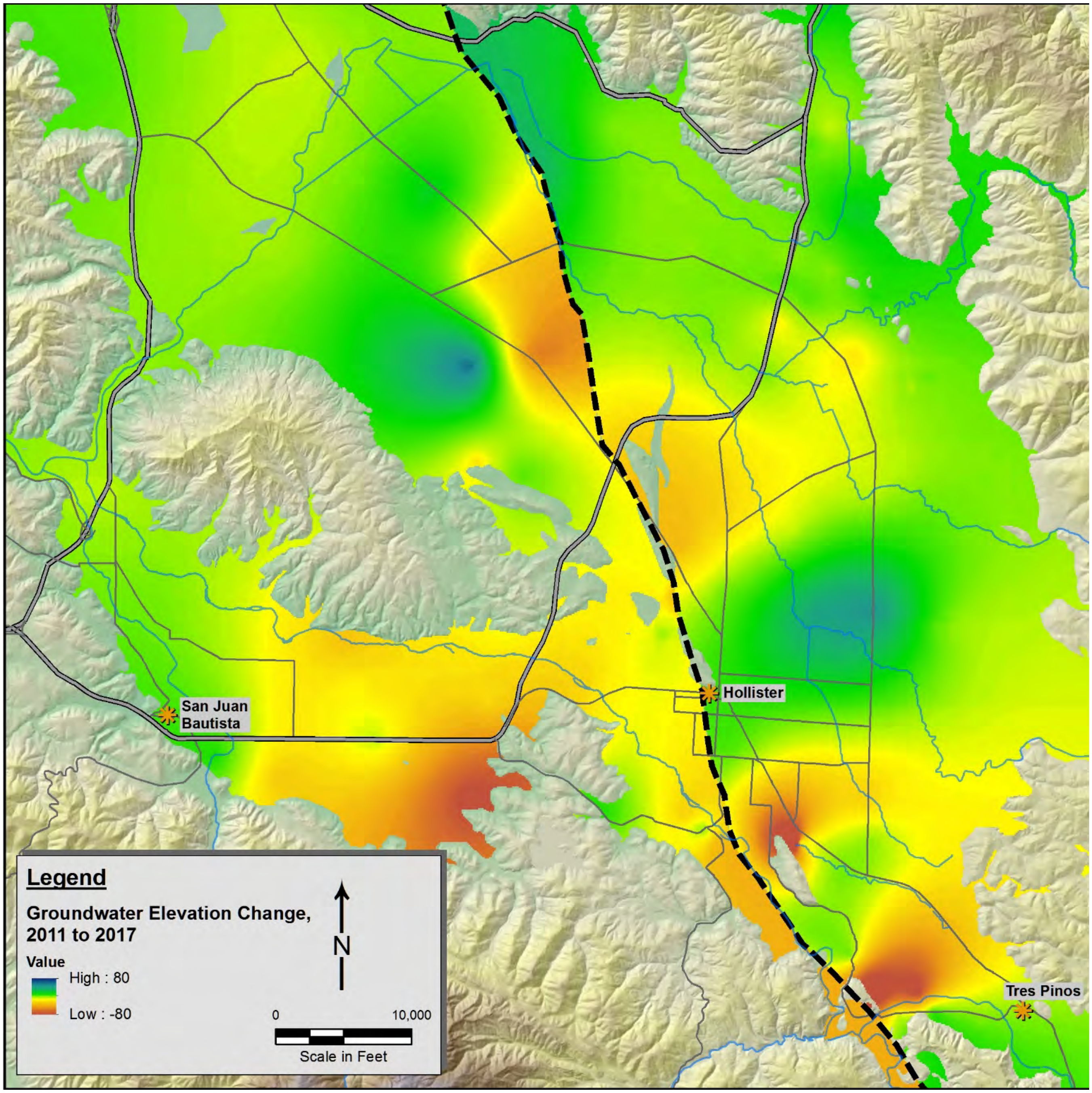


Figure 9. Cumulative Change in Groundwater Elevations 2011-2017



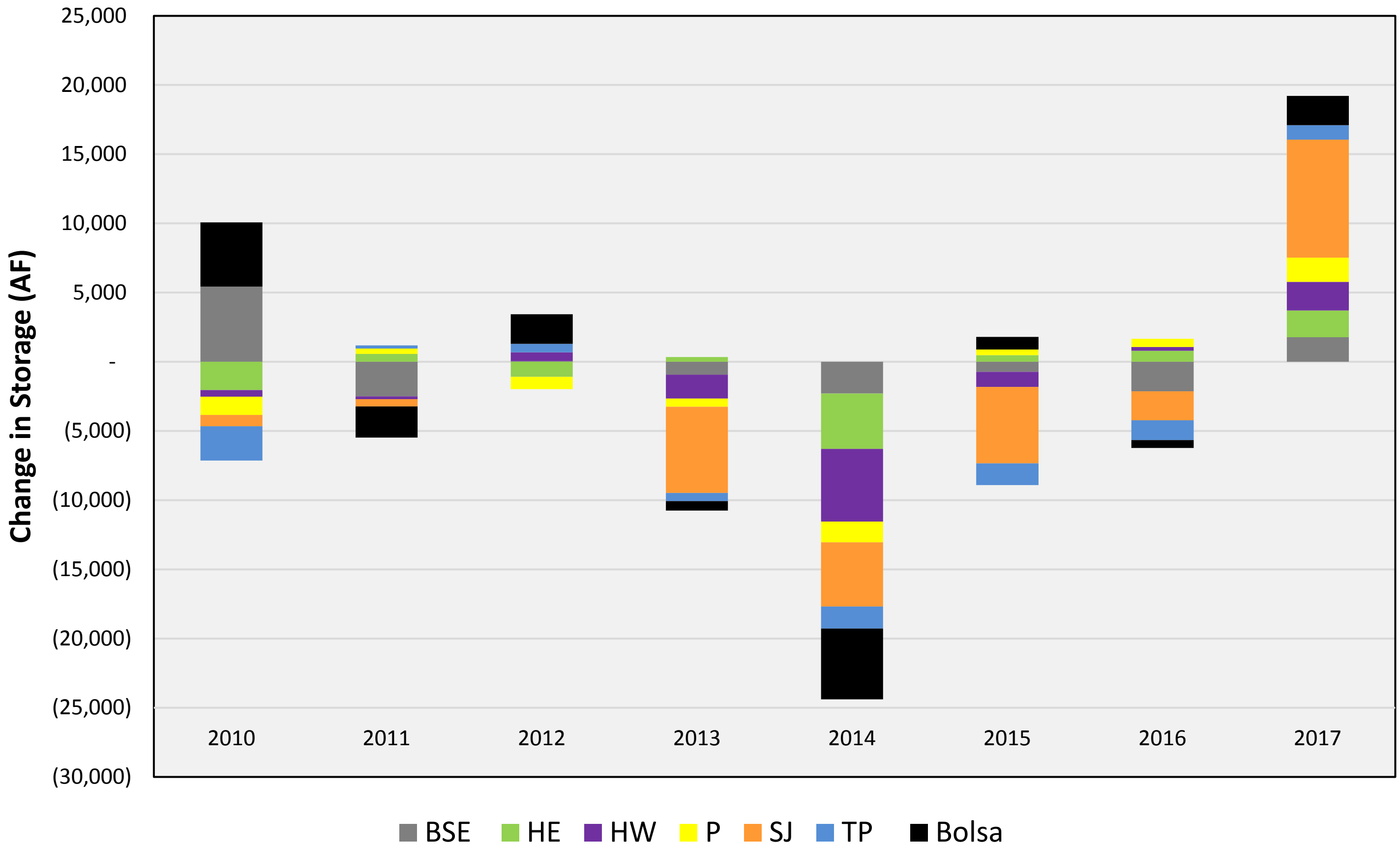
Change in Storage

Groundwater elevation changes from October 2016 to October 2017 were used to determine the change in storage, which is the net volume of water added to or removed from the basin over the water year. The change in storage was calculated using the change in groundwater elevations (feet) and multiplying by the total area (acres) to determine the total bulk volume of change. This bulk volume of change is then multiplied by the average storativity of the subbasin to represent the amount of water that a given volume of aquifer will produce. The storativity values for each subbasin were derived from a numerical model of the basin developed by Yates and Zhang (2001).

The total change in groundwater storage for Zone 6 was an increase of 17,091 AF, while the total change for the basin, including the Bolsa subbasin, was an increase of 19,216 AF. This marks the first year since the beginning of the recent drought when groundwater storage increased in all subbasins. While all subbasins showed increased storage this year, average groundwater elevations in all subbasins continue to be below the elevations when the current drought began in 2011. Average subbasin groundwater elevations compared to 2011 are still more than 27 feet lower in Tres Pinos, more than 20 feet lower in San Juan, 18 feet lower in Bolsa SE, and more than 16 feet lower in Hollister West. **Figure 10** illustrates the change in storage by subbasin for the past eight years.

The change in storage analysis and subsequent calculations are highly dependent on how many and which wells are monitored from year to year. As noted above and in past years, the number of monitored wells has diminished and the set of monitored wells has been unstable. These two factors increase the uncertainty of subbasin-wide storage change estimates because actual groundwater elevation changes cannot be effectively distinguished from apparent fluctuations related to variations in which wells are monitored. In some subbasins and some years, the effects of variations in the monitoring well network have more influence on the average change in groundwater elevations than do measured differences. Stabilization of the year-to-year monitoring well network is necessary for valid assessment of change in storage.

Figure 10. Change in Storage by Subbasin (2010-2017)



Hydrographs

Long term changes in groundwater elevations are illustrated in composite hydrographs. These composite hydrographs are generated by averaging elevations from key wells from each subbasin for each monitoring event. The key well locations are shown on **Figure 11.** It should be noted that these subbasin hydrographs represent average conditions in each subbasin and illustrate long-term trends, but do not show localized variations in groundwater elevations. Overall, groundwater elevations do not indicate overdraft conditions as of 2017.

Groundwater elevations in most subbasins have shown a decrease over the multi-year drought consistent with increased pumping and decreased storage. **Figure 12** shows the composite hydrographs. While precipitation in 2017 was higher than the long-term average, it will be some time before groundwater elevations recover to pre-drought levels. Some factors that will determine the length of recovery include not only precipitation but groundwater use, pattern and intensity of rainfall, local geology (that would affect how much time recharge travels from the surface to the aquifer), and any managed recharge activities (like wastewater percolation).

Figure 11. Locations of Key Wells Used in Hydrographs

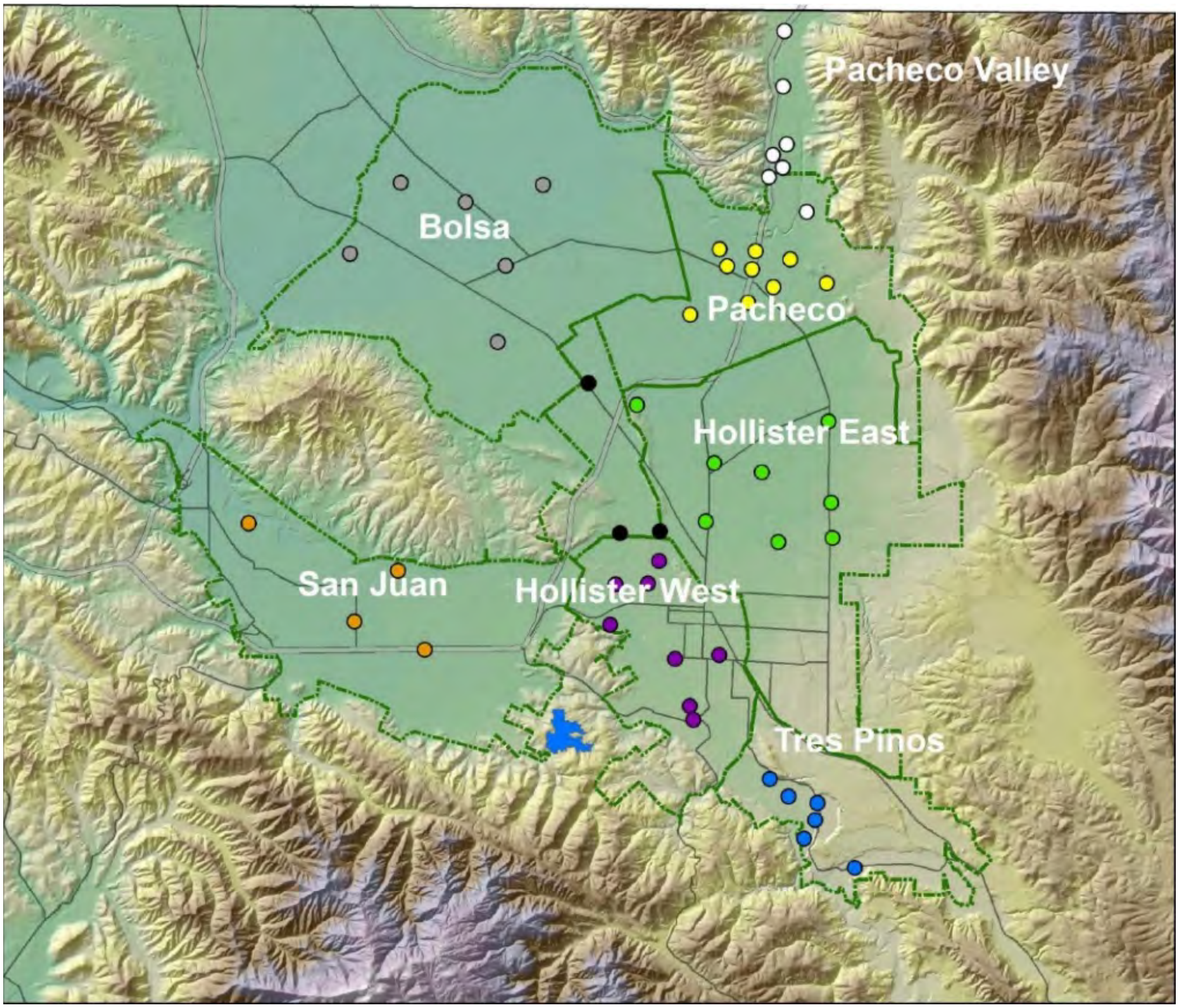
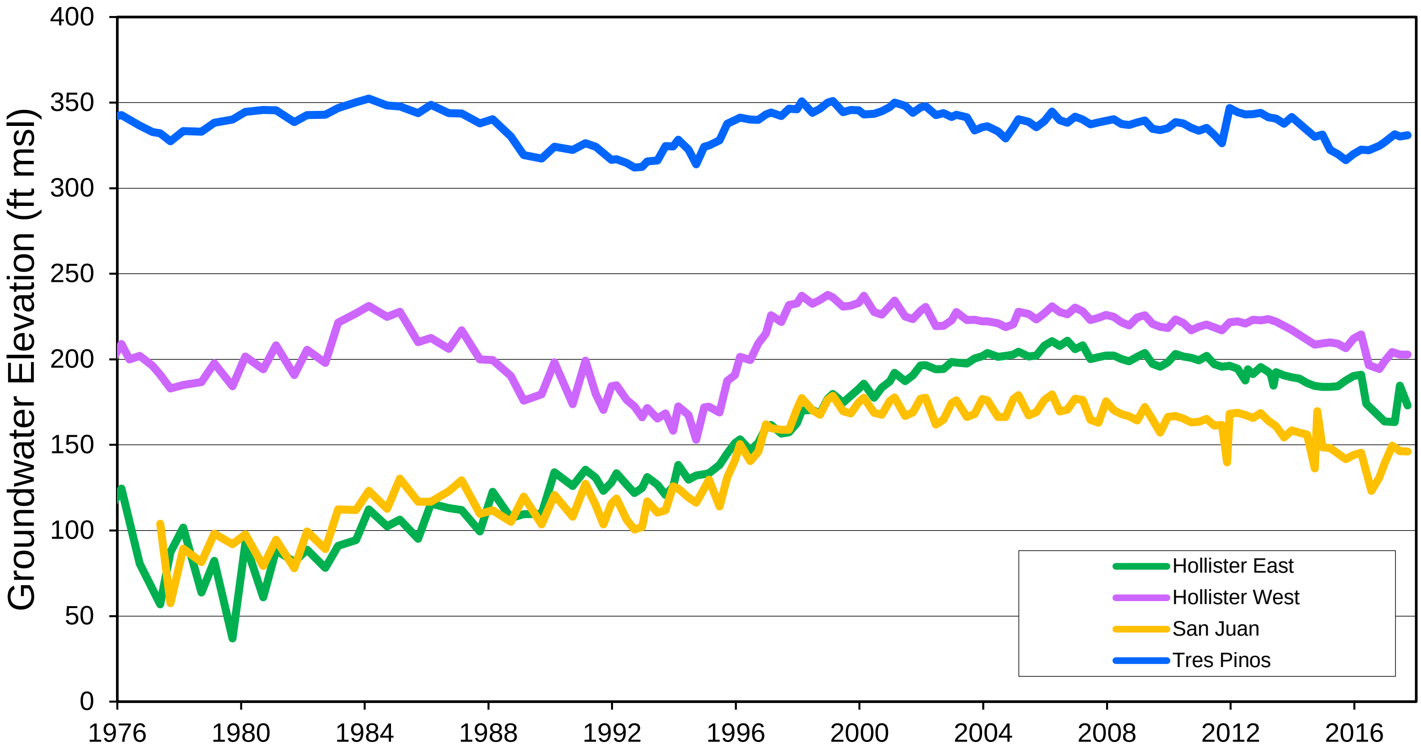
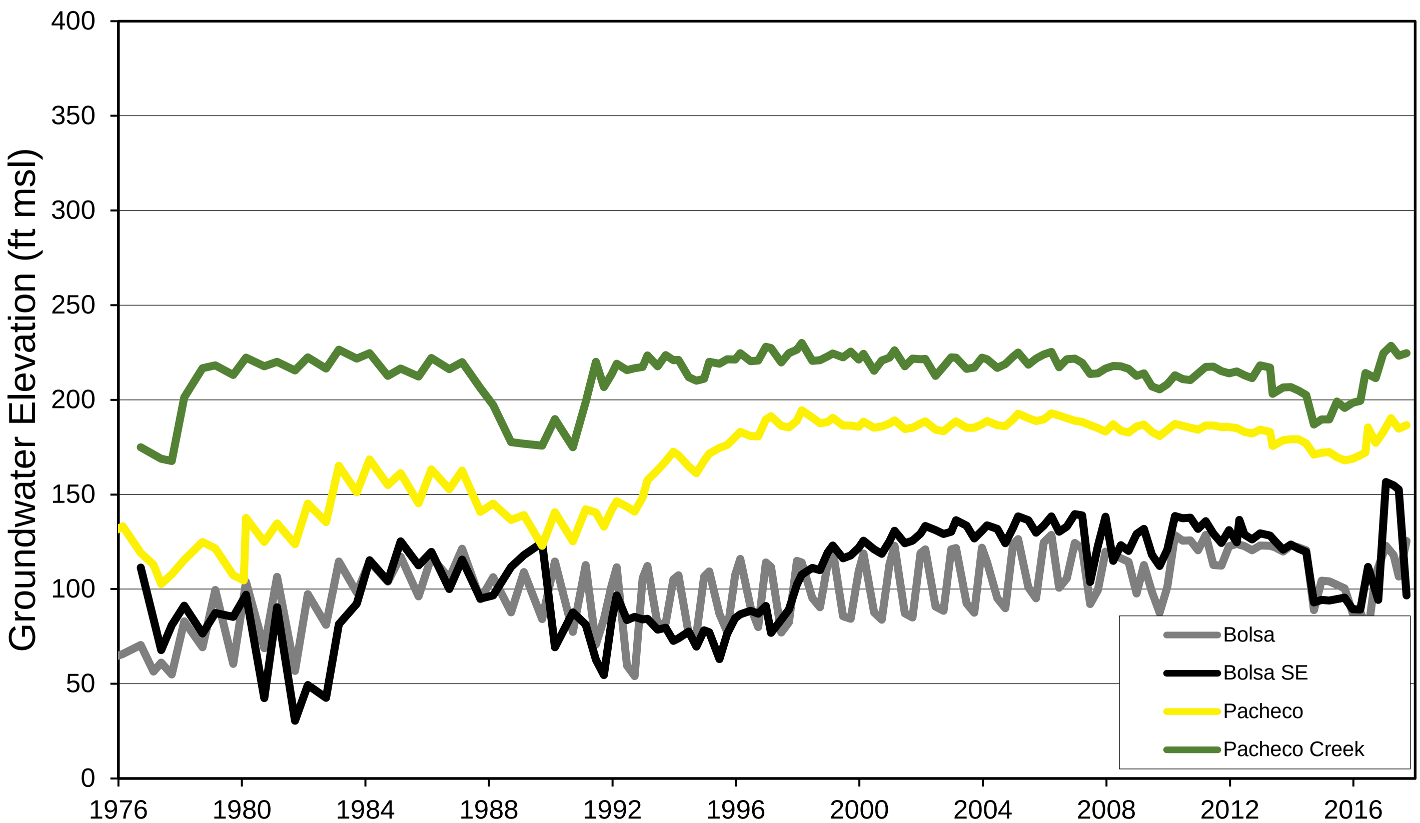


Figure 12. Composite Hydrographs





6 WATER BALANCE

The water balance provides a quantitative assessment of the state of the basin, including estimates of specific inflows and outflows for each individual subbasin, including the subbasins with Zone 6 supply (San Juan, Bolsa SE, Pacheco, Hollister East and West, and Tres Pinos) and the adjacent Bolsa, Paicines, and Tres Pinos Creek Valley subbasins. This detailed understanding of the groundwater system can serve as a basis to evaluate changes in the basin over time and develop tools for groundwater basin management. As in 2014, the soil moisture balance model (based on the 2010 updated land use) was employed to estimate various water balance inflows and confirm outflows. The estimated water balance from 2015 through 2017 is shown in **Tables 5 through 7.** Details on the water balance methodology can be found in Appendix G.

Future water balance analyses, including the water balances required by SGMA, will be conducted according to SGMA regulations and Best Management Practices. Water balances will be assessed according to DWR basin definitions. In addition, an updated hydrogeologic conceptual model and improved numerical model will provide comprehensive simulations of historical, current, and sustainable conditions. Comparison of newly simulated conditions to historical conditions and estimated water balances (in terms of differences between simulated and observed groundwater elevations and flows) will allow identification of data gaps and uncertainties and systematic review and adjustment of water balance analyses.

Inflows

Many inflows to the basin are controlled by hydrologic conditions. Natural stream percolation and deep percolation from rainfall are directly related to the volume and distribution of rainfall. Flow into reservoirs is controlled by stream discharge rates, and releases from reservoirs are a function mostly of stream inflow and available storage. Because they are related to rainfall, these three inflows are generally higher in wet years and lower in dry years. There are five major sources of inflow to the subbasins in Zone 6 and the wider groundwater basin. These include:

- **Natural stream percolation** – Natural stream percolation occurs in every subbasin except Bolsa Southeast (which lacks significant streams) and is most substantial in subbasins with large streams, such as Pacheco, Hollister West and San Juan. Stream percolation varies considerably from year to year depending on rainfall and groundwater elevations. Stream percolation is controlled primarily by the permeable channel area of the waterway and the rate of infiltration. These two variables change over time in response to factors including depth to groundwater, such that shallow groundwater levels and reduced availability of groundwater storage space can limit the volume of inflow.

- **Percolation of reservoir and CVP releases** – Reservoir releases from Hernandez and Paicines Reservoir flow to Zone 3 and Zone 6 via Tres Pinos Creek and the San Benito River. CVP releases occurred in 2017 to off-stream ponds in Hollister West and Pacheco subbasins. The percolation amounts in the Tres Pinos, Hollister West, Pacheco, and San Juan subbasin are estimated separately. Relative to natural percolation, percolation from reservoir releases is less affected by seasonal conditions because it occurs during the dry season after natural streamflow has ceased. However, it ceases entirely in prolonged drought when surface water becomes unavailable.

- **Deep percolation (from rainfall and/or irrigation)** – Deep percolation from the root zone to the water table is estimated separately for rainfall and irrigation. Rainfall percolation varies significantly on an annual basis, while irrigation percolation remains relatively steady. Rainfall deep percolation is dependent on the volume of rainfall, temporal and areal distribution of rainfall, crop type/land cover, and soil type. Percolation from irrigation depends on crop type and irrigation efficiency; it generally does not change significantly from year to year. However, sustained trends in cropping patterns and irrigation techniques could have a noticeable effect over time.

- **Percolation of reclaimed water** – Percolation of reclaimed water in wastewater disposal ponds occurs in three subbasins (San Juan, Hollister West, and Tres Pinos) at facilities operated by the City of Hollister, SSCWD, and Tres Pinos County Water District. Reclaimed water percolation has been relatively low since 2012 (and certainly since the 2003 peak) because of changes in water treatment plant operations and water conservation measures.

- **Subsurface groundwater inflow** –Groundwater can also flow between adjacent subbasins. While significant uncertainty exists in calculating subsurface flow, groundwater elevation gradients were used to estimate the volumes of flow into and between each subbasin. As groundwater flow directions have not changed significantly over the past few years, estimated groundwater inflow and outflow also have not changed significantly.

Outflows

Major outflows from the subbasins in Zone 6 and surrounding area are groundwater pumping (agricultural, M&I, and domestic) and subsurface outflow.

- **Agricultural groundwater pumping** – Agricultural pumping is dependent not only on cropping patterns and irrigation practices, but also on the volume of CVP imports and the amount and timing of rainfall; spring rains decrease total irrigation demand, and growers adjust pumping to compensate for changes in the availability of CVP imports.

- **Municipal pumping** is largely concentrated in the Hollister West, Hollister East, and Tres Pinos subbasins. Pumping by major municipal providers is measured, as is pumping by smaller community water systems in Zone 6. Domestic pumping is not measured.

- **Groundwater subsurface outflow** was calculated along with subsurface inflow. As with subsurface inflow, volumes did not change significantly over time.

- **River and creek outflow** – Discharges from the aquifer to surface water bodies generally occur along the San Benito River in San Juan Subbasin during wet years and along streams in the Hollister and Bolsa subbasins, including Pacheco Creek and Tequisquita Slough. Outflow to streams has not been evaluated systematically on a basin-wide basis. However, such outflow will need to be evaluated in the GSP along with identification of groundwater-dependent ecosystems (GDEs) and establishment of minimum thresholds to avoid undesirable results on GDEs.

Agricultural groundwater pumping is currently measured using hour meters on irrigation wells in Zone 6 and is estimated for surrounding areas based on the soil moisture balance and crop water demands. The duration of pumping at each well is multiplied by the pumping rate of the well to obtain the volume pumped. However, those pumping estimates have consistently been substantially less than estimates based on the soil moisture balance and crop water demands, which is the estimate that has always been used to estimate pumping outside of Zone 6. To be consistent with past annual reports, the agricultural pumping reported is used in the water balance. Future water balances will be prepared consistent with SGMA guidelines, and development of accurate estimates of pumping over the entire DWR defined subbasins may involve a well metering program for all but small wells (with *de minimis* pumping) followed by annual reporting.

Change in Storage

The water balance tables (**Tables 5 through 7**) include two estimates of storage change: the calculated difference between inflows and outflows and the previously-described estimate based on changes in measured groundwater elevations. Both methods rely on assumptions; the inflows and outflows approach is the sum of all individually-estimated water balance components and the groundwater elevation difference approach relies on the quality of groundwater elevation data and on general estimates of storativity. The potential net inaccuracy in these methodologies is illustrated by the difference between the estimates of change in storage that result from each. In 2017, the difference between the water balance inflows and outflows indicated a change in storage that is significantly greater than the change in storage estimated through water level changes. This difference could be indicative of real-world processes, such as a lag between the recharge to the ground surface and the rise in groundwater levels due to migration through the unsaturated zone. Other possible reasons for this discrepancy are more indicative of data gaps. For example, storativity values used to estimate volume from change in water levels may not accurately reflect the average conditions of each subbasin. In addition, the geographic distribution of wells in the water level network may not adequately represent recharge areas.

As a matter of perspective over the past three years, water conditions in the basin have changed significantly in response to drought followed by wet years and data collection has diminished; these changes combine to reduce the reliability of both analytical methods and to increase uncertainty. To improve the water balance and conceptual understanding of the basin, additional data collection and quality control—along with a comprehensive numerical model to test assumptions—would provide tools for increasing the reliability of the change in storage estimates.

Water Balance Conclusions

The water balance trends tend to track the hydrologic trends in the basin. In wet years, there is more recharge and less groundwater pumping and in dry years, the reverse is true. During the past three years, the basin has begun to show recovery from the most recent drought. Inflows increased significantly from 2015 to 2017. In 2015, inflows were reduced to the second lowest volume since 2006 and outflows were high because there was limited imported water for irrigation. By 2017, inflows were the highest since 2006 and outflows decreased as CVP imports resumed.

Tables 5 through 7 show the individual components of the water balance from Water Years 2015, 2016, and 2017. Figure 9 shows the water balance components over time.

The process of preparing the water balance provides important feedback on the availability and accuracy of the data collected and managed by the District. Two important data quality issues, presented in the 2014 report, are repeated here:

1. The soil moisture budget used to calculate return flows for agricultural and natural areas relies on reference evapotranspiration, crop types, crop coefficients, soil type and irrigation efficiency to determine the volume of water that percolates to the aquifer in each subbasin. As an intermediate step, the process also calculates the irrigation water demand of the irrigated lands. The calculated water demand is significantly greater than the reported groundwater use and CVP delivery data. Because the reported groundwater use is based on estimated power use and appears to be far lower than the water demand for the reported crops, the actual groundwater use may be significantly greater than the values reported.

2. The number of wells with available groundwater elevation data has decreased over time due to technical issues. Without a robust, spatially distributed network, the change in storage values may not represent the local or regional state of the subbasins. The storativity distribution is also largely unknown. Variations in storativity could greatly affect the calculated change in groundwater volume.

The SGMA process will provide an opportunity to revise the monitoring networks and improve these critical data sets. The District's GSP preparation will update the hydrogeologic conceptual model (including the water balance), update and improve the numerical model, and develop robust monitoring networks (e.g., for groundwater elevations, water use, and water quality) to aid in long term groundwater management.

Figure 13. Water Balance for Zone 6 and the Bolsa (2006-2017)

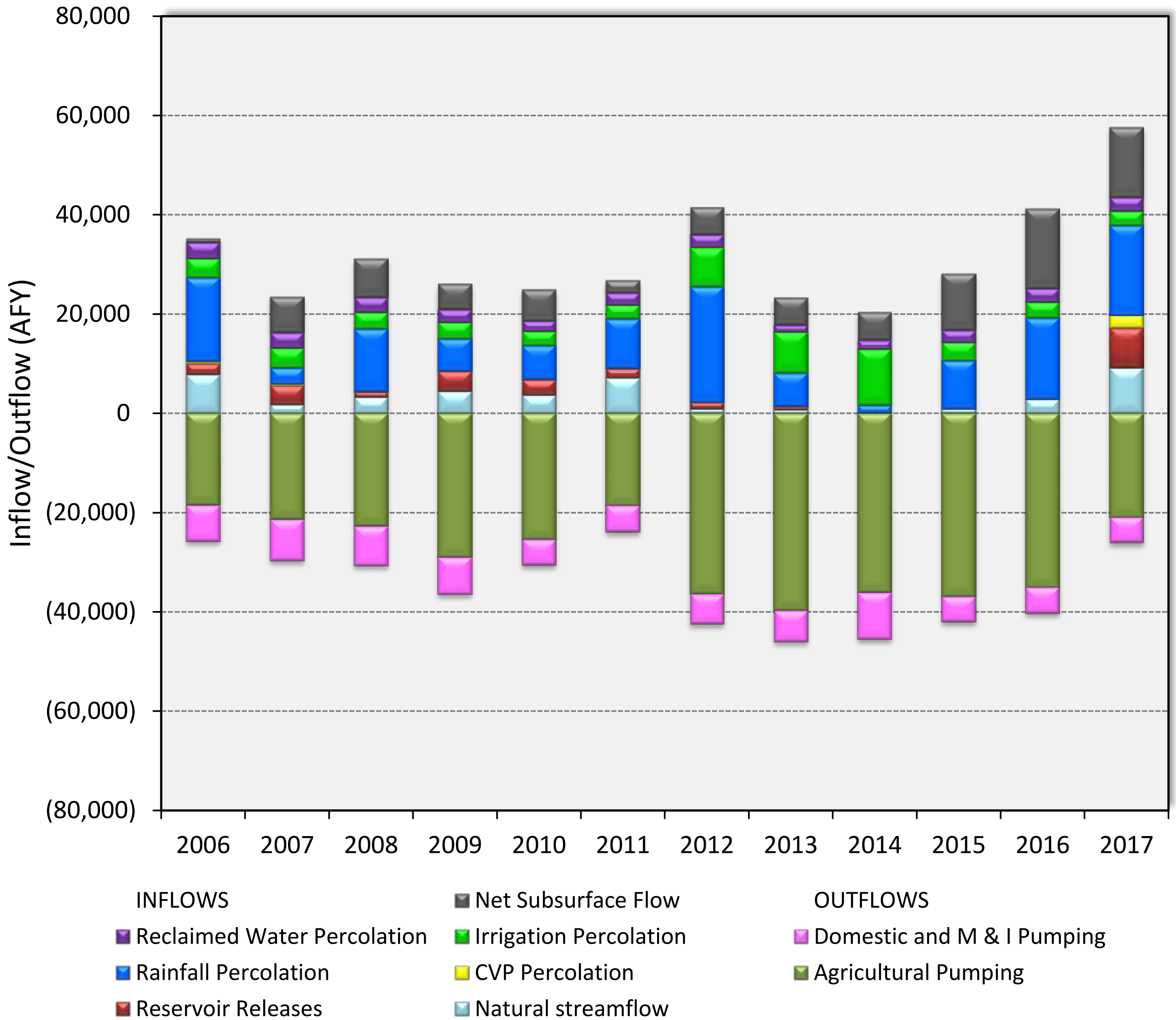


Table 5. Water Balance for Water Year 2015 (AFY)

	Pacheco	Bolsa Southeast	San Juan	Hollister West	Hollister East	Tres Pinos	Zone 6 Subtotal	Bolsa	Paicines	Tres Pinos Creek Valley	Grand Total
Inflows											
Stream percolation											
Natural streamflow	494	0	52	63	266	21	896	0	0	66	962
Reservoir releases			0	0		0	0	0	0	0	0
CVP Percolation	0	0	0	0	0	0	0	0	0	0	0
Deep percolation through soils											0
Rainfall	1,145	519	3,163	911	1,593	395	7,726	2,033	245	59	10,064
Irrigation	519	205	1,039	367	593	112	2,835	771	118	36	3,760
Reclaimed water percolation	0	0	2,255	44	0	200	2,499	0	0	0	2,499
Groundwater inflow	2,647	5,398	49	4,288	4,101	2,310	18,793	6,866	0	--	17,791
Total	4,805	6,123	6,557	5,672	6,553	3,038	32,749	9,671	363	161	42,943
Outflows											**0**
Wells											0
Agricultural	4,124	2,396	12,280	2,636	6,334	1,459	29,229	7,712	1,176	356	38,472
Domestic and M & I	155	5	459	2,094	896	1,489	5,099	0	0	0	5,099
Groundwater outflow	1,913	3,485	11	5,398	2,080	1,379	14,266	0	500	2,310	17,349
Total	6,193	5,886	12,750	10,128	9,310	4,327	48,594	7,712	1,676	2,310	60,291
Storage change											**0**
Inflows - outflows	(1,387)	237	(6,193)	(4,456)	(2,756)	(1,289)	(15,845)	1,959	(1,313)	(2,149)	(17,348)
Water level change	388	(719)	(5,530)	(1,090)	492	(1,579)	(8,040)	915	(1,455)	(2,574)	(11,155)

Adjustments

Agriculutral pumping is based on reported groundwater use

Adjusted the K used in the Darcy equation to calibration (2015-2017)

Table 6. Water Balance for Water Year 2016 (AFY)

	Pacheco	Bolsa Southeast	San Juan	Hollister West	Hollister East	Tres Pinos	Zone 6 Subtotal	Bolsa	Paicines	Tres Pinos Creek Valley	Grand Total
Inflows											
Stream percolation											
Natural streamflow	1,346	0	336	147	923	49	2,801	0	1,406	859	5,066
Reservoir releases			0	0		0	0	0	0	0	0
CVP Percolation	0	0	0	0	0	0	0	0	0	0	0
Deep percolation through soils											0
Rainfall	1,627	726	5,496	1,301	2,789	780	12,718	3,750	517	114	17,098
Irrigation	457	166	840	317	525	94	2,400	712	117	35	3,264
Reclaimed water percolation	0	0	2,398	208	0	200	2,806	0	0	0	2,806
Groundwater inflow	2,841	4,142	109	6,908	3,985	2,859	20,843	8,055	0	--	17,791
Total	6,271	5,034	9,178	8,881	8,222	3,981	41,567	12,517	2,039	1,008	57,131
Outflows											**0**
Wells											0
Agricultural	4,220	2,533	13,084	2,036	5,518	522	27,912	7,123	1,165	352	36,552
Domestic and M & I	167	25	497	1,996	865	1,701	5,251	0	0	0	5,251
Groundwater outflow	2,578	1,909	14	4,142	2,338	1,877	12,857	0	500	2,859	17,349
Total	6,964	4,467	13,595	8,173	8,720	4,100	46,019	7,123	1,665	3,211	58,018
Storage change											**0**
Inflows - outflows	(693)	566	(4,417)	708	(498)	(119)	(4,452)	5,394	374	(2,203)	(887)
Water level change	604	(2,139)	(2,086)	282	789	(1,427)	(3,977)	(578)	424	161	(3,970)

Adjustments

Agriculutral pumping is based on reported groundwater use

Rainfall percolation is reduced by 25%, to reflect additional runoff during intense storms

Adjusted the K used in the Darcy equation to calibration (2015-2017)

Table 7. Water Balance for Water Year 2017 (AFY)

	Pacheco	Bolsa Southeast	San Juan	Hollister West	Hollister East	Tres Pinos	Zone 6 Subtotal	Bolsa	Paicines	Tres Pinos Creek Valley	Grand Total
Inflows											
Stream percolation											
Natural streamflow	3,537	0	1,464	1,410	1,844	952	9,207	0	657	2,398	12,261
Reservoir releases			1,955	2,158	0	3,863	7,976	0	847	0	8,823
CVP Percolation	340	0	0	2,209	0	0	2,549	0	0	0	2,549
Deep percolation through soils											
Rainfall	1,888	689	5,399	1,474	3,199	943	13,592	4,546	1,943	492	20,573
Irrigation	438	156	811	310	477	96	2,288	624	102	33	3,048
Reclaimed water percolation	0	0	2,310	228	0	208	2,746	0	0	0	2,746
Groundwater inflow	3,081	4,317	74	6,775	3,663	2,610	20,520	5,916	0	0	17,791
Total	9,284	5,162	12,013	14,562	9,183	8,672	58,877	11,087	3,549	2,923	76,435
Outflows											
Wells											0
Agricultural	2,904	1,399	6,914	971	2,192	347	14,727	6,245	1,025	328	22,324
Domestic and M & I	52	3	980	1,554	658	1,840	5,088	0	0	0	5,088
Groundwater outflow	1,667	1,465	16	4,317	2,595	2,332	12,392	0	500	2,610	17,349
Total	4,623	2,867	7,910	6,842	5,445	4,519	32,207	6,245	1,525	2,937	42,914
Storage change											
Inflows - outflows	4,661	2,295	4,103	7,720	3,738	4,153	26,670	4,842	2,024	(14)	33,522
Water level change	1,736	1,767	8,531	2,084	1,939	1,034	17,091	2,125	976	2,060	22,253

Adjustments

Agricultural pumping is based on reported groundwater use for Zone 6, land use for outside Zone 6

Rainfall percolation is reduced by 66%, to reflect additional runoff during intense storms

Adjusted the K used in the Darcy equation to calibration (2015-2017)

Sreams in Bolsa were assumed to percolate rain water; this is included under deep percolation

Streamflows exceeding 30 cfs in San Benito River was assumed to flow out of the basin and flows exceeding 10 cfs in smaller creeks were assumed to flow out of the basin

7 FINANCIAL INFORMATION

The District derives its operating revenue from charges levied on landowners and water users. Non-operating revenue is generated from property taxes, interest, standby and availability charges, and grants. Zone 6 charges, relating to the importation and distribution of CVP water, are the focus of this section.

The groundwater charge for Zone 6 water users reflects costs associated with groundwater monitoring and management, including the cost of purchasing CVP water and power charges associated with percolation. The per-acre-foot charge is determined by dividing these costs by the volume of groundwater usage. Groundwater charges are adjusted annually in March. For March 2017-February 2018, the District rates are $6.45 for agricultural use and a groundwater charge of $24.25 for M&I use.

The District has also calculated the groundwater charge for the next USBR water year (March 2018-February 2019). The detailed calculation is shown in Appendix F; the District recommends that rates increase to $7.95 for agricultural use in Zone 6. A groundwater charge of $24.25 is recommended for M&I use in Zone 6.

CVP rates (provided by the USBR) include the cost of service, restoration fund payment, charges for maintenance of San Luis Delta Mendota Water Authority facilities, and other fees (the breakdown is found in Appendix F). The District's San Felipe rates (paid by users) include a standby and availability charge, power charge, and a water charge. The standby and availability charge is a $6 per-acre charge assessed on all parcels with access to CVP water (an active or idle turnout from the distribution system). Power charges depend on the location of user. **Table 8a and b,** on the following page, shows the District San Felipe water and power charges, respectively, for the Water Years 2017-2018 and 2018-2019.

Table 8a. District San Felipe Water Charges 2017-2018 and 2018-2019

Blue Valve Water Charge ($/af)				
Year	Agricultural			Municipal & Industrial
	Non - Full Cost	Full Cost (1a)	Full Cost (1b)	
2017-2018	$191.00	$364.00	$382.00	$363.00
2018-2019	$272.00	$445.00	$463.00	$363.00

Table 8b. District San Felipe Power Charges 2017-2018 and 2018-2019

Blue Valve Power Charge ($/acre-foot)	2017-2018	2018-2019
Subsystem 2	$126.80	$130.60
Subsystem 6H	$77.90	$80.25
Subsystem 9L	$113.25	$116.65
Subsystem 9H	$167.45	$172.45
All other subsystems	$68.05	$70.10

Notes:

1 "Full-cost rates for agricultural users apply to landholders that have exceeded his/her or its non full-cost entitlement. There are two full-cost rates:

a. Section 202(3) - the lower full-cost rate, which applies to qualified recipients leasing in excess of their 960-acre entitlement, limited recipients that received Reclamation irrigation water on or before October 1, 1981, and extended recordable contracts.

There are currently no Zone 6 full-cost users under this section.

b. Section 205(a)(3) - the higher full-cost rate, which applies to prior law recipients leasing in excess of their applicable no full-cost entitlement, and limited recipients that did not receive Reclamation irrigation water on or before October 1, 1981.

See Section 202(3) or 205(a)(3) of RRA Rules and Regulations for further non-full-cost definitions.

Recycled Water rates (**Table 9)** were set through 2017 to recover current operating and maintenance costs related to the water service. Recycled water rates include those costs associated with water supply, water quality, and infrastructure (SBCWD February 2015).

Table 9. Recycled Water Charges, 2016-2017

Recycled Water		
Effective	Agriculture Rate	Power Charge
3/1/2016	$182.55	$57.70
3/1/2017	$183.45	$59.45

Rates for water year 2018-2019 have not yet been adopted.

Development of a GSP by the District will be followed by expanded monitoring and management, with annual reporting and GSP updates every five years, consistent with SGMA. This will entail increased costs for operation and maintenance; during the GSP development process, the District will explore financial measures to support SGMA compliance equably across the managed subbasins.

8 OUTLOOK

La Niña

The next water year, 2017-2018, is expected to be a weak La Niña year. The National Weather Service (NWS) is predicting that precipitation will be normal or slightly below normal for Northern California for most of the winter and spring (NWS 2017). We note that even average precipitation will aid in the replenishment of the groundwater basins and perhaps translate to higher CVP allocations.

CVP Deliveries

The annual allocation of CVP water remains uncertain. In past years, San Luis & Delta Mendota Water Authority (SLDMWA) has forecasted CVP allocation for the next year. SLDWMA no longer publishes estimated allocation in the fall. Many factors affect the allocation, including environmental considerations in the Delta, seniority of CVP water rights on water ways, reduced snowpack due to climate change, debt to the State Water Project System and other factors. The District must continue to use its existing tools (and continue to develop new management tools) to secure a reliable water supply despite variable CVP allocations.

Groundwater

In 2017, groundwater storage increased throughout most of the basin as a result of the very wet winter. However, groundwater elevations have not recovered yet to pre-drought levels. Multiple years of normal to above-normal rainfall and restored CVP supply will be needed to replenish groundwater storage.

Current groundwater storage is sufficient to accommodate water demand in the short term even with negative water budgets, and the capacity for groundwater recovery in subsequent wet years is sufficient to balance moderate increases in groundwater pumping without causing long-term overdraft. However, resumption of drought and reduced CVP supply entail a real risk of overdraft.

9 RECOMMENDATIONS

The water supply outlook is mixed. While precipitation is expected to be average—with promise of some replenishment--the state's and the basin's water resources have been depleted by years of drought that will require additional years to recover. The District should continue to move forward with plans and projects to ensure a more sustainable water supply system that includes a portfolio of sources.

Groundwater Sustainability. The District plans to begin GSP preparation early in 2018. As summarized in the SGMA section of this report, this preparation should progress systematically throughout the various tasks of: compilation and review of data, development of a hydrogeologic conceptual model and water budgets, update and extension of the groundwater model, evaluation of sustainability criteria, identification of management actions and development of monitoring networks and protocols. The entire process will occur with agency collaboration and stakeholder involvement to improve groundwater management. The District should proceed with its request to DWR for basin consolidation.

Groundwater Charges. Based on the methodology used since 2006, the groundwater charge for the USBR contract year (March 2018-February 2019) is recommended to be $7.95 for agricultural use in Zone 6 and a groundwater charge of $24.25 is recommended for M&I use in Zone 6.

G**roundwater Production and Replenishment.** District percolation operations helped to reverse historical overdraft and then accumulate a water supply reserve. The District currently manages groundwater storage and surface water to minimize excessively high or low groundwater elevations on a temporal and geographic basis. In 2017, storage in Hernandez Reservoir was effectively replenished and substantial releases were made to aid the recovery of groundwater levels in portions of the basin with persistent low groundwater elevations, like Tres Pinos, Hollister West, and San Juan. Such replenishment activities should be continued into 2018, with use of the District's new operations planning tool. In addition, in 2017 the District provided off-channel percolation of CVP water; this too should be continued given availability of CVP water and persistence of low groundwater levels. Given the decreased reliability of imported supplies and continuing threat of drought, such timely and intensive replenishment operations are critical to sustainable groundwater supply.

Groundwater Monitoring. The number of wells in both the groundwater elevation network and water quality network has declined over time. The District plans to improve the monitoring network and redouble efforts to monitor a stable network of wells on a regular basis. In addition, it will expand monitoring to cover the entire GSA area. If for some reason wells are no longer part of the network, they should be replaced as soon as possible with a nearby, comparably-constructed well that can serve as a permanent addition to the network.

10 REFERENCES

California Department of Water Resources. November 1979. Evaporation from water surfaces in California. Bulletin 74-79. Sacramento, CA.

California Irrigation Management Information System (CIMIS), http://www.cimis.water.ca.gov/, station 126, Last accessed: November 20,2017.

California State Water Resources Control Board, Water Conservation Portal - Conservation Reporting, http://www.waterboards.ca.gov/water_issues/programs/conservation_portal/conservation_reporting.shtml, Last Accessed November 20, 2017.

Jones & Stokes Associates CH2M Hill, Groundwater Management Plan for the San Benito County Part of Gilroy-Hollister Groundwater Basin, April 1998.

Kennedy/Jenks Consultants, Groundwater Management Plan Update for the San Benito County Part of Gilroy-Hollister Groundwater Basin, July 2003.

National Weather Service (NWS) Climate Prediction Center, Prognostic Discussion for Monthly Outlook, http://www.cpc.ncep.noaa.gov/products/predictions/long_range/ , Last Accessed Nov 20, 2017.

San Benito County Water District, Notice of Proposed Recycled Water Rates for May 1, 2015, February 2015.

San Luis & Delta-Mendota Water Authority (SLDMWA), Water Supply Reports, November 2017, http://www.sldmwa.org/operations/water-supply-reports/

Todd Engineers/Groundwater, San Benito County Annual Groundwater Report. Water Years 2006-2016.

Todd Groundwater, San Benito County Salt and Nutrient Management Plan, 2013.

US Bureau of Reclamation, Central Valley Project (CVP) Water Quantities, 2016 Allocation. http://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=48986

Yates, G. and C-M Zhang, Groundwater flow and solute transport models for the San Benito County portion of the Gilroy-Hollister groundwater basin. May 11. Davis, CA, and Denver, CO. Prepared for San Benito County Water District and San Benito County Planning Department, Hollister, CA, 2001.

A REPORTING REQUIREMENTS AND SPECIAL TOPICS

List of Tables

The San Benito County Water District Act (1953) is codified in California Water Code Appendix 70. Section 70-7.6 authorizes the District Board of Directors to require the District to prepare an annual groundwater report; this report addresses groundwater conditions of the District and its zones of benefit for the water year, which begins October 1 of the preceding calendar year and ends September 30 of the current calendar year. The Board has consistently ordered preparation of Annual Reports, and the reports have included the contents specified Section 70-7.6:

- An estimate of the annual overdraft for the current water year and for the ensuing water year
- Information for the consideration of the Board in its determination of the annual overdraft and accumulated overdraft as of September 30 of the current year
- A report as to the total production of water from the groundwater supplies of the District and its zones as of September 30 of the current year
- Information for the consideration of the Board in its determination of the estimated amount of agricultural water and the estimated amount of water other than agricultural water to be withdrawn from the groundwater supplies of the District and its zones
- The amount of water the District is obligated to purchase during the ensuing water year
- A recommendation as to the quantity of water needed for surface delivery and for replenishment of the groundwater supplies of the District and its zones during the ensuing water year
- A recommendation as to whether or not a groundwater charge should be levied in any zone(s) of the District in the ensuing water year and if so, a rate per acre-foot for all water other than agricultural water for such zone(s)
- Any other information the Board requires.
- The full text of Appendix 70, Section 70-7.6 through 7.8 is enclosed at the end of this appendix.
- Each water year a special topic is identified for further consideration. These topics have included water quality, salt loading, shallow wells, and others. Additional analyses and documentation provided in previous annual reports are summarized in the following table.

Table A-1. Special Topics in Previous Annual Reports

Water Year	Additional Analyses and Reporting
2000	Methodology to calculate water supply benefits of Zone 3 and 6 operations
2001	Preliminary salt balance
2002	Investigation of individual salt loading sources
2003	Documentation of nitrate in supply wells, drains, monitor wells, San Juan Creek
2004	Documentation of depth to groundwater in shallow wells
2005	Tabulation of waste discharger permit conditions and recent water quality monitoring results
2006	Rate study
2007	Water quality update
2008	Water budget update
2009	Water demand and supply
2010	Water quality update
2011	Water budget update
2012	Land use update
2013	Water quality update
2014	Water balance update and Groundwater Sustainability
2015	Groundwater Sustainability – Basin Boundaries and GSAs
2016	Water quality update
2017	Water budget update

Water Code Appendix 70 Excerpts

Section 70-7.6. Groundwater; investigation and report: recommendations San Benito County

Sec. 7.6. the board by resolution require the district to annually prepare an investigation and report on groundwater conditions of the district and the zones thereof, for the period from October 1 of the preceding calendar year through September 30 of the current year and on activities of the district for protection and augmentation of the water supplies of the district and the zones thereof. The investigation and report shall include all of the following information:

(a) Information for the consideration of the board in its determination of the annual overdraft.

(b) Information for the consideration of the board in its determination of the accumulated overdraft as of September 30 of the current calendar year.

(c) A report as to the total production of water from the groundwater supplies of the district and the zones thereof as of September 30 of the current calendar year.

(d) An estimate of the annual overdraft for the current water year and for the ensuing water year.

(e) Information for the consideration of the board in its determination of the estimated amount of agricultural water and the estimated amount of water other than agricultural water to be withdrawn from the groundwater supplies of the district and the zones thereof for the ensuing water year.

(f) The amount of water the district is obligated to purchase during the ensuing water year.

(g) A recommendation as to the quantity of water needed for surface delivery and for replenishment of the groundwater supplies of the district and the zones thereof the ensuing water year.

(h) A recommendation as to whether or not a groundwater charge should be levied in any zone or zones of the district during the ensuing year.

(i) If any groundwater charge is recommended, a proposal of a rate per acre-foot for agricultural water and a rate per acre-foot for all water other than agricultural water for such zone or zones.

(j) Any other information the board requires.

(Added by Stats. 1965, c. 1798,p.4167, 7. Amended by Stats.1967,c.934, 5, eff. July27,1967; Stats. 1983, c. 402, 1; Stats. 1998, c. 219 (A.B.2135), 1.)

Section 70-7.7. Receipt of report; notice of hearing; contents; hearing

Sec. 7.7. (a) On the third Monday in December of each year, the groundwater report shall be delivered to the clerk of the board in writing. The clerk shall publish, pursuant to Section 6061 of the Government Code, a notice of the receipt of the report and of a public hearing to be held on the second Monday of January of the following year in a newspaper of general circulation printed and published within the district, at least 10 days prior to the date at which the public hearing regarding the groundwater report shall be held. The notice shall include, but is not limited to, an invitation to all operators of water producing facilities within the district to call at the offices of the district to examine the groundwater report.

(b) The board shall hold, on the second Monday of January of each year, a public hearing, at which time any operator of a water-producing facility within the district, or any person interested in the condition of the groundwater supplies or the surface water supplies of the district, may in person, or by representative, appear and submit evidence concerning the groundwater conditions and the surface water supplies of the district. Appearances also may be made supporting or protesting the written groundwater report, including, but not limited to, the engineer's recommended groundwater charge.

(Added by Stats. 1965, c. 1798, p. 4167, 8. Amended by Stats. 1983, c. 02,2; Stats. 1998, c. 219 (A.B.2135,2.)

Section 70-7.8. Determination of groundwater charge; establishment of rates; zones; maximum charge; clerical errors

Sec. 7.8. (a) Prior to the end of the water year in which a hearing is held pursuant to subdivision (b) of Section 7.7, the board shall hold a public hearing, noticed pursuant to Section 6061 of the government Code, to determine if a groundwater charge should be levied, it shall levy, assess, and affix such a charge or charges against all persons operating groundwater- producing facilities within the zone or zones during the ensuing water year. The charge shall be computed at fixed and uniform rate per acre-foot for agricultural water, and at a fixed and uniform rate per acre-foot for all water other than agricultural water. Different rates may be established in different zones. However, in each zone, the rate for agricultural water shall be fixed and uniform and the rate for water other than agricultural water shall be fixed and uniform. The rate for agricultural water shall not exceed one-third of the rate for all water other than agricultural water.

(b) The groundwater charge in any year shall not exceed the costs reasonably borne by the district in the period of the charge in providing the water supply service authorized by this act in the district or a zone or zones thereof.

(c) Any groundwater charge levied pursuant to this section shall be in addition to any general tax or assessment levied within the district or any zone or zones thereof.

(d) Clerical errors occurring or appearing in the name of any person or in the description of the water-producing facility where the production of water there from is otherwise properly charged, or in the making or extension of any charge upon the records which do not affect the substantial rights of the assesse or assesses, shall not invalidate the groundwater charge.

(Added by Stats. 1965, c. 1798, p. 4168, 9. Amended by Stats. 1983, c. 402, 3; Stats.1983, c. 402, 3; Stats. 1998, c. 219 (A.B.2135), 3.)

B CLIMATE DATA

List of Tables and Figures

Table B-1. Monthly Precipitation at the SBCWD CIMIS Station (inches)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL	% Normal
1996	0.1	0	2.2	4.4	4.5	1.6	1.3	1.3	0	0	0	0	15.5	120%
1997	1.0	3.2	4.3	6.8	0.2	0.1	0.2	0	0.1	0	0	0	15.9	123%
1998	0.2	3.8	2.6	4.9	9.1	2.7	2.3	2.4	0.1	0	0	0.1	28.1	218%
1999	0.5	1.9	0.8	2.5	2.5	1.5	0.7	0.1	0.1	0	0	0	10.6	82%
2000	0.1	1.0	0.1	4.1	4.5	0.7	0.4	0.5	0.1	0	0	0	11.5	89%
2001	3.5	0.8	0.2	2.9	2.8	0.6	2.2	0	0	0	0	0	13.1	101%
2002	0.7	11.5	11.9	0.7	1.2	1.6	0.4	0.3	0	0	0	0	28.1	218%
2003	0.0	1.7	5.0	0.8	1.4	1.1	3.1	0.1	0	0	0.1	0	13.1	102%
2004	0.2	0.6	5.3	1.3	4.2	0.6	0.3	0.1	0	0	0	0	12.5	97%
2005	2.0	0.5	3.5	2.5	2.9	3.4	0.8	0.6	0.4	0	0	0	16.7	129%
2006	0.1	0.3	3.1	1.5	1.0	5.0	1.7	0.4	0	0	0	0	13.0	101%
2007	0.2	0.7	1.7	0.6	2.2	0.3	0.6	0	0	0	0	0.4	6.7	52%
2008	0.7	0.7	0.9	4.6	2.1	0.1	0.1	0	0	0	0	0	9.1	70%
2009	0.3	1.1	1.9	0.4	3.7	1.8	0.2	0.5	0	0	0	0.2	10.0	77%
2010	0.5	0	1.3	2.3	2.2	1.7	3.4	0.6	0	0	0	0	12.1	94%
2011	0.7	1.9	2.6	1.6	2.6	2.3	0.2	0.8	0	0	0	0	13.0	100%
2012	0.7	1.0	0.1	0.8	0.5	2.3	1.4	0.3	0	0	0	0	7.1	55%
2013	0.0	2.2	1.2	1.4	0.6	0.5	0.3	0.0	0	0	0	0	6.3	49%
2014	0.1	0.4	0.2	0.2	1.9	1.6	0.9	0.0	0	0	0	0	5.4	41%
2015	1.6	0.5	5.8	0.0	1.2	0.2	0.2	0.9	0.0	0.0	0.1	0.1	10.6	82%
2016	0.2	3.7	1.6	4.0	0.6	3.7	0.8	0.1	0.1	0.1	0.1	0.1	14.9	115%
2017	1.8	2.5	3.3	4.7	6.1	1.7	1.1	0.5	0.3	0.0	0.0	0.0	21.9	170%
AVG	**0.6**	**1.5**	**2.2**	**2.6**	**2.3**	**2.1**	**1.0**	**0.4**	**0.1**	**0.0**	**0.0**	**0.2**	**12.9**	**104%**

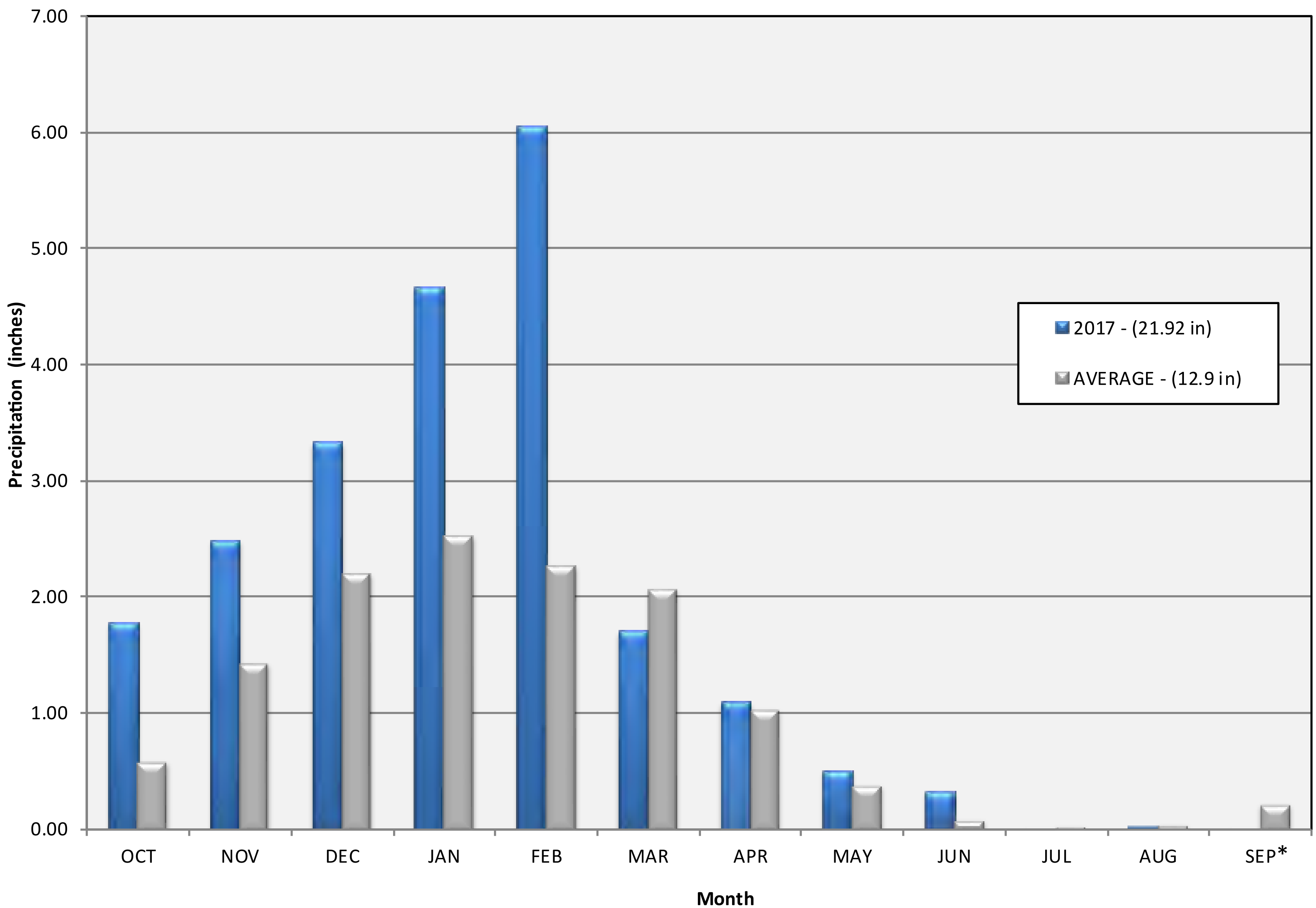
Note: The averages are for the available period of record, starting in 1875 for precipitation and 1995 for reference evapotranspiration.
The CIMIS value for September 2017 (2.4") includes measurement error due to irrigation overspray. The corrected District value is 0".

Table B-2. Reference Evapotranspiration at the SBCWD CIMIS Station (inches)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL	% Normal
1996	3.9	2.2	1.2	1.5	1.9	3.7	5.1	6.1	6.7	7.4	6.7	4.7	51.0	104%
1997	3.8	1.8	1.4	1.4	2.5	4.3	5.8	7.5	7.1	7.2	6.7	5.7	55.2	113%
1998	3.9	1.8	1.5	1.3	1.4	2.8	4.3	4.5	5.3	6.9	6.8	4.7	45.2	92%
1999	3.5	1.7	1.5	1.5	1.8	3.0	4.7	5.8	6.7	6.9	5.9	4.7	47.8	98%
2000	4.0	2.0	1.9	1.2	1.6	3.7	5.1	6.0	6.7	6.7	6.2	4.7	50.0	102%
2001	2.9	1.7	1.5	1.5	1.8	3.1	3.9	6.2	6.5	6.0	6.2	4.8	46.0	94%
2002	3.5	1.9	1.2	1.5	2.3	3.7	4.2	6.4	7.1	7.2	6.1	5.4	50.5	103%
2003	3.6	1.9	1.3	1.6	1.8	3.9	3.8	6.0	6.5	7.3	6.2	5.1	48.8	100%
2004	4.1	1.7	1.2	1.3	1.7	4.0	5.2	6.4	6.7	6.6	6.0	5.3	50.3	103%
2005	3.1	1.7	1.4	1.3	1.7	3.0	4.4	5.7	6.4	6.9	6.1	4.6	46.2	94%
2006	3.6	2.0	1.2	1.4	2.2	2.4	3.0	5.5	6.4	7.0	5.6	4.4	44.7	91%
2007	3.3	1.7	1.4	1.8	1.8	4.1	4.8	6.3	6.9	6.8	6.5	4.7	49.8	102%
2008	3.5	2.2	1.4	1.3	2.0	3.8	5.2	6.0	6.9	6.7	6.3	5.0	50.2	103%
2009	3.8	1.9	1.4	1.7	1.7	3.5	4.8	5.5	6.3	7.1	6.3	5.3	49.3	101%
2010	3.5	2.2	1.7	1.3	1.8	3.5	3.9	5.4	6.7	6.3	5.9	5.0	47.0	96%
2011	3.0	1.9	1.1	1.6	2.1	2.7	4.4	5.3	6.0	6.6	5.7	4.6	45.0	92%
2012	3.3	1.9	1.8	1.8	2.5	3.3	4.4	6.4	6.8	6.6	6.0	4.6	49.5	101%
2013	3.3	1.8	1.2	1.5	2.1	3.7	5.4	6.3	6.4	6.5	6.0	4.8	48.8	100%
2014	3.5	2.0	1.8	2.1	1.9	3.6	4.9	6.8	6.6	6.4	6.0	4.7	50.4	103%
2015	3.9	1.9	1.5	1.8	2.2	4.1	5.1	5.0	6.4	6.5	6.5	5.3	50.2	102%
2016	4.1	2.1	1.4	1.3	2.7	3.4	4.7	5.7	7.5	7.2	5.7	5.2	51.0	104%
2017	3.4	2.1	1.5	1.6	1.8	3.7	4.5	6.3	6.8	7.6	6.0	5.2	50.4	103%
AVG	3.6	1.9	1.4	1.5	2.0	3.5	4.6	6.0	6.6	6.8	6.2	4.9	49.0	100%

Note: The averages are for the available period of record, starting in 1875 for precipitation and 1995 for reference evapotranspiration.

Todd Groundwater 12/14/2017



* CIMIS data adjusted for know irrigation near raingage
CIMIS data for September 2017 reflects irrigation occuring at site, not precipitation

December 2017

TODD GROUNDWATER

Figure B-1
Monthly Precipitation
Hollister (2017)

C HYDROLOGICAL DATA

List of Tables and Figures

Table C-1. Groundwater Elevations October 2016 through October 2017

Well Number	Well Depth	Depth to Top	Ground	Subbasin	Key Well	Groundwater Elevations (feet MSL) Oct-16	Jan-17	Apr-17	Jul-17	Oct-17
Bolsa SE										
12-5-09M1	240.00	105.00		BSE	*	115.3		125.8	117.4	115.6
12-5-21Q1	500.00	0.00		BSE	*			260.0	260.0	
12-5-22N1	372.00	250.00		BSE	*	73.3		78.8	80.7	77.7
Hollister East										
12-5-14N1	0.00	0.00		HE	*				229.0	
12-5-22C1	237.00	102.00		HE	*	155.0	163.7	121.9	133.7	146.3
12-5-22J2	355.00	120.00		HE	*	185.5		191.3	190.9	190.1
12-5-23A20	862.00	178.00		HE	*	173.0		177.0	184.7	182.6
12-6-07P1	147.00	0.00		HE		224.1		246.6	244.5	243.9
12-6-18G1	198.00	70.00		HE		257.4	263.7	276.7	275.4	273.6
12-6-30E1	0.00	0.00		HE		347.4	348.8	349.2	347.7	348.9
13-6-07D2	0.00	0.00		HE		335.2	337.6	335.3	335.9	332.9
2317	0.00	0.00		HE		222.7	227.3	223.8	222.7	221.5
ROSSI 1	0.00	0.00		HE		223.2	227.3	235.3	224.0	222.4
Hollister West										
12-5-27E1	175.00	0.00		HW	*	182.3		188.2	183.1	181.7
12-5-28J1	220.00	0.00		HW	*	194.0	195.9	199.6	197.4	198.6
12-5-33E2	121.00	81.00		HW	*	195.3	196.0	202.6	202.9	205.4
12-5-34P1	195.00	153.00		HW	*	193.4	198.3	202.8	201.6	199.3
13-5-03L1	126.00	0.00		HW	*	206.5	208.4	213.2	212.8	211.7
13-5-04B	0.00	0.00		HW		212.8	213.4	213.4	211.5	207.4
13-5-10B1	0.00	0.00		HW	*	195.1	195.5	219.5	218.9	219.6
13-5-10L1	252.00	52.00		HW		312.0	312.0	312.0	312.0	
13-5-11E1	0.00	0.00		HW		239.0	237.0	246.6	274.3	277.9
San Justo 4 (INDART)	0.00	0.00		HW		271.6	271.7	275.1	273.5	272.7
San Justo 6 (ROSE)	0.00	0.00		HW		234.6	235.1	235.6	233.5	231.9
Pacheco										
11-5-26N2	232.00	95.00		P	*	165.4		174.4	170.9	173.6
11-5-26R3	225.00	65.00		P	*	169.6	179.6	185.3	181.1	180.4
11-5-35C1	180.00	0.00		P	*	169.8	172.7	179.8	177.8	176.7
11-5-35G1	230.00	0.00		P	*	172.0	178.3	186.0	184.1	185.1
11-5-35Q3	0.00	0.00		P	*	160.6	164.2	176.0	161.5	159.7
11-5-36C1	98.00	0.00		P	*	187.8	190.4	194.4	176.5	194.3
11-5-36M1	0.00	0.00		P	*	172.7	175.2	189.2	186.4	185.7
11-6-31M2	188.00	155.00		P	*	215.6	221.9	245.5	243.3	241.8
12-5-01G2	300.00	0.00		P		176.6	178.2	182.8	187.9	186.7
12-5-02H5	128.00	42.00		P		169.8		185.0	181.6	178.8
12-5-02L2	170.00	0.00		P		185.6	189.1	198.5	195.6	194.6
12-5-03B1	128.00	100.00		P	*	182.0	182.0	182.0	182.0	182.0
12-6-06K1	260.00	16.00		P		260.0	260.0	260.0	260.0	260.0
12-6-06L4	235.00	50.00		P		213.5	215.3	221.1	220.8	221.6
San Juan										
12-4-17L20	0.00	0.00		SJ		117.8	122.6	124.6	122.8	121.9
12-4-18J1	0.00	0.00		SJ		120.3	122.2	126.6	121.6	121.6
12-4-21M1	250.00	0.00		SJ	*	134.7	139.6	145.3	140.8	139.7
12-4-26G1	876.00	240.00		SJ	*	128.6	138.5	150.8	146.7	145.9
12-4-34H1	387.00	120.00		SJ	*	130.1	138.8	152.4	151.7	152.7
12-4-35A1	325.00	110.00		SJ		150.6	159.4	173.3	167.3	165.5
12-5-30H1	240.00	0.00		SJ		199.2	198.6	199.4	183.5	185.7
13-4-03H1	312.00	168.00		SJ		126.5	137.1	151.2	145.7	146.4
13-4-4A3	0.00	0.00		SJ		163.2	165.6	200.2	198.9	197.9
RIDER BERRY	0.00	0.00		SJ		130.1	142.3	160.4	157.8	155.9

Table C-1. Groundwater Elevations October 2016 through October 2017

Well Number	Well Depth	Depth to Top	Ground	Subbasin	Key Well	Groundwater Elevations (feet MSL)				
						Oct-16	Jan-17	Apr-17	Jul-17	Oct-17
Tres Pinos										
13-5-12D4	0.00	0.00		TP		197.0	236.0	122.0	171.0	169.0
13-5-12K1	0.00	0.00		TP		313.0	314.0	317.0	317.0	
13-5-12N20	352.00	301.00		TP	*	303.0	304.5	309.3	308.4	310.1
13-5-13F1	134.00	30.00		TP	*	324.2	324.9	326.8	324.5	325.7
13-5-13J2	180.00	0.00		TP	*	327.2	328.1	336.7	333.6	330.6
13-6-19J1	340.00	128.00		TP		413.3	414.5	430.8	427.3	428.6
13-6-19K1	211.00	0.00		TP	*	344.8	349.6	353.5	354.5	357.6
13-6-20K1	0.00	0.00		TP			408.1	428.3	427.6	427.5
Bolsa										
11-4-25H1	0.00	0.00		B		86.3		119.3	115.7	114.4
11-4-26B1	642.00	149.00		B	*	126.8		135.4	132.9	131.9
11-4-34A1	100.00	0.00		B	*	128.1		137.0	128.9	127.9
11-5-20N1	300.00	0.00		B	*	72.3		97.7	63.3	
11-5-21E2	220.00	100.00		B		155.0	155.0	155.0	155.0	155.0
11-5-27P2	331.00	67.00		B		165.1	170.8	173.7	169.4	167.3
11-5-28B1	198.00	125.00		B		168.0	168.0	168.0	168.0	168.0
11-5-28P4	140.00	80.00		B		165.0	165.0	165.0	165.0	165.0
11-5-31F1	515.00	312.00		B	*	68.6		69.1	67.6	68.0
11-5-33B1	125.00	0.00		B		169.0	169.0	169.0	169.0	169.0
12-5-05M1	0.00	0.00		B		62.5		59.5	36.3	47.7
12-5-06L1	0.00	0.00		B	*	143.5		150.7	140.9	141.6
12-5-07P1	750.00	360.00		B		20.3	36.0	42.0	35.7	36.7
12-5-17D1	950.00	314.00		B		32.0	44.0			
Paicines										
DONATI 6	0.00	0.00		Paicines				616.6	630.5	631.6
RFP Vineyard 3 (FRANCHIONI)	0.00	0.00		Paicines		657.6		652.7	647.7	646.9
RIDGEMARK 5	0.00	0.00		Paicines		622.9			640.6	639.6
RIDGEMARK 7	0.00	0.00		Paicines		627.4		629.1	627.9	628.7
SCHIELDS 2	0.00	0.00		Paicines				737.0	737.0	
SCHIELDS 4 (vineyard)	0.00	0.00		Paicines		623.2		626.7	624.7	625.7
Pacheco Creek										
11-5-12E1	103.00	52.00		PC	*			241.8	240.6	243.3
11-5-13D1	125.00	0.00		PC	*	221.6	235.7	233.2	229.0	229.3
11-5-24C1	134.00	0.00		PC	*	213.3			214.8	213.9
11-5-24C2	165.00	70.00		PC	*	221.2		229.2	225.6	225.9
11-5-24L1	70.00	0.00		PC	*	206.7	213.6	214.5	209.3	212.7
11-5-25G1	225.00	0.00		PC	*	200.3		224.1	220.9	223.0
Tres Pinos Creek Valley										
1536	0.00	0.00		TPCV		278.0	288.0	283.0	279.0	276.0
DONATI 2	0.00	0.00		TPCV		646.4		654.5	653.6	654.6
GRANITE ROCK WELL 1	0.00	0.00		TPCV		282.7		297.1	300.1	299.6
GRANITE ROCK WELL 2	0.00	0.00		TPCV		290.6		327.8	316.6	314.5
San Justo 5 (WINDMILL)	0.00	0.00		TPCV		275.0	274.8	276.3	274.7	273.9
WILDLIFE CENTER 5	0.00	0.00		TPCV		702.0		708.3	704.8	705.6
Llagas										
11S04E02D008	0.00	0.00		SCVWD		142.2	168.2	157.9	133.7	151.4
11S04E02N001	0.00	0.00		SCVWD		139.0	160.9	146.1	115.7	147.0
11S04E03J002	0.00	0.00		SCVWD		142.3	166.6	151.7	126.7	152.5
11S04E08K002	0.00	0.00		SCVWD		144.1		163.2	156.2	152.5
11S04E10D004	0.00	0.00		SCVWD		141.2	163.0	155.4	137.9	143.8
11S04E15J002	0.00	0.00		SCVWD		130.8	144.0	138.1	121.2	133.0
11S04E17N004	0.00	0.00		SCVWD		145.1	167.6	164.7	150.6	153.7
11S04E21P003	0.00	0.00		SCVWD		133.0	149.3	136.1	128.2	139.2
11S04E22N001	0.00	0.00		SCVWD		128.0	144.5	137.8	123.1	134.6
11S04E32R002	0.00	0.00		SCVWD		121.5	135.3	128.9	116.7	128.0

Table C-2. Groundwater Change Attributes

Subbasin	Subbasin Area (Acres)	Average Storativity
San Juan	11,708	0.05
Hollister West	6,050	0.05
Tres Pinos	4,725	0.05
Pacheco	6,743	0.03
Northern Hollister East	10,686	0.03
Southern Hollister East	5,175	0.03
Bolsa SE	2,691	0.08
Bolsa	20,003	0.01

Table C-3. Groundwater Change in Elevation 2016-2017 (feet)

	Average Change in Groundwater Elevation											
Subbasin	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
San Juan	0.87	(4.49)	0.29	(0.75)	(1.39)	(0.89)	-	(10.66)	(7.95)	(9.45)	(3.56)	14.57
Hollister West	3.13	(1.69)	3.31	(1.43)	(1.58)	(0.66)	2.12	(5.72)	(17.41)	(3.60)	0.93	6.89
Tres Pinos	2.47	(2.34)	0.72	8.10	(10.52)	0.97	2.54	(2.48)	(6.66)	(6.68)	(6.04)	4.38
Pacheco	1.93	(4.41)	(1.36)	8.10	(6.60)	1.92	(4.36)	(2.95)	(7.37)	1.92	2.98	8.58
Northern Hollister East	3.64	(6.51)	(4.21)	10.15	(8.73)	2.72	(2.36)	1.65	(9.10)	0.76	(1.48)	5.82
Southern Hollister East	3.26	(1.46)	5.45	9.39	4.93	(1.94)	(2.18)	(1.14)	(6.87)	1.61	8.13	0.46
Bolsa SE	1.55	(6.78)	11.51	(24.80)	25.29	(11.65)	0.25	(4.27)	(10.68)	(3.34)	(9.94)	8.21
Bolsa	6.79	(3.30)	8.97	(16.86)	23.15	(11.19)	10.72	(3.37)	(25.56)	4.57	(2.89)	10.62

Table C-4. Groundwater Change in Storage 2006-2017 (acre-feet)

	Average Change in Groundwater Storage (AF)											
Subbasin	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
San Juan	510	(2,626)	168	(437)	(811)	(523)	-	(6,239)	(4,653)	(5,530)	(2,086)	8,531
Hollister West	947	(510)	1,001	(431)	(477)	(198)	640	(1,730)	(5,267)	(1,090)	282	2,084
Tres Pinos	584	(553)	169	1,913	(2,485)	228	601	(586)	(1,574)	(1,579)	(1,427)	1,034
Pacheco	391	(892)	(275)	1,639	(1,335)	389	(882)	(597)	(1,490)	388	604	1,736
Northern Hollister East	1,167	(2,087)	(1,350)	3,253	(2,798)	870	(757)	528	(2,918)	242	(474)	1,867
Southern Hollister East	506	(227)	846	1,457	766	(301)	(339)	(177)	(1,067)	250	1,263	72
Bolsa SE	333	(1,458)	2,478	(5,338)	5,443	(2,508)	53	(918)	(2,300)	(719)	(2,139)	1,767
Bolsa	1,358	(659)	1,794	(3,372)	4,631	(2,239)	2,144	(674)	(5,112)	915	(578)	2,125

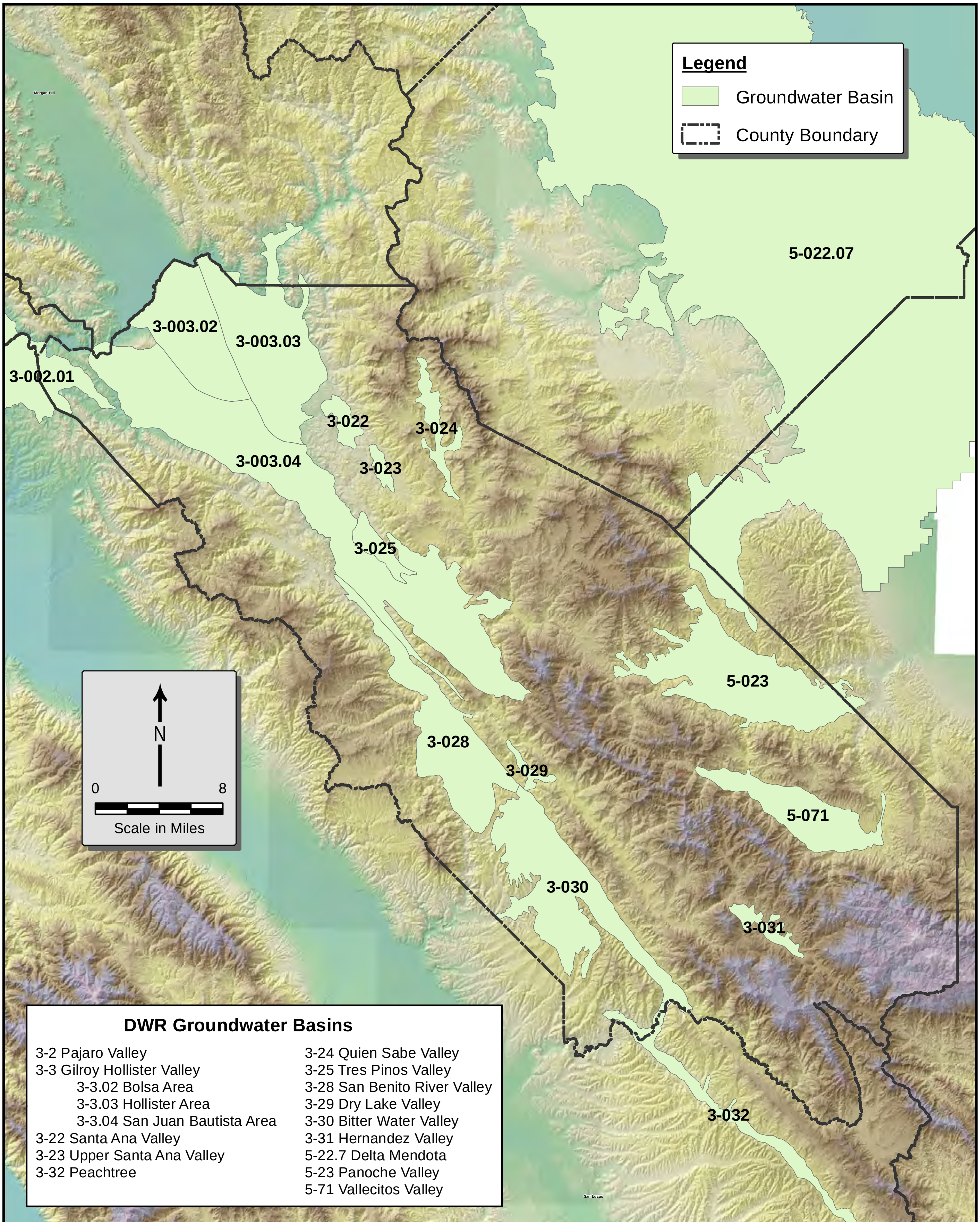


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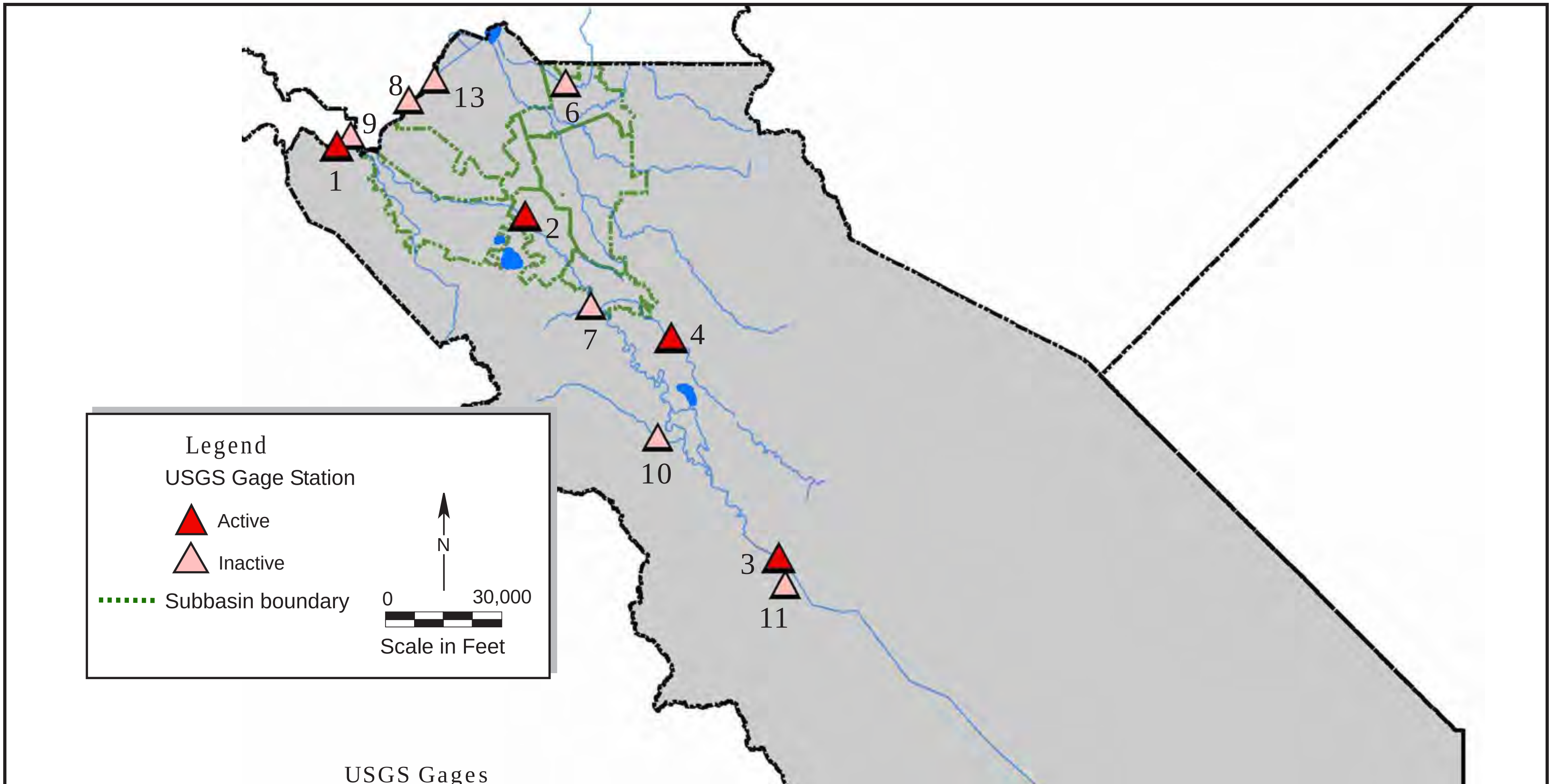
Figure C-1
Groundwater Basins in San Benito County



USGS Gages

Site ID	USGS Number	Site Name	Period of Record	
1	11159000	PAJARO R A CHITTENDEN CA	10/1/1939	Active
2	11158600	SAN BENITO R A HWY 156 NR HOLLISTER CA	10/1/1970	Active
3	11156500	SAN BENITO R NR WILLOW CREEK SCHOOL CA	10/1/1939	Active
4	11157500	TRES PINOS C NR TRES PINOS CA*	12/8/1922	Active
5	11154700	CLEAR C NR IDRIA CA	10/1/1993	Active
6	11153040	PACHECO C A DUNNEVILLE CA	10/1/1981	9/30/1985
7	11158500	SAN BENITO R NR HOLLISTER CA	10/1/1949	9/30/1983
8	11153700	PAJARO R NR GILROY CA	3/1/1959	9/30/1982
9	11158900	PESCADERO C NR CHITTENDEN CA	9/11/1970	9/30/1981
10	11156700	PESCADERO C NR PAICINES CA	7/1/1959	10/7/1970
11	11156450	WILLOW C TRIB NR SAN BENITO CA	7/1/1964	9/30/1969
12	11156000	SAN BENITO R BL M C NR HERNANDEZ CA	10/1/1949	9/30/1963
13	11154500	PAJARO R A SARGENT CA	10/1/1940	9/30/1941

* WY 2006 data for gage height only

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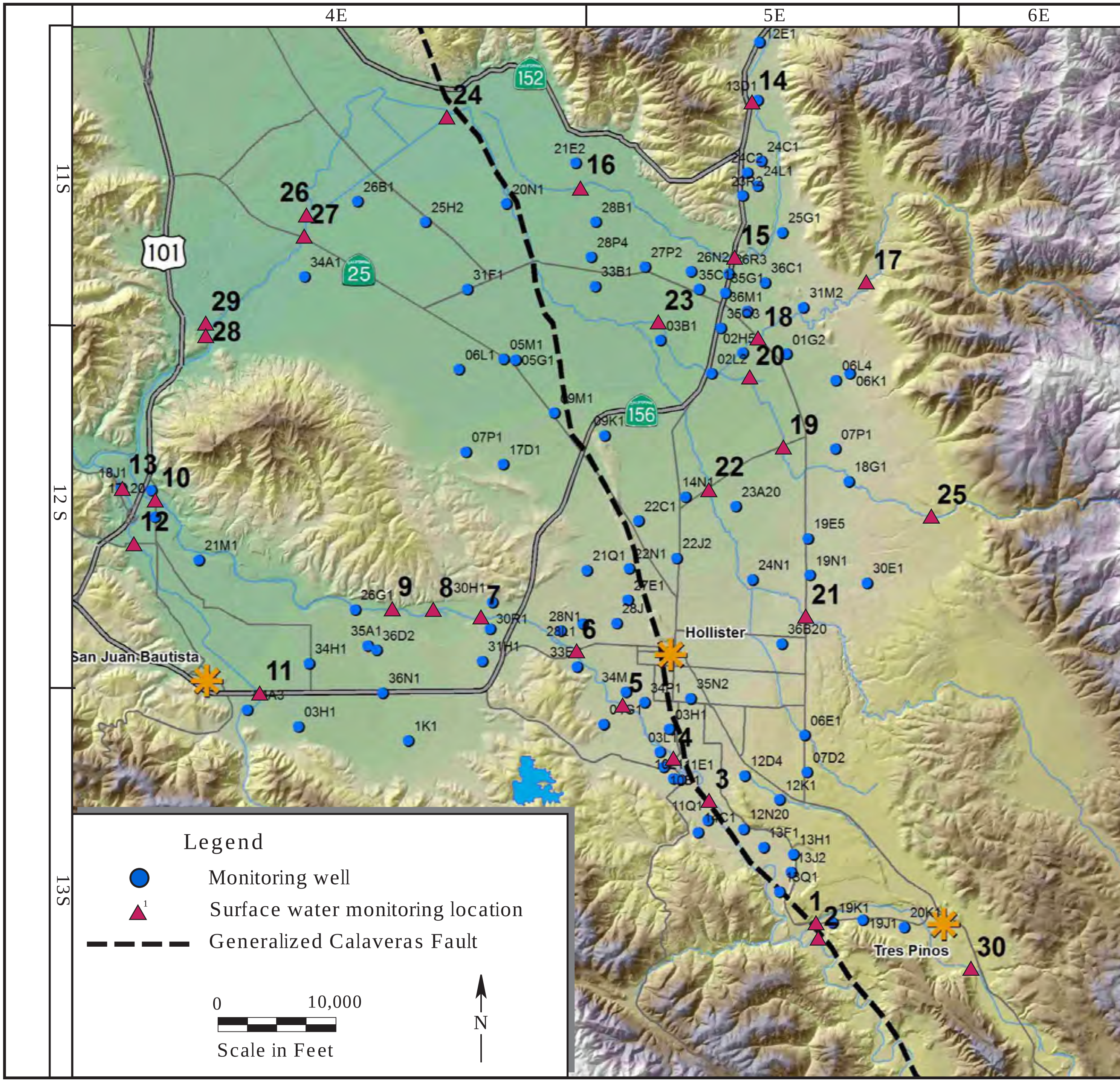
Figure C-2
Location of
Streamflow Stations



▲ Surface Water Monitoring Locations

1. Tres Pinos Cr - Southside Road Bridge (West)
2. San Benito River - KT Road bridge
3. San Benito River - Hospital Road
4. San Benito River - Cienega Road
5. San Benito River - Nash Road
6. San Benito River - Old Highway 156
7. San Benito River - near Mitchell Road
8. San Benito River - near Flint Road
9. San Benito River - upstream of Bixby Road
10. San Benito River - Y Road
11. San Juan Creek - - Highway 156
12. San Juan Creek - Anzar Road
13. San Juan Creek - 2000 ft downstream of Highway101
14. Pacheco Creek - Walnut Avenue
15. Pacheco Creek - Highway 156
16. Pacheco Creek - Lovers Lane
17. Arroyo de las Viboras - Hawkins Ranch driveway
18. Arroyo de las Viboras - Fairview Road
19. Arroyo Dos Picachos - Fallon Road
20. Arroyo Dos Picachos - Aquistapace Road
21. Santa Ana Creek - Fairview Road
22. Santa Ana Creek - Fallon Road
23. Tequisquita Sough - San Felipe Road
24. Millers Canal - 2000 ft downstream of San Felipe Lake
25. Arroyo Dos Picachos - Lone Tree Road
26. Pajaro River - above Millers Canal
27. Pajaro River - Highway 25
28. Pajaro River - below Carnadero Creek
29. Carnadero Creek - above Pajaro River
30. Tres Pinos Creek - Bolado Park

Figure C-3
Monitoring Locations

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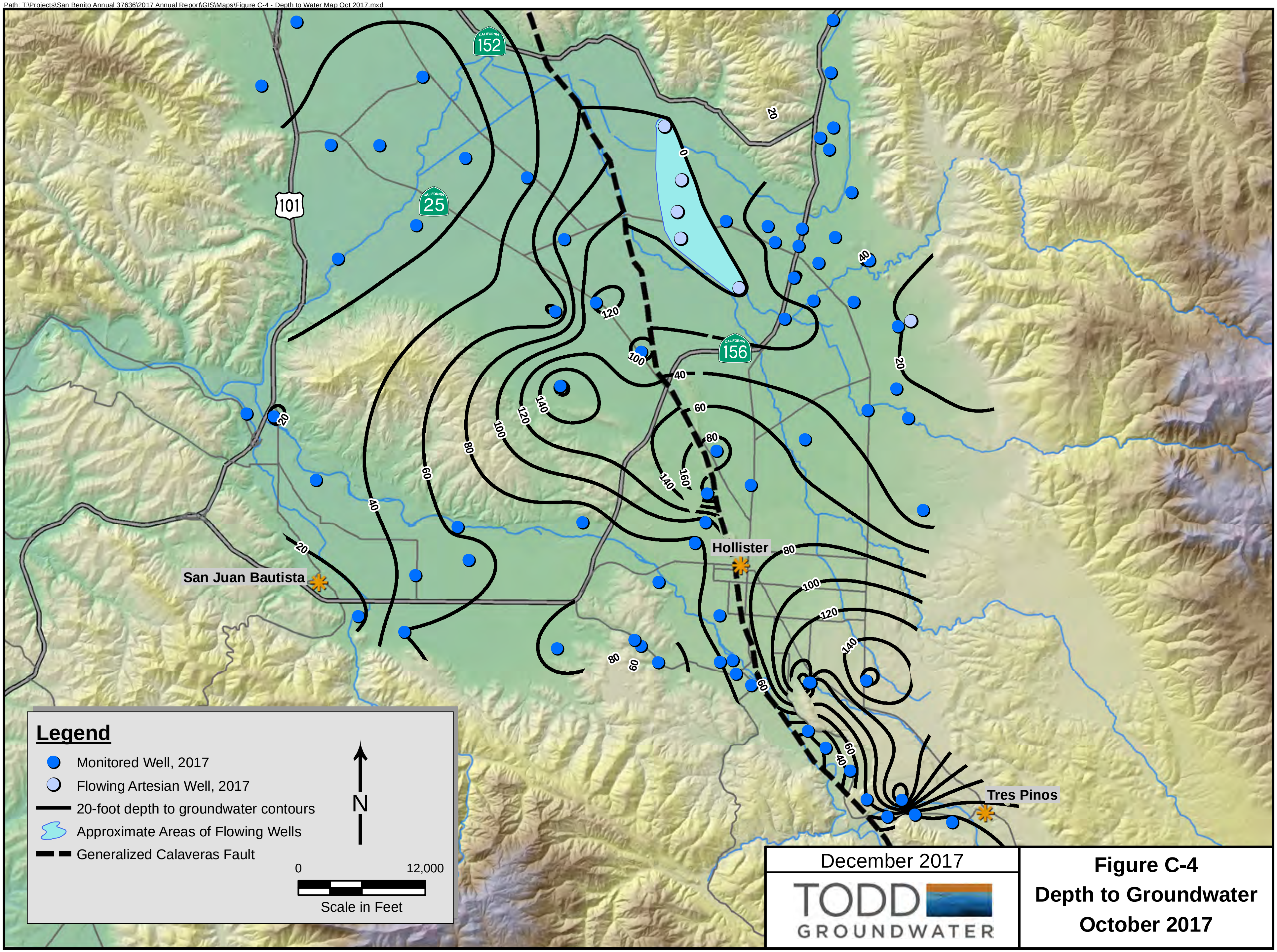
Path: T:\Projects\San Benito Annual 37636\2017 Annual Report\GIS\Maps\Figure C-4 - Depth to Water Map Oct 2017.mxd



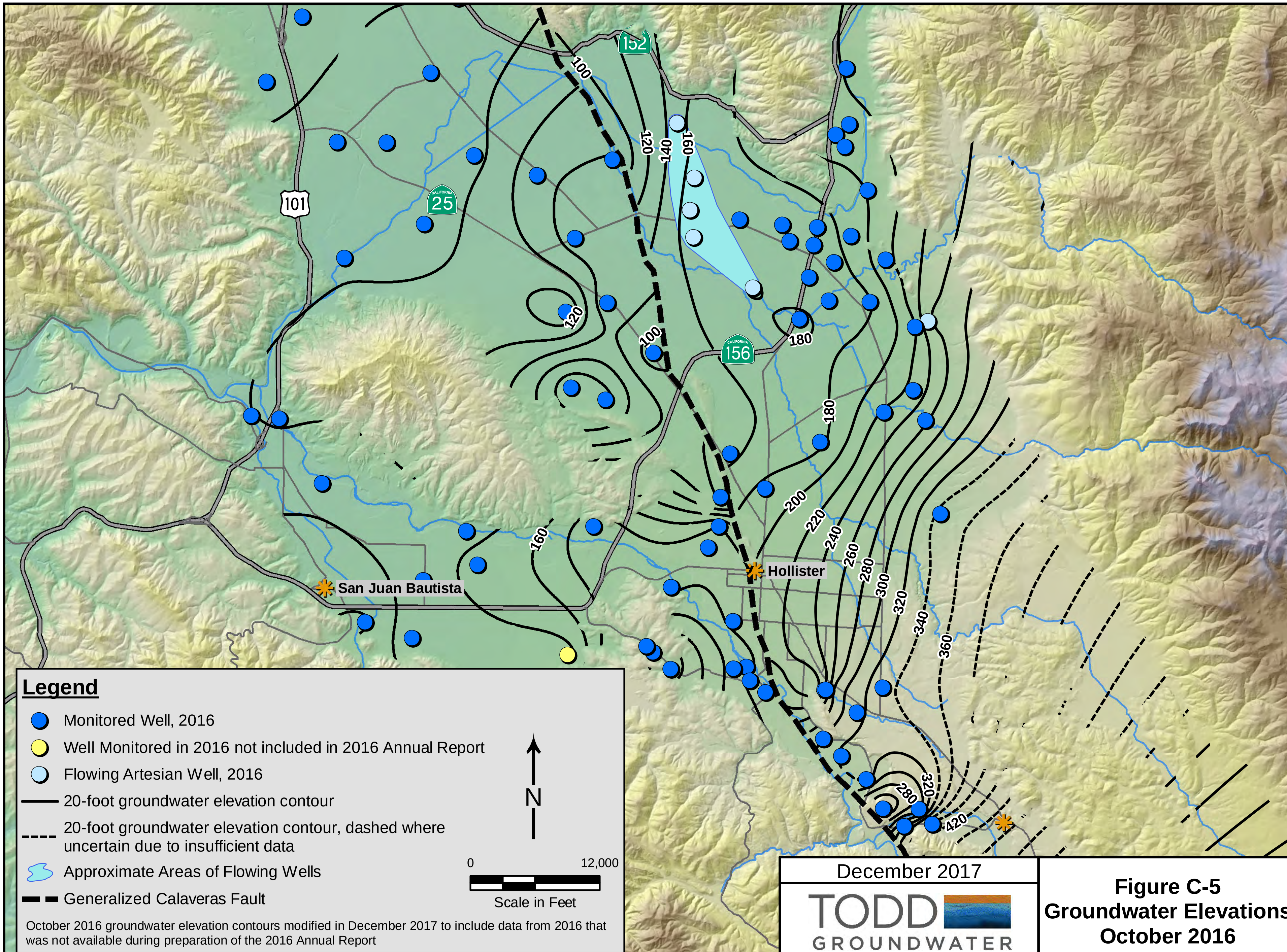


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Figure C-5
Groundwater Elevations
October 2016

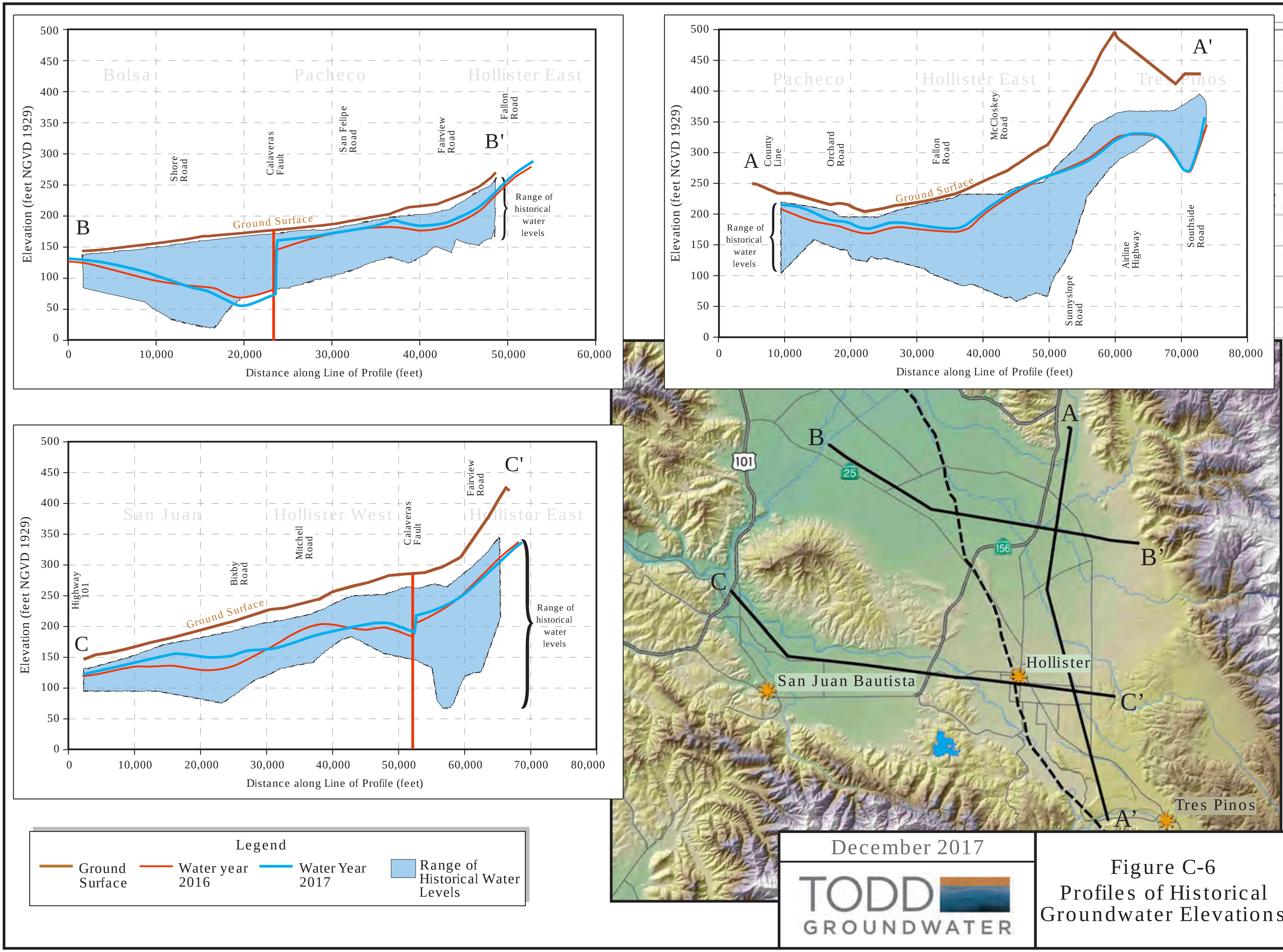

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Figure C-6
Profiles of Historical Groundwater Elevations

D

PERCOLATION DATA

List of Tables and Figures

Table D-1. Reservoir Water Budgets for Water Year 2017 (acre-feet)

	Hernandez	Paicines	San Justo
Inflows			
Rainfall	569	100	300
San Benito River	37,024	2,834	n.a.
Hernandez-Paicines transfer	n.a.	503	n.a.
San Felipe Project	n.a.	n.a.	21,721
Total Inflows	**37,593**	**3,438**	**22,021**
Outflows			
Hernandez spills	-15,006	n.a.	n.a.
Hernandez-Paicines transfer	503	n.a.	n.a.
Tres Pinos Creek percolation releases	n.a.	-2,407	n.a.
San Benito River percolation releases	-23,191	n.a.	-2,209
CVP Deliveries	n.a.	n.a.	-16,131
Evaporation and seepage	846	-736	-1,237
Total Outflows	**-36,847**	**-3,143**	**-19,577**
Storage Change			
Reservoir capacity	17,200	2,870	11,000
Maximum storage	16,952	1,425	10,102
Minimum storage	323	0	4,307
Net water year storage change	**478**	**300**	**1,831**
Unaccounted for Water	**269**	**-5**	**613**

Table D-2. Historical Reservoir Releases (AFY)

WY	Hernandez	Paicines	TOTAL
1996	13,535	6,139	19,674
1997	3,573	2,269	5,842
1998	26,302	450	26,752
1999	12,084	1,293	13,377
2000	13,246	2,326	15,572
2001	12,919	3,583	16,502
2002	9,698	310	10,008
2003	5,434	0	5,434
2004	3,336	0	3,336
2005	19,914	677	20,591
2006	14,112	196	14,308
2007	12,022	1,254	13,276
2008	7,646	495	8,141
2009	4,883	0	4,883
2010	8,484	4,147	12,631
2011	9,757	2,397	12,154
2012	6,341	1,321	7,662
2013	3,963	677	4,640
2014	0	0	0
2015	0	0	0
2016	0	0	0
2017	23,191	2,407	25,597
AVG	**9,565**	**1,361**	**10,926**

Table D-3. Historical Percolation of CVP Water (AFY)

Water Year	Pacheco Creek	Arroyo de las Viboras			Arroyo Dos Picachos			Santa Ana Creek				Tres Pinos Creek	San Benito River	Total
		Road	Creek 1	Creek 2	Fallon Road	Jarvis Lane	Creek	John Smith Road	Maranatha Road	Airline Highway	Ridgemark			
1994	232	136	515	0	0	550	209	0	0	0	0	85	158	**1,885**
1995	444	238	770	2	0	654	622	73	0	0	0	809	2,734	**6,345**
1996	0	494	989	832	67	235	708	531	197	134	25	21	6,097	**10,330**
1997	0	447	601	1,981	77	0	200	17	353	286	29	1,477	5,619	**11,087**
1998	0	132	109	403	0	0	0	65	0	158	74	518	1,084	**2,543**
1999	0	0	0	0	0	0	4	256	48	141	10	452	413	**1,322**
2000	1	0	0	6	0	0	3	236	21	240	12	285	938	**1,740**
2001	0	0	0	0	0	0	0	161	17	186	1	703	1,041	**2,110**
2002	0	0	0	2	0	0	1	78	2	143	0	426	470	**1,122**
2003	0	0	0	0	0	0	5	119	9	172	0	163	605	**1,074**
2004	0	0	0	0	0	0	52	83	0	0	0	1	882	**1,018**
2005	0	0	0	0	0	0	0	0	0	0	0	0	527	**527**
2006	0	0	0	0	0	0	7	156	0	0	0	1	451	**614**
2007	0	0	0	0	0	0	0	0	0	0	0	88	216	**304**
2008	0	0	0	0	0	0	0	0	0	0	0	0	6	**6**
2009	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
2010	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
2011	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
2012	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
2013	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
2014	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
2015	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
2017*	0	0	340	0	0	0	0	0	0	0	0	0	2,209	**2,549**

*2017 percolation occurred only to recharge basins adjacent to the listed streams.

Table D-4. Percolation of Municipal Wastewater during Water Year 2017

	Pond Area[1] (acres)	Effluent Discharge (acre-feet)	Evaporation[2] (acre-feet)	Percolation (acre-feet)
Hollister - domestic*	92.9	2,211	266	1,945
Hollister - industrial*	39.0	85	28	57
Ridgemark Estates I & II	7.2	175	21	154
Tres Pinos	1.8	25	5	20
Total	141	2,497	320	2,177

Notes:

1. Hollister pond areas are from Dickson and Kenneth D. Schmidt and Associates (1999) and include treatment ponds in addition to percolation ponds at the domestic wastewater treatment plant. Assumes 80% of total pond area in use at any time (Rose, pers. comm.). These areas should be updated as operations change.

2. Average evaporation less precip = 43 inches (56 in/yr evaporation (DWR Bulletin 73-79) less 13 in/yr precip (CIMIS) The IWTP evaportation was adjsuted to account only for when the ponds are in use.

The San Juan Bautista plant is not included because the unnamed tributary of San Juan Creek that receives its effluent usually gains flow along the affected reach and is on the southwest side of the San Andreas Fault. These conditions prevent the effluent from recharging the San Juan Subbasin.

Table D-5. Historical Percolation of Municipal Wastewater (AFY)

	Hollister Reclamation Plant - Domestic	Hollister - industrial	Ridgemark Estates I & II	Tres Pinos	TOTAL
1994	1,775	665	155	5	2,600
1995	1,935	610	180	10	2,735
1996	2,020	689	207	14	2,930
1997	1,965	909	201	17	3,092
1998	2,490	518	231	17	3,256
1999	1,693	1,476	156	12	3,337
2000	2,110	1,136	293	24	3,563
2001	1,742	1,078	303	24	3,147
2002	1,884	1,545	283	24	3,736
2003	2,009	1,432	279	24	3,744
2004	1,787	1,536	268	21	3,612
2005	1,891	1,323	227	26	3,468
2006	1,797	1,211	216	33	3,257
2007	1,740	1,228	139	19	3,126
2008	1,580	1,257	139	19	2,996
2009	1,976	428	172	19	2,594
2010	1,922	37	172	19	2,150
2011	1,807	466	183	19	2,476
2012	1,740	605	177	19	2,541
2013*	889	332	188	21	1,430
2014	1,552	86	179	21	1,838
2015	1,816	344	161	21	2,342
2016	1,923	305	154	21	2,402
2017	1,945	57	154	20	2,177

*Potential missing data

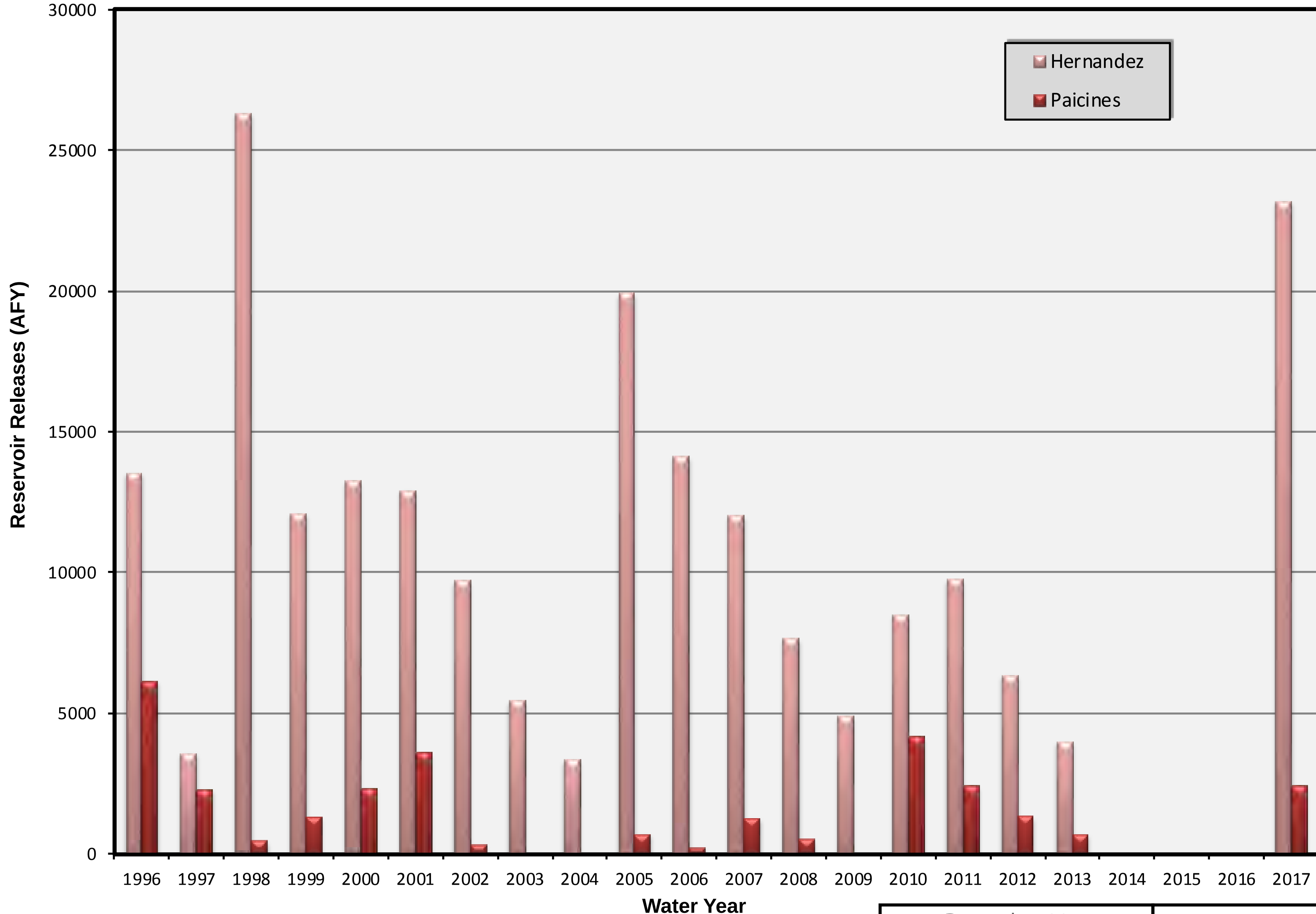

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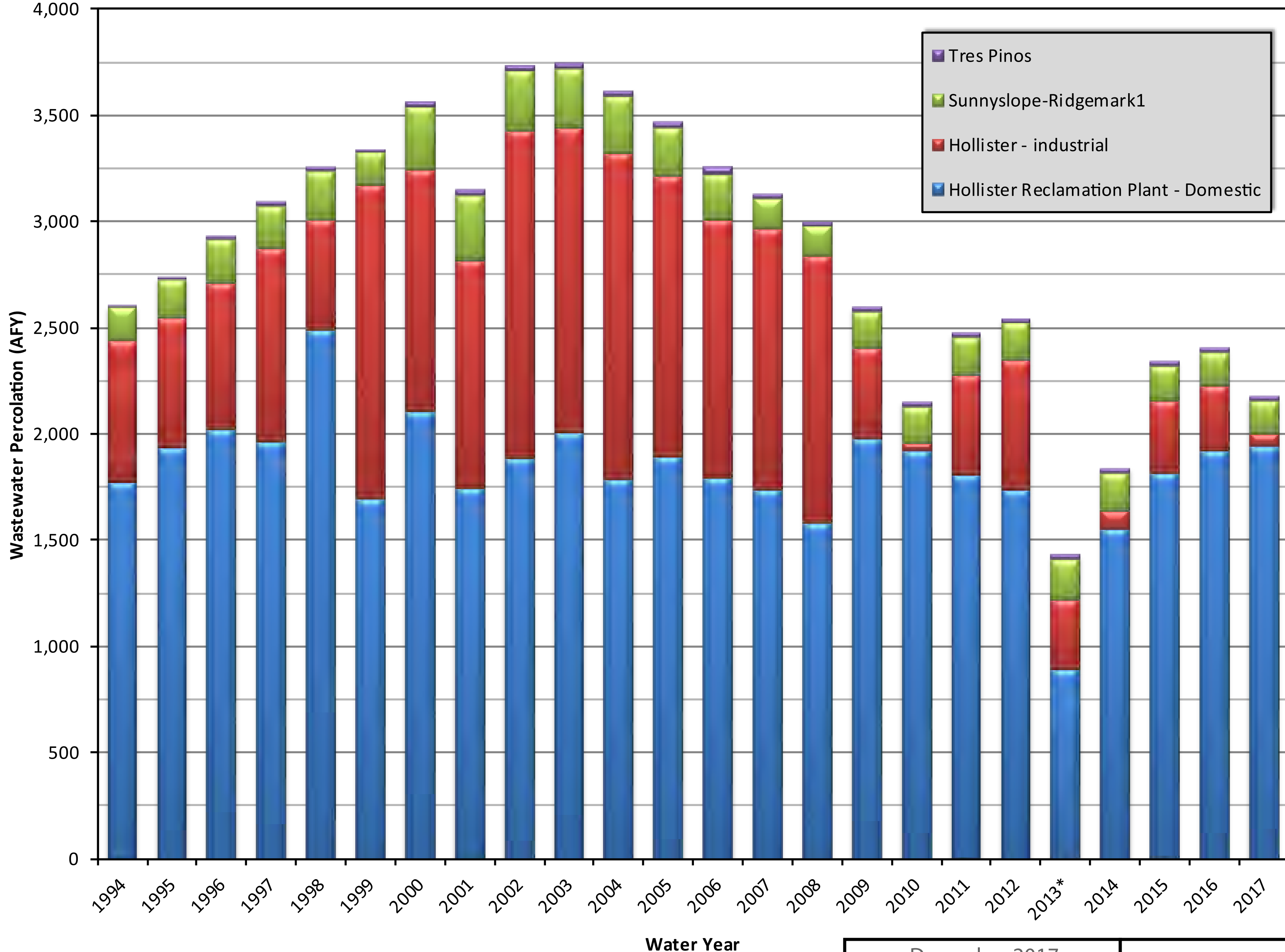
Figure D-1
Reservoir Releases for Percolation



* Potential Missing Data

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Figure D-2
Wastewater Percolation by Facility

E WATER USE DATA

List of Tables and Figures

Table E-1. Recent CVP Allocation and Use

	Municipal and Industrial (M&I) CVP				Agricultural CVP			
Water Year	Percent of Contract Allocation	Percent of Historic Average	Contract Amount Used (AF)	Contract Amount Used (%)	Percent of Contract Allocation	Percent of Contract and M&I Adjustment[1]	Contract Amount Used (AF)	Contract Amount Used (%)
	(USBR Water Year Mar-Feb)		(Hydrologic Water Year Oct-Sep)		(USBR Water Year Mar-Feb)		(Hydrologic Water Year Oct-Sep)	
2006	100%		3,152	38%	100%		19,840	56%
2007	100%		4,969	60%	40%		18,865	53%
2008	37%	75%	2,232	27%	40%	45%	10,514	30%
2009	29%	60%	1,978	24%	10%	11%	6,439	18%
2010	37%	75%	2,197	27%	45%	50%	10,061	28%
2011	100%		2,433	29%	80%		16,234	46%
2012	51%	75%	2,683	33%	40%	40%	17,267	49%
2013	47%	70%	2,652	32%	20%	22%	12,914	36%
2014	34%	50%	1,599	29%	0%	0%	7,545	21%
2015	25%	25%	1,810	22%	0%	0%	3,697	10%
2016	55%	55%	1,914	23%	5%	0%	4,434	12%
2017	100%	100%	2,909	35%	100%	100%	13,288	37%

Notes:

[1] If the M&I allocation is 75 percent or less, the difference between the M&I contract amount and M&I allocation is added to the agricultural contract amount. The agricultural percentage is multiplied by that sum to obtain the agricultural allocation.

Table E-2. Historical Water Use by Subbasin and Water Source (AFY)

Subbasin	Pacheco		Bolsa Southeast			San Juan		Hollister West			Hollister East			Tres Pinos		Total Zone 6		
Source	GW	CVP	GW	CVP	RW	GW	CVP	GW	CVP	RW	GW	CVP	RW	GW	CVP	GW	CVP	RW
1993	2,251	3,210	3,474	533		9,278	4,300	7,213	90		3,744	7,275		5,658	224	31,618	15,633	-
1994	3,748	3,394	3,467	602		10,859	3,836	7,327	87		5,475	6,808		5,294	263	36,169	14,990	-
1995	2,756	3,474	2,855	720		9,328	4,554	7,092	460		3,428	6,647		4,475	275	29,935	16,130	-
1996	2,533	3,500	2,682	782		8,726	5,187	5,717	679		3,396	8,267		3,695	408	26,748	18,823	-
1997	2,209	4,205	2,755	997		9,587	6,191	7,602	907		3,534	8,284		4,620	466	30,307	21,048	-
1998	2,035	2,165	1,561	361		6,963	4,099	4,991	591		4,037	5,291		3,751	289	23,338	12,796	-
1999	2,553	3,219	2,453	433		9,312	5,990	7,013	726		3,701	7,279		4,199	391	29,231	18,038	-
2000	2,270	3,256	2,418	355		8,681	6,372	7,590	869		3,108	7,279		4,006	542	28,073	18,673	-
2001	1,848	3,443	2,126	411		7,977	7,232	7,377	685		2,213	7,010		3,599	621	25,140	19,402	-
2002	2,322	3,840	2,193	497		7,571	7,242	6,577	706		2,588	7,390		3,994	737	25,244	20,411	-
2003	2,425	3,277	2,175	493		7,434	7,127	6,222	720		1,897	9,329		2,805	788	22,958	21,734	-
2004	2,461	3,607	2,405	740		8,121	7,357	4,971	614		2,321	10,726		3,204	966	23,484	24,010	-
2005	1,320	3,106	1,849	514		6,608	6,245	5,084	680		2,586	9,198		2,378	642	19,825	20,384	-
2006	1,208	3,495	1,864	661		6,741	7,200	4,633	579		2,555	10,253		2,537	803	19,538	22,992	-
2007	1,034	3,832	2,005	572		7,658	6,160	5,118	553		3,867	10,194		2,908	804	22,590	22,115	-
2008	1,900	1,568	2,014	333		7,796	3,160	4,375	399		3,962	6,792		2,743	493	22,789	12,745	-
2009	3,370	1,257	2,082	179		11,956	1,605	4,186	19		4,733	4,697		2,871	447	29,199	8,204	-
2010	2,553	1,771	1,897	207		9,561	3,452	4,081	10	151	4,460	6,056		1,686	488	24,238	11,984	151
2011	1,992	2,420	2,781	229		4,987	5,623	3,940	394	183	1,947	9,575		2,454	427	18,102	18,667	183
2012	3,723	2,652	1,556	288		5,782	5,976	4,298	549	230	2,004	9,917		2,492	568	19,855	19,949	230
2013*	4,157	1,976	2,348	292		11,044	4,134	5,656	374	357	5,430	8,224		2,452	565	31,087	15,566	357
2014	3,303	1,020	2,157	32		10,018	1,984	7,227	233	262	4,872	5,490		3,014	384	30,592	9,144	262
2015	4,279	555	2,401	20		12,739	975	4,730	148	101	7,230	3,568		2,948	241	34,327	5,507	101
2016	4,386	420	2,558	30	38	13,581	819	4,031	162	253	6,383	4,810	207	2,223	106	33,162	6,347	499
2017	2,949	2,097	1,414	365	66	7,542	5,853	3,255	217	108	2,209	7,488	192	2,447	177	19,815	16,197	366
AVG 03-17	2,737	2,203	2,100	330	52	8,771	4,511	4,787	377	206	3,764	7,755	200	2,611	527	24,771	15,703	143

GW = groundwater, CVP = Central Valley Project, RW = recycled water

Table E-3. Recent Water Use by Subbasin and User Type, not including recycled water (AFY)

SUBBASIN	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Agriculture													
Bolsa SE	2,352	2,517	2,570	2,334	2,252	2,103	3,004	1,837	2,635	2,180	2,417	2,601	1,765
Hollister East	8,543	9,526	10,685	8,012	6,860	8,315	9,067	9,453	10,832	8,151	8,464	8,784	7,564
Hollister West	2,128	1,936	2,145	1,509	1,708	1,888	2,190	2,228	3,324	2,584	2,750	2,192	1,338
Pacheco	4,190	4,469	4,573	3,220	4,304	4,242	4,279	6,148	5,990	4,121	4,658	4,616	4,964
San Juan	11,496	12,622	12,185	9,581	12,397	11,960	10,009	10,964	14,376	11,183	13,123	13,826	11,916
Tres Pinos	800	1,004	954	655	670	640	471	641	652	514	1,513	572	468
TOTAL	29,509	32,074	33,112	25,310	28,192	29,148	29,020	30,980	37,810	28,734	32,926	32,591	28,015
M&I													
Bolsa SE	12	8	7	13	9	0	6	6	4	9	5	25	14
Hollister East	3,241	3,280	3,203	2,742	2,570	2,201	2,455	2,469	2,822	2,211	2,334	2,617	2,132
Hollister West	3,636	3,168	3,361	3,265	2,710	2,477	2,144	2,619	2,705	4,876	2,128	2,254	2,134
Pacheco	235	234	293	248	323	83	133	227	144	203	176	191	81
San Juan	1,356	1,320	1,640	1,375	1,164	1,053	601	793	803	820	590	574	1,479
Tres Pinos	2,220	2,336	2,748	2,581	2,648	3,048	2,410	2,710	2,365	2,884	1,676	1,757	2,156
TOTAL	10,700	10,345	11,252	10,225	9,424	8,862	7,749	8,825	8,843	11,002	6,909	7,417	7,997

Table E-4. Historical Water Use by User Type (AFY)

WY	Agricultural	Municipal, and Industrial	Total	% Ag
1988	45,366	5,152	50,518	90%
1989	32,387	6,047	38,434	84%
1990	49,663	5,725	55,388	90%
1991	46,640	7,631	54,271	86%
1992	32,210	6,912	39,122	82%
1993	38,878	5,066	43,944	88%
1994	41,854	7,186	49,040	85%
1995	36,399	8,272	44,671	81%
1996	39,575	8,338	47,913	83%
1997	41,482	11,117	52,599	79%
1998	27,526	8,650	36,176	76%
1999	37,203	10,110	47,313	79%
2000	36,062	10,811	46,873	77%
2001	34,035	10,687	44,722	76%
2002	34,354	11,347	45,701	75%
2003	33,533	11,206	44,739	75%
2004	35,597	11,944	47,541	75%
2005	29,509	10,700	40,209	73%
2006	32,074	10,345	42,419	76%
2007	33,112	11,252	44,364	75%
2008	25,310	10,225	35,535	71%
2009	28,192	9,424	37,616	75%
2010	29,148	8,862	38,010	77%
2011	29,020	7,749	36,769	79%
2012	31,270	8,825	40,095	78%
2013	37,810	8,843	46,653	81%
2014	28,734	11,226	39,960	72%
2015	32,926	7,010	39,935	82%
2016	32,591	7,417	40,008	81%
2017	28,015	7,997	36,012	78%
AVERAGE	**34,682**	**8,869**	**43,552**	**79%**

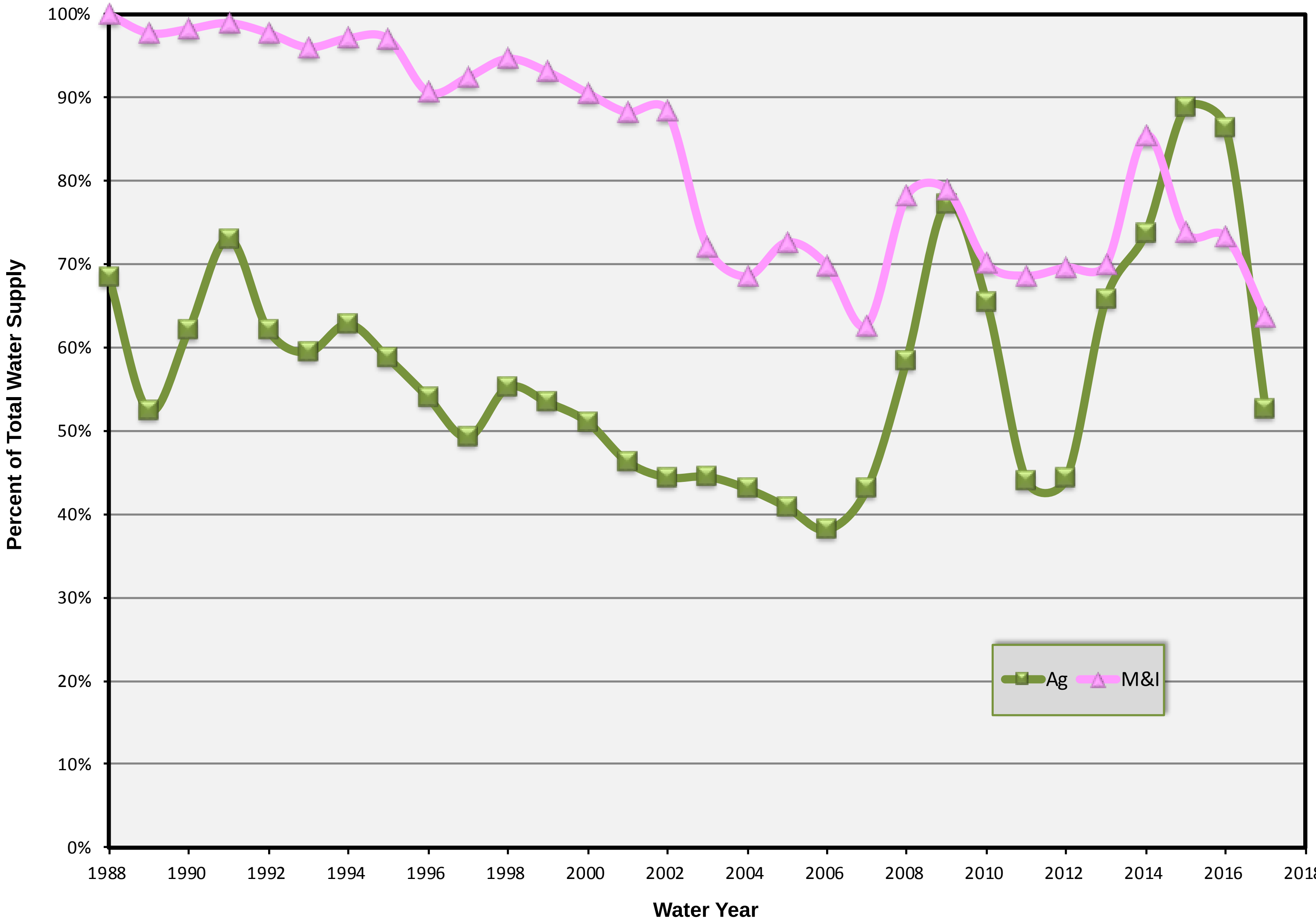
Table E-5. Municipal Water Use by Purveyor for Water Year 2017 (AF)

	WY 2017	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Groundwater													
Sunnyslope CWD	**1,449**	190	78	58	72	56	39	71	111	168	226	199	180
City of Hollister	**1,543**	145	110	97	92	66	66	84	166	208	123	221	166
City of Hollister - Cienega Wells	**79**	9	9	10	9	7	10	9	9	6	1	0	1
San Juan Bautista	**249**	19	18	15	13	-	15	16	25	31	33	32	31
Tres Pinos CWD	**32**	3	2	2	2	2	2	2	3	3	4	3	3
Groundwater Subtotal	**3,352**	**367**	**218**	**181**	**188**	**130**	**131**	**182**	**314**	**417**	**387**	**456**	**382**
CVP Imported Water													
Lessalt Treatment Plant	**1,940**	168	146	123	145	127	163	189	172	178	200	168	162
West Hills Treatment Plant	**51**	0	0	0	0	0	0	0	0	0	0	0	51
Imported Water Subtotal	**1,991**	**168**	**146**	**123**	**145**	**127**	**163**	**189**	**172**	**178**	**200**	**168**	**213**
Municipal Total													
Municipal Water Supply Total	**5,344**	**534**	**364**	**304**	**332**	**258**	**294**	**370**	**487**	**594**	**586**	**624**	**595**

Table E-6. Historical Municipal Water Use by Purveyor (AFY)

WY	Sunnyslope CWD - GW	City of Hollister - GW	City of Hollister - Cienega Wells[1]	San Juan Bautista	Tres Pinos CWD	Lessalt Treatment Plant	West Hills Lessalt Treatment Plant	Undivided Total	TOTAL
1988						0		5,152	**5,152**
1989						0		6,047	**6,047**
1990						0		5,725	**5,725**
1991						0		7,631	**7,631**
1992						0		6,912	**6,912**
1993						0		5,066	**5,066**
1994						0		7,186	**7,186**
1995	2,167	2,446				0			**4,613**
1996	2,139	3,386				0			**5,525**
1997	2,638	3,848				0			**6,486**
1998	2,357	3,441				0			**5,798**
1999	2,820	3,558				0			**6,378**
2000	3,214	4,021				0			**7,235**
2001	3,290	3,851				0			**7,141**
2002	3,256	4,120				21			**7,398**
2003	2,053	2,754				2,494			**7,302**
2004	2,426	2,828				2,101			**7,356**
2005	1,959	3,147	123	247	49	1,843			**7,368**
2006	1,907	2,801	123	150	49	1,900			**6,930**
2007	2,413	2,758	123	47	49	1,719			**7,108**
2008	2,294	2,746	123	417	47	1,323			**6,949**
2009	2,251	2,503	123	373	47	1,212			**6,509**
2010	1,861	2,194	108	308	47	1,344			**5,861**
2011	2,225	1,651	80	292	47	1,593			**5,887**
2012	2,360	1,761	130	267	45	1,657			**6,219**
2013	1,655	2,655	120	281	46	1,648			**6,405**
2014	2,134	2,646	114	285	49	979			**6,207**
2015	1,348	1,960	114	225	49	1,364			**5,060**
2016	1,331	1,615	105	232	49	1,682			**5,014**
2017	1,449	1,543	79	249	32	1,940	51		**5,344**

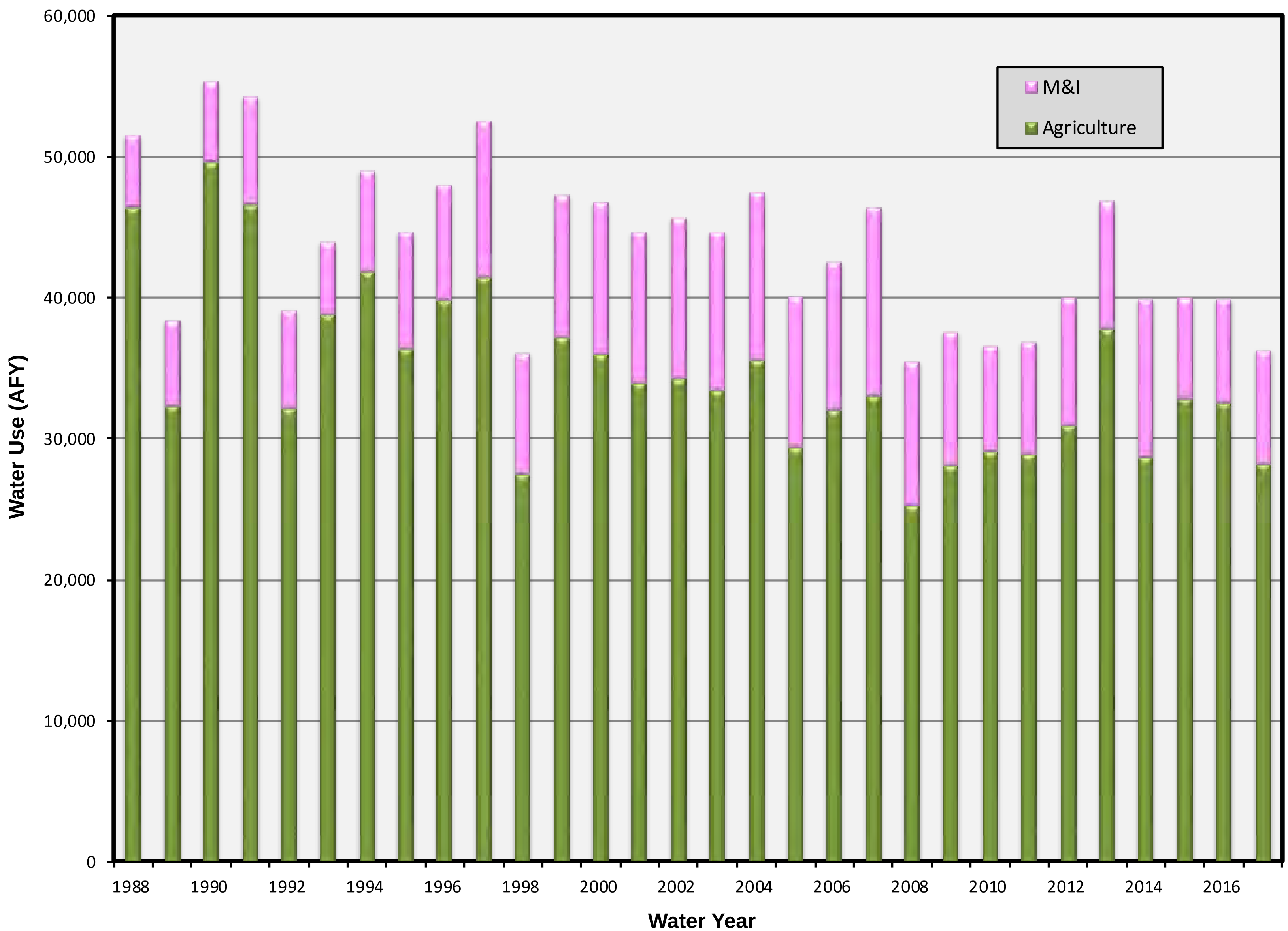
1. Data from Hollister Cienega Wells for 2005-2008 was estimated to be the same as WY 2009
Cells with no data indicate that the information is unavailable, while years with no use are shown explicitly as 0's.



December 2017

TODD GROUNDWATER

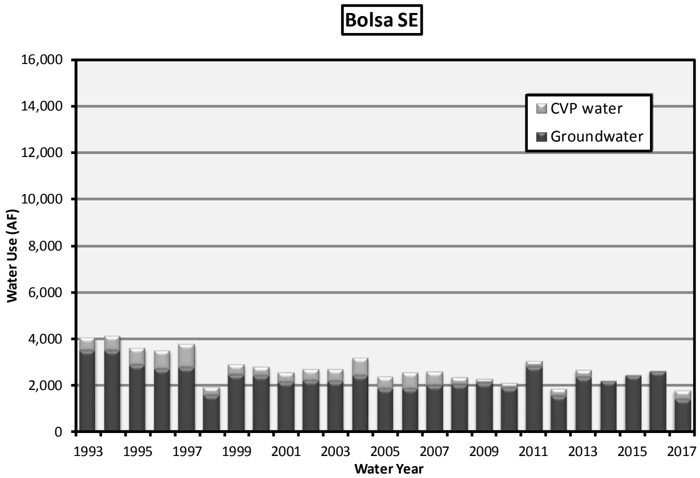
Figure E-1
Groundwater Percentage of Total Water Use

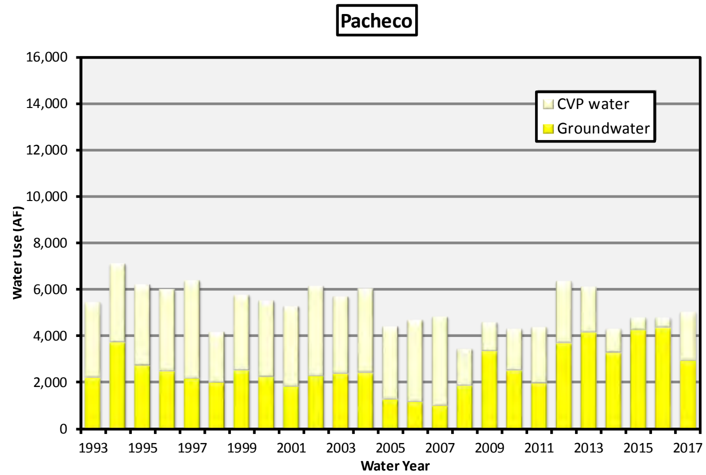


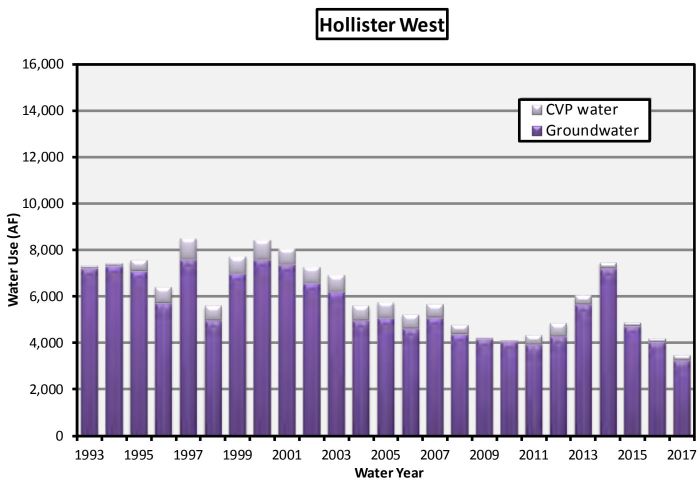
December 2017

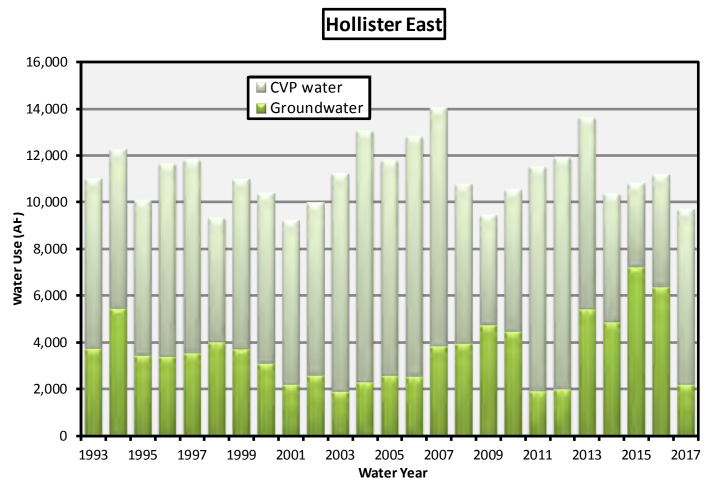
TODD GROUNDWATER

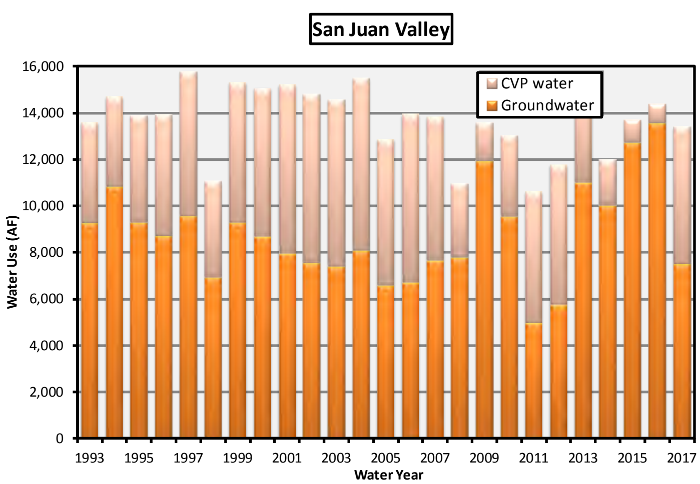
Figure E-2
Water Use in Zone 6 by User Category

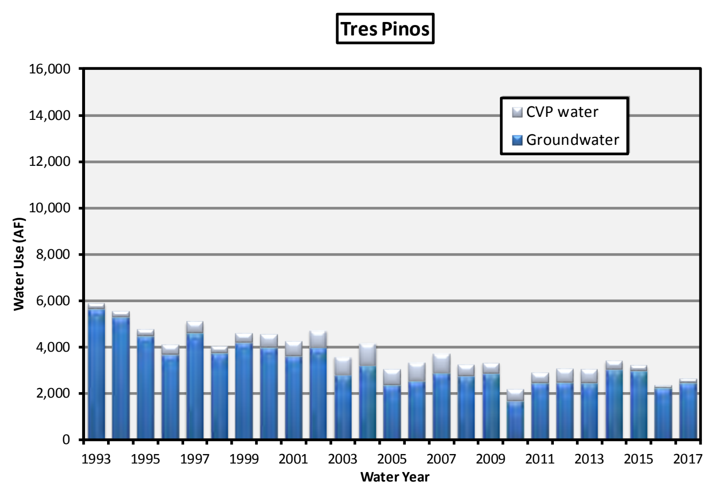








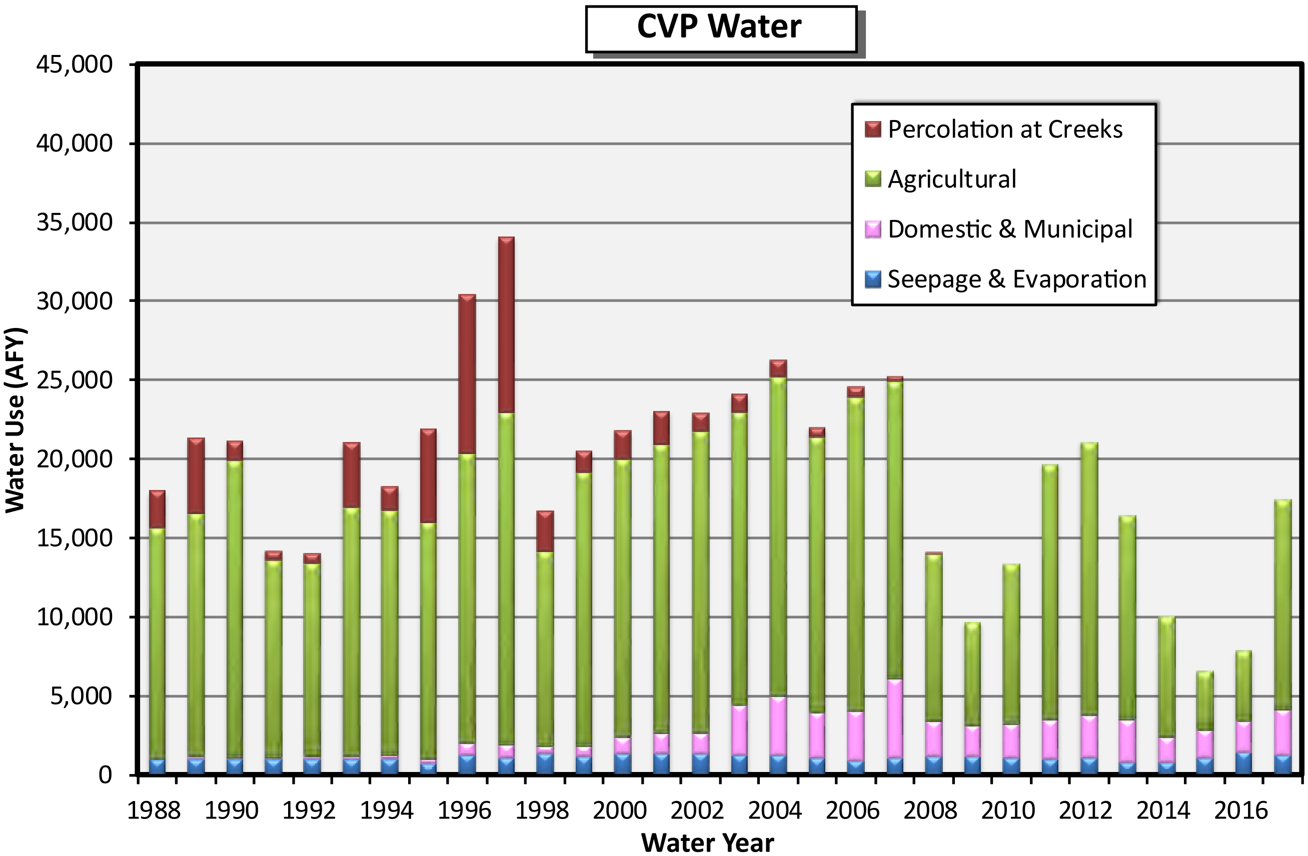


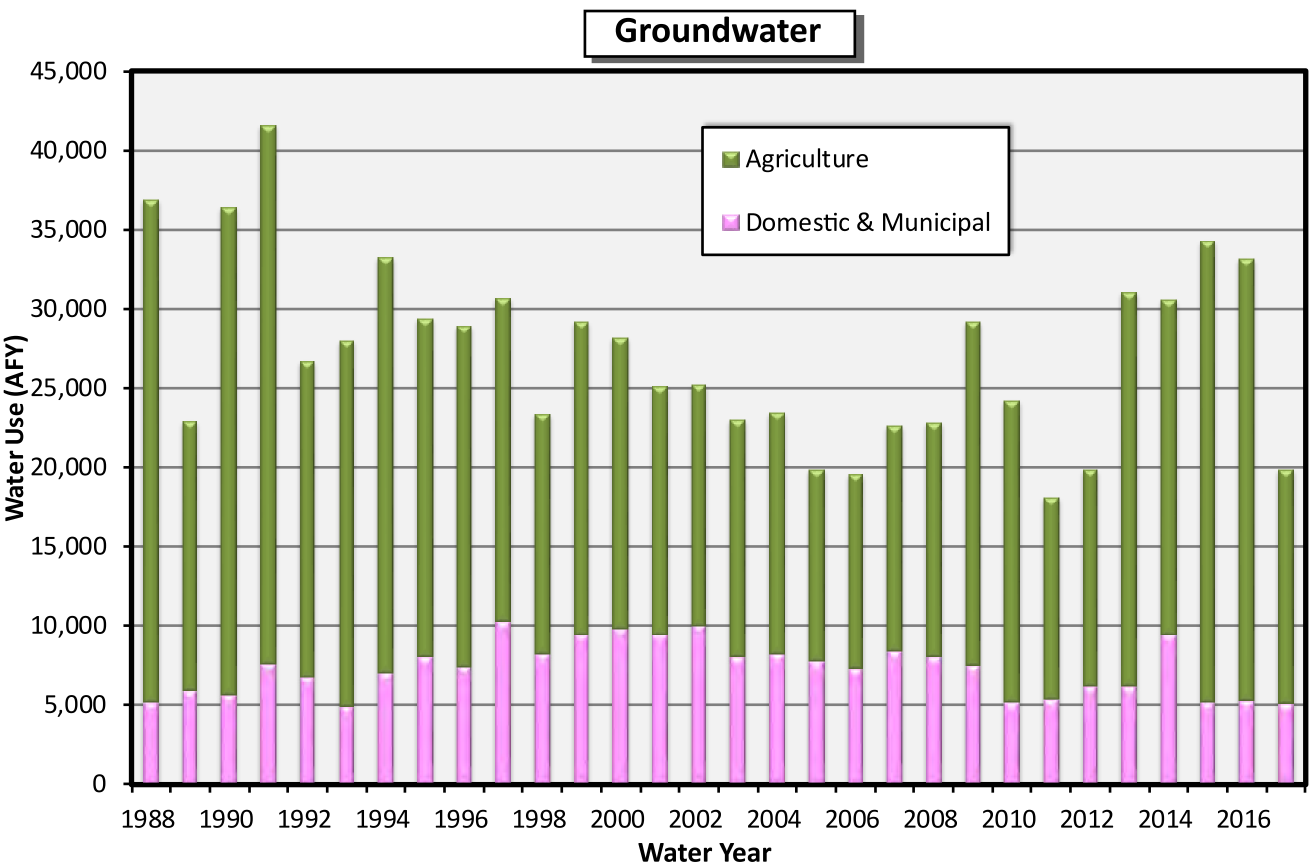


December 2017

TODD GROUNDWATER

Figure E-3
Total Subbasin Water Use by Water Type

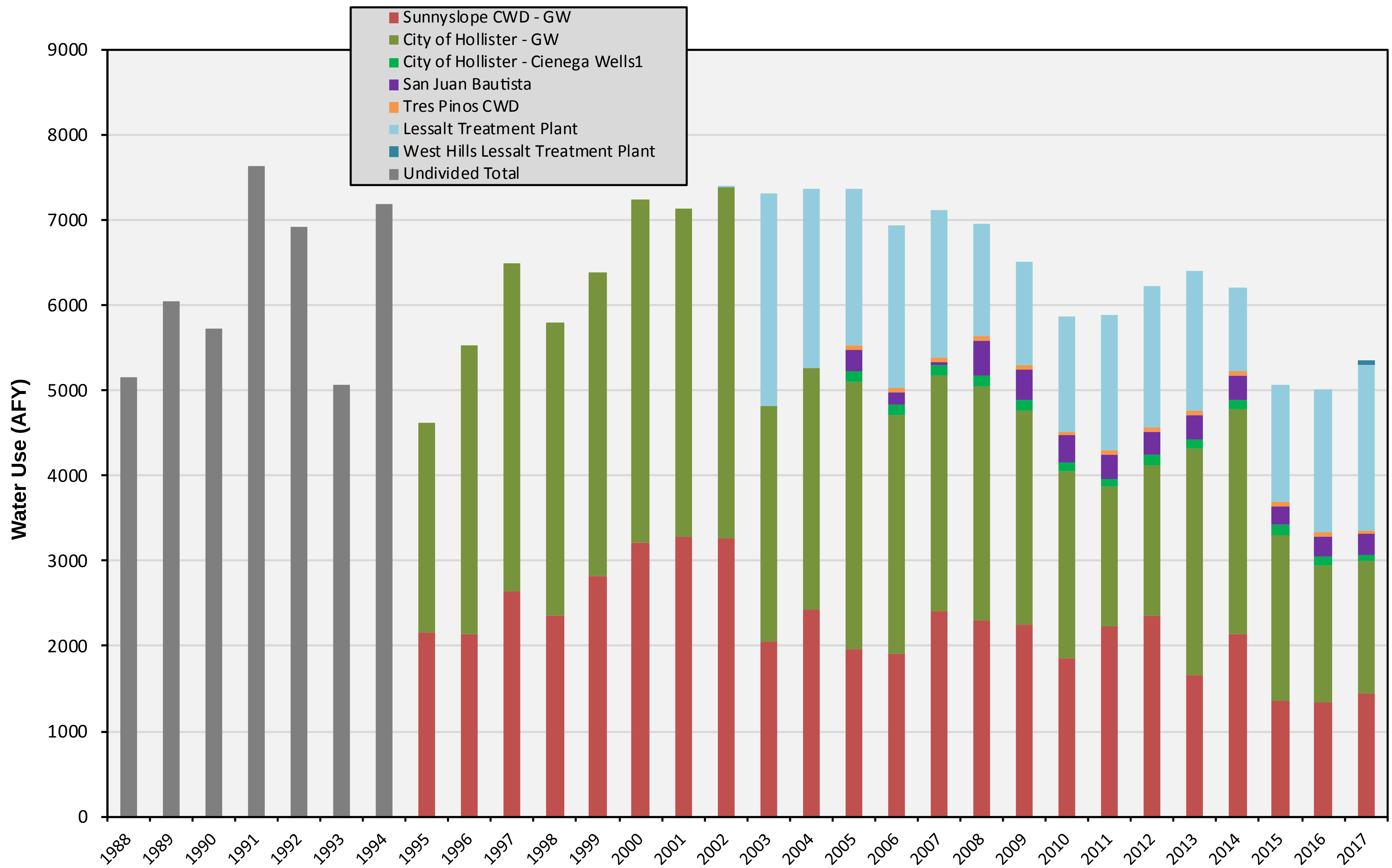




December 2017

TODD GROUNDWATER

Figure E-4
Annual Total of CVP and Groundwater by Use



December 2017

TODD GROUNDWATER

Figure E-5
Municipal Water Use by Purveyor

F RATES AND CHARGES

List of Tables and Figures

Table F-1. Historical and Current San Benito County Water District CVP (Blue Valve) Water Rates (dollars/af)

USBR Water Year	Standby & Availability Charge (dollars/acre)	Water Charge		Power Charge					Groundwater Charge (dollars/af)			Recycled Water (per AF)	
		Agricultural	Municipal & Industrial	Distribution Subsystem					Agricultural	Municipal & Industrial		Agricultural	Power Charge
				2	6H	9L	9H	Others					
1987	$8.00	$34.00	n.c.						n.i.	n.i.			
1988	$2.00	$34.00	n.c.						n.i.	n.i.			
1991	$4.00	$38.00	$110.00						$6.25	$22.00			
1992	$4.00	$45.00	$120.00						$2.00	$10.00			
1994	$4.50	$77.61	$168.92						$1.00	$5.00			
1995	$4.50	$77.61	$168.92						$1.00	$15.75	First 100 af		
										$36.70	Next 500 af		
										$54.60	Over 600 af		
1996	$6.00	$75.00	$150.00						$1.50	$33.00			
1997	$6.00	$75.00	$157.00						$1.50	$33.00			
1998	$6.00	$75.00	$155.00						$1.50	$33.00			
2000	$6.00	$75.00	$155.00						$1.50	$11.50			
2001	$6.00	$75.00	$155.00						$1.50	$25.00			
2004	$6.00	$75.00	$150.00	$24.30	$46.75	$25.05	$53.70	$15.25	$1.50	$10.00			
2005	$6.00	$80.00	$150.00	$26.15	$49.40	$35.00	$66.90	$17.10	$1.50	$21.50			
2006	$6.00	$85.00	$160.00	$23.60	$36.05	$34.70	$65.75	$18.40	$1.50	$21.50			
2007	$6.00	$85.00	$160.00	$23.60	$36.05	$34.70	$65.75	$18.40	$1.50	$21.50			
2008	$6.00	$100.00	$170.00	$17.25	$19.40	$32.60	$62.75	$14.85	$1.50	$21.50			
2009	$6.00	$115.00	$180.00	$17.50	$20.25	$42.55	$74.85	$16.30	$2.50	$22.50			
2010	$6.00	$135.00	$200.00	$22.00	$27.30	$49.75	$84.35	$21.75	$2.50	$22.50			
2011	$6.00	$155.00	$220.00	$22.70	$28.15	$51.25	$86.90	$22.40	$2.50	$22.50			
2012	$6.00	$170.00	$235.00	$23.35	$29.00	$52.80	$89.50	$23.10	$2.50	$22.50			
2013	$6.00	$170.00	$235.00	$40.30	$29.25	$43.05	$91.55	$22.40	$3.25	$23.25			
2014	$6.00	$170.00	$238.00	$41.55	$30.15	$44.35	$94.30	$23.10	$3.60	$23.25			
2015	$6.00	$179.00	$247.00	$42.75	$31.05	$45.70	$97.15	$23.80	$3.95	$23.25			
2016	$6.00	$272.00	$363.00	$123.10	$75.65	$109.95	$162.55	$66.05	$4.95	$24.25		$182.55	$57.70
2017	$6.00	$191.00	$363.00	$126.80	$77.90	$113.25	$167.45	$68.05	$6.45	$24.25		$183.45	$59.45

Notes:

af = acre-feet.
n.c. = no classification.
n.i. = not implemented
All rates effective March 1 through following February.

Table F-2. 2016 Recommended Groundwater Revenue Requirement/Charges

REVENUE REQUIREMENTS					Rates [2]	
	Component	Rate ($/AF)	Quantity[1] (af)	Amount	Ag	M & I
Source of Supply						
Ag	Source of Supply Costs	$9.41	22,438	$ 211,222	$ 9.41	
M&I	Source of Supply Costs	$28.24	5,725	$ 161,679		$ 28.24
Percolation Costs						
Ag	CVP Water Rate[3]	$299.64	-	$ -		
M&I	CVP Water Rate[3]	$410.76	-	$ -		
Ag	Power Charge for Percolation	$0.00	-	0	$ -	
M&I	Power Charge for Percolation	$0.00	-	0		$ -
Calculated Total					$ 9.41	$ 28.26
Previous Groundwater Charge (per acre foot)					$ 6.45	$ 24.25
CURRENT AND RECOMMENDED CHARGES (per acre foot)					**$ 7.95**	**$ 24.25**

1 Assumed Volumes
Percolation (based on average of last 3 years of recharge
Groundwater Usage (based on average of past 3 years)
2 Rates=Revenue Requirement/projected usage
3 CVP water rate basis for 2018-2019 water year

Note: Section 70-7.8 (a) of the District Act states that the agricultural rate shall not exceed one-third of the rates for all water other than agricultural water.

Table F-3. Recent US Bureau of Reclamation Charges per Acre-Foot for CVP Water

User Category and Cost Item	Irrigation[1]						Municipal & Industrial					
	Cost of service (non-full cost)	Restoration fund[3]	SLDMWA[4]	Trinity PUD Assessment	Total	Contract rate[5]	Cost of service[2] (non-full cost)	Restoration fund[3]	SLDMWA[4]	Trinity PUD Assessment	Total	Contract rate[5]
1994	$71.68	$6.20	n.a.		$77.88	$17.21	$165.67	$12.40	n.a.		$178.07	$85.86
1995	$66.47	$6.35	n.a.		$72.82	$17.21	$132.90	$12.69	n.a.		$145.59	$85.86
1996	$65.63	$6.53	n.a.		$72.16	$27.46	$127.40	$13.06	n.a.		$140.46	$85.86
1997	$69.57	$6.70	n.a.		$76.27	$27.46	$143.27	$13.39	n.a.		$156.66	$85.86
1998	$61.58	$6.88	$5.00		$73.46	$27.46	$130.88	$13.76	$5.00		$149.64	$85.86
1999	$60.30	$6.98	$2.73		$70.01	$27.46	$127.91	$13.96	$2.73		$144.60	$85.86
2000	$64.24	$7.10	$6.43		$77.77	$27.46	$129.59	$14.20	$6.43		$150.22	$85.86
2001	$69.50	$7.28	$2.65		$79.43	$27.46	$129.40	$14.56	$4.15		$148.11	$85.86
2002	$68.71	$7.54	$6.61		$82.86	$24.30	$130.32	$15.08	$6.61		$152.01	$79.13
2003	$72.20	$7.69	$5.46		$85.35	$24.30	$129.07	$15.38	$5.46		$149.91	$79.13
2004	$74.52	$7.82	$6.61		$88.95	$24.30	$134.86	$15.64	$6.61		$157.11	$79.13
2005	$77.10	$7.93	$7.99		$93.02	$24.30	$132.01	$15.87	$7.99		$155.87	$79.13
2006	$91.13	$8.24	$9.31		$108.68	$30.93	$214.41	$16.49	$9.31		$240.21	$77.12
2007	$93.53	$8.58	$9.99	$0.11	$112.21	$30.93	$215.32	$17.15	$9.99	$0.11	$242.46	$80.08
2008[6]	$28.12	$8.79	$10.95	$0.07	$47.93	$30.93	$33.34	$17.57	$10.95	$0.07	$61.68	$33.34
2009	$30.20	$9.06	$11.49	$0.07	$50.82	$30.20	$32.77	$18.12	$11.49	$0.07	$62.45	$32.77
2010	$33.27	$9.11	$11.91	$0.11	$54.40	$33.27	$36.11	$18.23	$11.91	$0.11	$66.36	$36.11
2011	$38.92	$9.29	$9.51	$0.05	$57.77	$38.92	$42.58	$18.59	$9.51	$0.05	$70.73	$42.58
2012	$39.71	$9.39	$15.20	$0.05	$64.35	$39.71	$37.95	$18.78	$15.20	$0.05	$71.98	$37.95
2013	$40.39	$9.79	$17.29	$0.05	$67.52	$39.91	$38.71	$19.58	$17.29	$0.05	$75.63	$40.92
2014	$46.87	$9.99	$28.81	$0.23	$85.90	$46.87	$29.70	$19.98	$28.81	$0.23	$78.72	$29.70
2015	$53.82	$10.07	$30.66	$0.23	$94.78	$53.82	$34.74	$20.14	$30.66	$0.23	$85.77	$34.74
2016	$85.12	$10.07	$30.66	$0.23	$126.08	$53.82	$61.24	$20.14	$30.66	$0.23	$112.27	$34.74
2017	$66.17	$10.23	$14.15	$0.30	$90.85	$39.90	$49.50	$20.45	$14.15	$0.30	$84.40	$22.85

Notes:

(1) Total USBR rate given for non-full cost users only, as they represent the majority of water users.

(2) Cost-of-service for agricultural and municipal and industrial users includes a capital repayment rate and an operation and maintenance (O&M) rate. For municipal and industrial customers, cost-of-service also includes a deficit charge, which includes interest on unpaid O&M and interest on capital and on unpaid deficit.

(3) Restoration fund charges apply October 1 through September 30.

(4) Beginning in 1998, the San Luis-Delta Mendota Water Authority instituted this charge to "self-fund" costs associated with maintaining the Delta-Mendota Canal and certain other facilities, which were formerly funded directly by the Bureau of Reclamation. SLDMWA issues preliminary rates in December for the upcoming contract year (March-February). These rates are used for rate-setting purposes; actual rates may vary.

(5) The contract rate is the minimum rate CVP contractors are allowed to pay. To the extent that the contract rate does not cover interest plus actual operation and maintenance costs, a contractor deficit is accumulated that is charged interest at the current-year treasury borrowing rate.

(6) Per the amendatory contract with the USBR "out of basin" capital costs that were previously included in the cost of service are now under a separate repayment contract.

(7) Cost of service rates are inclusive of USBR direct pumping and Project Use Energy costs.

G WATER BALANCE

Water Balance Methodology

Annual groundwater balances for water years 2015, 2016 and 2017 were developed for this annual report. Water balance information is required for effective water resources management. The relative magnitude of each water balance element and its changes over time illustrate the mechanisms at work in the basin. The water balance supports decisions related to groundwater replenishment and withdrawals.

The water balance table for each year lists inflows and outflows by subbasin in the same format as in prior annual reports. Any water balance analysis includes uncertainty, which derives from potential errors in data measurement and recording and from necessary use of assumptions when data are lacking. To address uncertainty, items in the water balance tables are estimated using various *independent* methods; combining the estimates into a single table can reveal errors or uncertainty in assumptions or data.

As an additional check on consistency, the tables include two estimates of net annual change in groundwater storage. One estimate equals the difference between total inflows and total outflows, and the other is a volumetric calculation based on aquifer storativity values and changes in observed groundwater elevations. Comparison of the two change-in-storage values allows consideration of the accuracy of the overall water balance estimate.

Future water balances, including the water balances required by SGMA, will be assessed according to those DWR GSP regulations and Best Management Practices. The water balances also will be computed according to DWR groundwater basin definitions. In addition, an updated hydrogeologic conceptual model and improved numerical model will provide comprehensive simulations of historical, current, and sustainable conditions. Comparison of simulated conditions to historical conditions and estimated water balances (in terms of differences between simulated and observed groundwater elevations and flows) will allow identification of data gaps and uncertainties and systematic review and adjustment of water balance analyses.

Inflows

There are six major sources of inflow to the subbasins in Zone 6 and surrounding areas. These include natural stream percolation, percolation from Hernandez/Paicines releases, direct percolation of imported CVP water, deep percolation (from rainfall and/or irrigation), percolation of reclaimed water, and subsurface groundwater inflow.

Stream Percolation. Percolation along local stream channels provides groundwater recharge in many parts of the basin. Percolation can occur from natural flows, or releases from Hernandez Reservoir in the headwaters of the San Benito River watershed. The three-year period 2015-2017 includes a dry, average, and wet year. Infiltration amounts from reservoir releases were 0 AF in 2015 (a dry year) and substantially increased in the wet year 2017, when releases from Hernandez Reservoir were 23,191 AF and releases from Paicines were 2,407 AF.

Percolation is estimated based on the amount of natural flow in the waterway, the distance that the waterway transverses a subbasin, and the channel percolation capacity. Percolation capacities were estimated from synoptic surveys of changes in flow along each creek completed in the late 1990's (Yates, 2008). The overall percolation capacity and the length of the "losing" reach both decrease when groundwater elevations are high. Because the percolation estimates are based on static values for these variables, there is some uncertainty in the amount of stream flow that percolates in any given year. Flow and percolation rates for local creeks and the San Benito River are shown in **Table G-1**.

Table G-1. Estimated parameters for stream percolation

Name	Watershed Area (ac)	Annual Precipitation (in)	Calibration+	Subbasin	Length of Percolation (mi)	Maximum Percolation Rate (cfs/mi)
Pacheco Creek	145.0	18	1	Pacheco	2	5.34
Arroyo de las Viboras	22.1	22	1	Pacheco	2.28	6.29
Arroyo Dos Picachos	16.2	20	1	Hollister East	1.31	1.02
Santa Ana Creek	36.5	19	1	Hollister East	7.58	6
Bird Creek*+	15.0	18	0.15	Hollister West Tres Pinos	--	--
Pescadero Creek*+	38.3	18	0.15	Hollister West Tres Pinos	--	--
Tres Pinos Creek*	--	--	1	Tres Pinos	--	--
San Benito River*	--	--	1	San Juan, Hollister West, Tres Pinos	--	--

*Percolation along these streams is calculated using a combination of USGS gage data and Hernandez/Paicines release information

+Pescadero and Bird Creek flows were reduced by a calibration factor to remain consistent with observed flows

Stream flow gages are only present on Pacheco Creek, Tres Pinos Creek and the San Benito River. Daily flows in ungaged streams are estimated from gaged flows in three reference streams outside the basin (previous water balances used four reference gages but Gabilan Creek is no longer routinely monitored). These streams are listed in **Table G-2**. This regional approach avoids potential errors associated with anomalous rainfall or stream flow conditions at any single reference gage. For each of the local ungaged streams, a daily unit flow was determined by normalizing stream flow by watershed area and annual average precipitation. The unit flows of the four streams were averaged to determine a reference unit flow per day that could be applied to streams within the basin. The unit flow was multiplied by each stream's watershed area and annual average precipitation, **Table G-1**, to develop a daily estimate of flow. The maximum portion of estimated daily flow that could result in recharge was determined by multiplying the length of the percolation reach in the subbasin by the maximum percolation rate in cfs per mile.

Table G-2. Reference streams used to estimate daily flow on ungaged streams.

Name	Watershed Area (ac)	Annual Precip (in)	USGS Station ID	Location	Latitude	Longitude
Gabilan Creek (no longer monitored)	36.7	18	11152600	Salinas, CA	36.755792	-121.610501
Cantua Creek	46.4	11	11253310	San Joaquin Valley	36.402174	-120.43349
Los Gatos Creek	95.8	16	11224500	Coalinga, CA	36.2146772	-120.470712
Corralitos Creek	27.8	35	11159200	Watsonville, CA	36.9393968	-121.770507

Percolation on the San Benito River can be estimated using two available USGS gages and available percolation rate data from synoptic surveys. However, flow in the river at these gages consists of a combination of natural sources and reservoir releases. In order to estimate the contribution of each source to the stream flow percolation, a more detailed analysis has been required as described in the Reservoir Releases section below.

Because of changing conditions, high groundwater elevations, antecedent moisture conditions, and intensity of precipitation, the percolation rate, volume, and the portion of the stream recharging groundwater also change over time. Because the simple method developed to estimate percolation is based on one set of percolation data (length and rate) and assumes available groundwater storage, it represents a maximum amount of percolation.

Reservoir Releases. San Benito River and Tres Pinos Creek flows are augmented by releases from the upstream Hernandez and Paicines Reservoirs. The flow from natural sources (e.g., rainfall) and from reservoir releases were estimated separately to determine the contribution of flow and percolation by source. For the San Benito River, the USGS has continuous gages at two locations: Willow Creek School (upstream of Paicines Valley) and Old Highway 156 (near Hollister). Because reservoir releases from Hernandez and flow at Willow Creek School are both observed, the contribution of the releases to the total flow can be determined by assuming any flow up to the volume of the release is from a reservoir release. The remaining flow can be considered the natural flow component. This simple analysis sometimes leads to a more variable natural flow than expected under the current conceptual model. In previous water balances (water year 2008 and earlier) a regression was used to smooth the streamflow data and reduce variability. However, for this 2017 report was determined on an annual scale that this approach adequately estimates the natural percolation and reservoir release percolation.

Percolation from the San Benito River occurs along the four subbasins it traverses: Paicines Valley, Tres Pinos, Hollister West, and San Juan. The first three of those are between the two USGS gages, and the overall flow loss between the gages is apportioned among the subbasins based on groundwater conditions, accounting for additional flow from Pescadero and Bird Creeks (estimated by the reference stream method discussed above).

Percolation capacity is assumed to be satisfied first by reservoir release flows, because the releases are managed to percolate entirely before leaving the inter-gage reach. The remainder of flow and percolation is assumed to be from natural sources. Flow past the Highway 156 gage is assumed all flow percolates based on observations by District staff.

The portion of percolation that occurs in Paicines Valley is determined through a water budget that estimates groundwater storage depletion during the preceding dry season. River percolation reliably refills the deficit in all but very dry years. The remaining percolation upstream of the Highway 156 gage is apportioned between the Tres Pinos and Hollister West subbasins based on their respective reach lengths and flow and groundwater conditions. The drought that commenced in 2013 resulted in decreased CVP imports, increased groundwater pumping, lower groundwater elevations and very low local stream flow. Accordingly, percolation was not reduced by rejected recharge (as was the case in the early 2000s). Proceeding in downstream order, each subbasin was assumed to percolate up to the amount of available flow or the channel percolation capacity, whichever was smaller.

Percolation releases from Paicines Reservoir were assumed to completely infiltrate along Tres Pinos Creek in the Tres Pinos subbasin. Finally, flow in the San Benito River occasionally reached the gage at old Highway 156, even though the annualized percolation calculations indicated that all river water should have percolated upstream of the gage. The discrepancy results from transient events when flashy river flows temporarily exceed the percolation capacity, and possibly also errors in estimated percolation capacity. However, in 2017 it was assumed all releases percolated before leaving the basin.

CVP Percolation. From 1992 to 2005, the District released CVP water to local creek channels for percolation. That practice was discontinued because of the full condition of the basin at the time and the potential for release of invasive mussels from the imported water system. In 2017, the District used two off-stream recharge basins to percolate CVP imports. The Union Road basin in Hollister West percolated 2,209 AF beginning in March 2017, while another pond in Pacheco subbasin was used to percolate 340 AF April through September.

Deep Percolation. Deep percolation refers to the portion of water applied to the basin (either through precipitation or irrigation) that percolates through the soil to the groundwater aquifer. A soil moisture budget was prepared to examine the portion of the daily volume of precipitation and irrigation that percolates to the aquifer. A soil moisture budget accounts for several factors including daily precipitation, interception, runoff, infiltration, soil moisture storage, evapotranspiration, and the amount and efficiency of applied irrigation water. The basic concept of a soil moisture budget is that deep percolation is expected to occur only when the maximum moisture-holding capacity of the soil is reached. The budget calculations update soil moisture storage and deep percolation on a daily time step for each recharge zone.

Recharge zones were assigned to one of 22 land use categories, which included six categories of natural vegetation, seven categories of urban or developed uses, and seven categories of irrigated crops. The crop categories reflected groups sharing similar root depths, crop coefficients and growing seasons: pasture, grain, field crops, truck crops (vegetables), deciduous orchard, citrus, and vineyard.

The daily soil moisture capacity can be expressed as:

Soil Moisture Storage = Precipitation– Interception - Runoff –ET demands + Irrigation + Previous Day's Soil Moisture Storage

If the calculated soil moisture storage is greater than the maximum, then deep percolation occurs:

Deep Percolation = Soil Moisture Storage – Maximum Soil Moisture Capacity

Deep percolation accrues to a shallow groundwater storage zone from which groundwater leaks downward to the regional aquifer system at a constant rate or seeps laterally into a creek channel at a rate proportional to shallow groundwater storage. Each of the variables and how they were estimated are discussed below:

Precipitation – Daily rainfall (in inches) was obtained from the National Climatic Data Center precipitation station "Hollister 2".

Interception— Interception is rain that adheres to leaves and never reaches the ground. It was assumed to range from 0 inches for unvegetated areas to 0.02 inches for deciduous vegetation to as much as 0.08 inches for perennial broad-leaf shrubs and trees. Interception was subtracted from rainfall on each rainy day.

Runoff – The amount of rainfall that results in runoff was estimated using a linear equation. Runoff was assumed to commence when daily rainfall exceeded a threshold amount. This threshold was estimated to range from 0.3 inches for urban industrial zones to 1.1 inches for all categories of cropland and natural vegetation on level ground. Above the threshold, 90-96 percent of daily rainfall was assumed to infiltrate, while the remainder became direct runoff, depending on land use category. These values were based on model calibration studies in another central coast groundwater basin (HydroFocus, 2012).

Evapotranspiration (ET)– Evapotranspiration refers to the evaporation of water from soil (evaporation) and leaves (transpiration). It was calculated using the common method of multiplying a reference value of ET by a crop coefficient that reflects differences in physical characteristics between the type of vegetation in a recharge zone and the reference conditions. Measured daily reference evapotranspiration (ETo) was downloaded from the California Irrigation Management Information System (CIMIS) for the San Benito station located at the District's offices on the eastern outskirts of Hollister (Station # 126).

Monthly ET crop coefficients (Kc) for each crop type were adapted from several sources (California Department of Water Resources, 1975; Snyder and others, 2007; Williams, 2001; U.N. Food and Agriculture Organization) and are shown in **Table G-3** (located at the end of the section). Note that each recharge zone was assumed to comprise impervious, irrigated and non-irrigated land cover, with the corresponding percentages reflecting the primary land use (residential, industrial, natural, cropland).

Irrigation – For irrigated areas, irrigation demand is estimated based on the accumulated soil moisture deficit since the last rainfall or irrigation event. Irrigation is triggered on the day when soil moisture drops below a threshold, which was set to 80 percent of soil moisture capacity for most crops. The amount of irrigation water applied was calculated as the accumulated soil moisture deficit (in inches) divided by the irrigation efficiency. Irrigation efficiency was assumed to be 85 percent for all commercial crops except vineyards. The over-applied water (15 percent of the application in this case) causes the soil moisture profile to over-fill, and the excess becomes deep percolation. Inefficiency due to evaporation of sprinkler spray, overspray onto impervious surfaces, or runoff is not considered.

Vineyards are drip irrigated and typically grown under a "regulated deficit irrigation" (RDI) regimen during mid-July through harvest. RDI deliberately under-irrigates the vines and imposes mild water stress. Drip irrigation was assumed to be 95 percent efficient outside the RDI season and 100 percent efficient during the season.

Soil Moisture Capacity - The maximum soil moisture capacity is the total amount of water that can be stored in the root zone of a specific soil with a given land cover. Any additional water introduced into the root zone results in deep percolation to the shallow groundwater zone. Maximum soil moisture capacity is derived from the available capacity of a soil (the moisture range between field capacity and permanent wilting point, in inches per inch) and the rooting depth of the land cover/crop. The rooting depths were compiled from a variety of sources including Blaney and others (1963) for native vegetation, United Nations FAO Irrigation and Drainage Paper No. 56 for crops (2006), and Dunne and Leopold (1978) for bare soils. The available water capacity was based on the Natural Resources

Conservation Service soil survey. The soil moisture budget simulation is continuous, so the ending soil moisture for one year becomes the initial soil moisture balance for the following year. Parameters for the shallow groundwater zone were set to allow all deep percolation from the root zone to become regional groundwater recharge, with no seepage into local stream channels. Accretions to small stream base flow typically occur only when peripheral watershed areas are being simulated.

The soil moisture budget accounting comingles rainfall infiltration and applied irrigation water. For the purposes of the annual report, deep percolation from natural and irrigation sources are reported separately in the water balance tables. The irrigation component is calculated as:

Irrigation deep percolation = Applied irrigation water * (1 – irrigation efficiency)

The natural component equals the remainder of the total deep percolation.

Paicines and Tres Pinos Creek Valleys are outside the area covered by the current groundwater model and were not included in the simulated recharge zones. Irrigation demand and groundwater recharge for those areas were estimated from simulation results for a mix of zones with similar crops within Zone 6.

Reclaimed Water Percolation. Several municipalities have wastewater treatment plants (WWTPs) within the basin, including the Tres Pinos, Cielo Vista, and San Juan Bautista WWTPs, one active sites operated by Sunnyslope County Water District near Ridgemark, and the City of Hollister domestic and industrial plants (DWTP and IWTP, respectively). Tres Pinos, SSCWD and the City of Hollister have percolation ponds where treated wastewater is percolated to the groundwater aquifer. The total volume percolated is reported by facility in **Appendix D** for water years 2015 through 2017. The percolation from each facility is assigned to one or more subbasins. The distribution of reclaimed water percolation is shown in **Table G-4**. The proportions of IWTP recharge percolating into the San Juan and Hollister West subbasins are estimated and can change over time.

Table G-4. Percent of WW percolating in each subbasin

	San Juan	Hollister West	Tres Pinos
Hollister -- domestic	100		
Hollister -- industrial	50	50	
Ridgemark Estates I & II			100
Tres Pinos			100

Subsurface Inflow. Subsurface groundwater flow to and from individual subbasins was calculated for 2015-2017 using Darcy's Law. The Darcy's Law estimates for 2015-2017 were derived from the slopes on groundwater contour maps and the flux calculated based on estimated hydraulic conductivity. In prior years, minor adjustments to groundwater inflows and outflows were made if they were consistent with general changes in groundwater elevations and reduced the discrepancies between the two estimates of storage change for the subbasin.

Table G-4. Inflows and Outflows Based on Darcy's Flow Equation

	2015 Totals (AF)		2016 Totals (AF)		2017 Totals (AF)	
	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow
Pacheco	2,647	1,913	2,841	2,578	3,081	1,667
Bolsa South East	5,398	3,485	4,142	1,909	4,317	1,465
San Juan	49	11	109	14	74	16
Hollister West	4,288	5,398	6,908	4,142	6,775	4,317
Hollister East	4,101	2,080	3,985	2,338	3,663	2,595
Tres Pinos	2,310	1,379	2,859	1,877	2,610	2,332
Bolsa	6,866	0	8,055	0	5,916	0
Paicines	0	500	0	500	0	500
Tres Pinos Creek Valley	--	2,310	--	2,859	--	2,610
Total	9,176	1,379	10,914	1,877	8,526	2,332

Outflows

The major outflows from the subbasins in Zone 6 and surrounding areas are groundwater pumping (agricultural and M&I plus domestic) and surface and subsurface outflow.

Pumping. Groundwater pumping in Zone 6 is metered by means of hour meters on irrigation wells that are read three times per water year in early spring, summer, and early fall. Groundwater meters are categorized as agriculture use, domestic use, or municipal use. Monthly data for municipal wells are also received directly from the City of Hollister, SSCWD, City of San Juan Bautista, and Tres Pinos Water District. For areas outside of Zone 6 (Bolsa, Pacheco Valley, Tres Pinos Creek Valley, and Paicines), agricultural pumping is estimated using the soil moisture budget. The irrigation needs of the subbasins are based on land use, crop evapotranspiration coefficient, and irrigation efficiency. Domestic and municipal use in the Bolsa and Pacheco subbasins are assumed negligible.

Agricultural pumping is also calculated using the soil moisture balance described in the inflow section. The calculated pumping (estimated groundwater needed to meet the applied water demand of the specific crops) is significantly different than the reported pumping. It is unclear why this discrepancy exists and it is recommended the District is investigating the accuracy of their meters. For purposes of this annual report, the reported groundwater use was used to remain consistent with previous years.

Groundwater Outflow. Subsurface outflow is determined by the same method as groundwater inflow. The Darcy's Law estimates for 2015-2017 were derived from the slopes on groundwater contour maps and the flux calculated based on estimated hydraulic conductivity.

Change in Storage

The change in groundwater storage can be estimated two ways. The first is simply:

Inflows- Outflows = Change in Storage

The second method, described in detail in the groundwater elevations section of the report, involves analysis of the change in groundwater elevations and the regional storativity values.

Conclusion

The water balance analysis provides independent estimation of each element with consistent methodology, and thereby provides a useful check on the current basin conceptualization. The water balance can be used to help illustrate and document changes in groundwater basin conditions, and can indicate changes in groundwater use, hydrologic conditions, or groundwater management. Consistent with SGMA requirements, the water balance will be analyzed for historical, current, and future conditions in the GSP and then updated and reported annually. As part of GSP preparation, development of an updated hydrogeologic conceptual model, improved numerical model, and expanded monitoring program will support more accurate and reliable water balance analyses. The forthcoming water balances also will address the full extent of the DWR-defined Bolsa, Hollister, and San Juan Bautista groundwater basins.

Table G-5. Water Balance for Water Year 2006 (AFY)

	Pacheco	Bolsa Southeast	San Juan	Hollister West	Hollister East	Tres Pinos	Zone 6 Subtotal	Bolsa	Paicines	Tres Pinos Creek Valley	Grand Total
Inflows											
Stream percolation											
Natural streamflow*	1,659	0	1,410	1,134	2,681	378	7,263	500	238	2,521	10,522
Reservoir releases	0	0	587	1,222	0	407	2,217	0	0	0	2,217
CVP Percolation	0	0	0	451	0	1	452	0	0	0	452
Deep percolation through soils											
Rainfall+	1,763	699	5,499	1,396	2,859	842	13,059	3,853	451	110	17,472
Irrigation	447	252	1,262	194	953	100	3,207	623	102	32	3,964
Reclaimed water percolation	0	0	2,402	606	0	249	3,257	0	0	0	3,257
Groundwater inflow	4,000	3,750	500	2,750	1,250	4,000	16,250	6,000	500	500	23,250
Total	7,869	4,700	11,660	7,753	7,743	5,978	45,704	10,976	1,290	3,162	61,133
Outflows											
Wells											
Agricultural	1,029	1,856	5,822	1,422	1,263	842	12,234	6,234	1,016	316	19,800
Domestic and M & I	180	8	919	3,211	1,292	1,645	7,255	0	0	49	7,304
Groundwater outflow	4,250	2,000	2,000	3,750	1,500	2,750	16,250	5,250	500	500	22,500
Total	5,458	3,864	8,741	8,383	4,055	5,238	35,739	11,484	1,516	865	49,603
Storage change											
Inflows - outflows	2,411	837	2,919	(630)	3,688	741	9,965	(508)	(225)	2,298	11,530
Water level change	410	245	442	770	1,539	409	3,815	1,195	0	0	5,010

*rejected recharge was assumed to be 50 % for Pacheco, natural percolation in San Juan subbasin was also decreased by 50 percent to represent rejected recharge
+Deep percolation from rainfall was decreased by 20 percent to account for additional runoff and rejected recharge during wet times

Table G-6. Water Balance for Water Year 2007 (AFY)

	Pacheco	Bolsa Southeast	San Juan	Hollister West	Hollister East	Tres Pinos	Zone 6 Subtotal	Bolsa	Paicines	Tres Pinos Creek Valley	Grand Total
Inflows											
Stream percolation											
Natural streamflow*	799	0	25	73	319	24	1,241	500	34	2,673	4,448
Reservoir releases	0	0	767	2,297	0	766	3,830	0	0	0	3,830
CVP Percolation	0	0	0	216	0	88	304	0	0	0	304
Deep percolation through soils											
Rainfall	378	179	1,166	287	402	66	2,478	759	96	17	3,350
Irrigation	457	257	1,218	214	1,069	95	3,311	709	116	35	4,170
Reclaimed water percolation	0	0	2,354	614	0	158	3,126	0	0	0	3,126
Groundwater inflow	4,500	3,000	250	3,000	1,250	3,000	15,000	6,000	500	500	22,000
Total	6,135	3,436	5,781	6,701	3,040	4,197	29,290	7,968	746	3,224	41,228
Outflows											
Wells											
Agricultural	810	1,998	6,562	1,662	2,366	849	14,247	7,086	1,156	350	22,839
Domestic and M & I	224	7	1,096	3,456	1,501	2,013	8,297	0	0	46	8,343
Groundwater outflow	4,250	2,000	500	2,750	1,500	1,250	12,250	1,500	500	500	14,750
Total	5,284	4,005	8,158	7,868	5,367	4,112	34,794	8,586	1,656	896	45,932
Storage change											
Inflows - outflows	851	(569)	(2,377)	(1,168)	(2,327)	85	(5,504)	(618)	(910)	2,328	(4,703)
Water level change	(958)	(1,466)	(2,530)	(400)	(2,909)	(220)	(8,482)	(862)	0	0	(9,344)

*no rejected recharge removed

Table G-7. Water Balance for Water Year 2008 (AFY)

	Pacheco	Bolsa Southeast	San Juan	Hollister West	Hollister East	Tres Pinos	Zone 6 Subtotal	Bolsa	Paicines	Tres Pinos Creek Valley	Grand Total
Inflows											
Stream percolation											
Natural streamflow*	1,131	0	496	275	726	92	2,719	500	146	2,669	6,035
Reservoir releases	0	0	412	564	0	188	1,164	0	0	0	1,164
CVP Percolation	0	0	0	6	0	0	6	0	0	0	6
Deep percolation through soils											
Rainfall	1,111	556	4,414	898	2,150	594	9,723	2,928	224	41	12,916
Irrigation	322	233	958	151	801	66	2,531	789	126	37	3,483
Reclaimed water percolation	0	0	2,209	629	0	158	2,996	0	0	0	2,996
Groundwater inflow	4,750	4,000	250	3,000	1,000	3,500	16,500	7,000	500	500	24,500
Total	7,314	4,790	8,739	5,522	4,678	4,597	35,639	11,217	996	3,247	51,099
Outflows											
Wells											
Agricultural	1,703	2,001	6,744	1,143	2,639	567	14,796	7,889	1,255	372	24,313
Domestic and M & I	197	13	1,053	3,232	1,323	2,130	7,947	0	0	47	7,993
Groundwater outflow	5,500	1,250	250	3,500	1,500	2,500	14,500	1,250	500	500	16,750
Total	7,400	3,264	8,046	7,875	5,462	5,197	37,243	9,139	1,755	919	49,056
Storage change											
Inflows - outflows	(85)	1,525	693	(2,353)	(784)	(600)	(1,604)	2,078	(759)	2,328	2,043
Water level change	(298)	2,483	174	1,009	(403)	(158)	2,807	1,796	0	0	4,603

*no rejected recharge removed

Table G-8. Water Balance for Water Year 2009 (AFY)

	Pacheco	Bolsa Southeast	San Juan	Hollister West	Hollister East	Tres Pinos	Zone 6 Subtotal	Bolsa	Paicines	Tres Pinos Creek Valley	Grand Total
Inflows											
Stream percolation											
Natural streamflow	771	0	666	1,517	449	506	3,910	500	0	413	4,823
Reservoir releases	0	0	1,013	2,318	0	773	4,104	0	0	0	4,104
CVP Percolation	0	0	0	0	0	0	0	0	0	0	0
Deep percolation through soils											
Rainfall	767	424	2,515	676	748	185	5,314	1,185	182	31	6,712
Irrigation	494	185	910	340	577	111	2,618	721	114	34	3,488
Reclaimed water percolation	0	0	2,190	214	0	191	2,594	0	0	0	2,594
Groundwater inflow	3,422	1,500	260	2,032	1,000	1,644	9,858	4,000	0	--	13,858
Total	5,454	2,109	7,554	7,098	2,774	3,409	28,398	6,407	296	478	35,579
Outflows											
Wells											
Agricultural	3,106	2,073	10,943	1,495	3,535	600	21,753	7,213	1,140	344	30,451
Domestic and M & I	264	9	1,013	2,691	1,198	2,271	7,446	0	0	0	7,446
Groundwater outflow	2,000	1,000	19	1,500	2,159	2,000	8,678	0	0	1,644	10,322
Total	5,370	3,082	11,975	5,686	6,892	4,871	37,877	7,213	1,140	1,988	48,218
Storage change											
Inflows - outflows	84	(974)	(4,421)	1,412	(4,118)	(1,462)	(9,478)	(807)	(845)	(1,510)	(12,639)
Water level change	1,639	(5,338)	(437)	(431)	4,710	1,913	2,055	(3,372)	(343)	(366)	(2,026)

Adjustments

- Adjusted Bolsa SE/Hollister West subsurface flow
- Adjusted Bolsa/Pacheco subsurface flow
- Adjusted Bolsa/Bolsa SE subsurface flow
- Assumed all San Benito River flows percolate within the basin

Table G-9. Water Balance for Water Year 2010 (AFY)

	Pacheco	Bolsa Southeast	San Juan	Hollister West	Hollister East	Tres Pinos	Zone 6 Subtotal	Bolsa	Paicines	Tres Pinos Creek Valley	Grand Total
Inflows											
Stream percolation											
Natural streamflow	671	0	701	993	467	331	3,164	500	0	(316)	3,348
Reservoir releases	0	0	829	1,755	0	585	3,169	0	0	0	3,169
CVP Percolation	0	0	0	0	0	0	0	0	0	0	0
Deep percolation through soils											
Rainfall	806	407	2,611	749	717	152	5,444	1,403	231	43	7,121
Irrigation	433	150	766	301	472	88	2,210	629	103	33	2,975
Reclaimed water percolation	0	0	1,940	18	0	191	2,150	0	0	0	2,150
Groundwater inflow	2,870	2,874	36	2,021	1,041	1,901	10,742	6,600	0	--	17,341
Total	4,780	3,431	6,883	5,837	2,698	3,248	26,877	9,132	334	(240)	36,103
Outflows											
Wells											
Agricultural	2,517	1,896	8,745	1,614	3,739	575	19,087	6,294	1,032	326	26,740
Domestic and M & I	36	0	816	2,467	721	1,111	5,152	0	0	0	5,152
Groundwater outflow	3,108	1,473	19	2,874	1,619	2,000	11,093	0	0	1,901	12,994
Total	5,661	3,370	9,580	6,955	6,079	3,686	35,332	6,294	1,032	2,227	44,885
Storage change											
Inflows - outflows	(881)	61	(2,697)	(1,118)	(3,382)	(438)	(8,455)	2,838	(698)	(2,467)	(8,782)
Water level change	(1,335)	5,443	(811)	(477)	(2,032)	(2,485)	(1,696)	4,631	(2,036)	(1,067)	(168)

Adjustments

Bolsa SE not adjusted due to uncertainty in the observed groundwater levels
Reduced Pacheco and Hollister East stream flow to 25 % of calculated
Reduced subsurface outflow from Pacheco
Reduced subsurface inflow from Pacheco outside basin
Reduced subsurface inflow into Tres Pinos
Assumed 50% of San Benito River flows out of the basin

Table G-10. Water Balance for Water Year 2011 (AFY)

	Pacheco	Bolsa Southeast	San Juan	Hollister West	Hollister East	Tres Pinos	Zone 6 Subtotal	Bolsa	Paicines	Tres Pinos Creek Valley	Grand Total
Inflows											
Stream percolation											
Natural streamflow	896	0	2,272	1,948	693	812	6,622	500	1,304	3,003	11,428
Reservoir releases	0	0	846	764	0	318	1,929	0	511	0	2,440
CVP Percolation	0	0	0	0	0	0	0	0	0	0	0
Deep percolation through soils											
Rainfall	1,627	475	3,034	1,383	1,230	348	8,097	1,919	452	120	10,588
Irrigation	435	150	767	301	446	88	2,187	577	101	32	2,898
Reclaimed water percolation	0	0	2,040	233	0	202	2,475	0	0	0	2,475
Groundwater inflow	3,037	3,055	100	2,019	900	2,003	11,115	6,676	0	--	17,791
Total	5,995	3,680	9,059	6,648	3,269	3,772	32,424	9,672	2,369	3,155	47,620
Outflows											
Wells											
Agricultural	1,910	2,775	4,664	1,801	1,247	390	12,786	5,775	1,013	322	19,896
Domestic and M & I	82	6	322	2,139	700	2,064	5,315	0	0	0	5,315
Groundwater outflow	3,191	1,500	3,600	3,055	2,000	2,000	15,346	0	0	2,003	17,349
Total	5,183	4,281	8,587	6,995	3,947	4,454	33,447	5,775	1,013	2,325	42,560
Storage change											
Inflows - outflows	812	(601)	473	(347)	(678)	(682)	(1,023)	3,897	1,356	830	5,060
Water level change	389	(2,508)	(523)	(198)	570	228	(2,042)	(2,239)	852	2,334	(1,095)

Adjustments

Reduced Pacheco stream flow to 25% of calculated
Assumed 58% of San Benito River flows out of the basin
Reduced deep peroclation in San Juan and parts of Bolsa
Adjusted Holliseter West/Tres Pinos interaction
Reduced subsurface inflow from Pacheco outside basin and Holliser East
Increased groundwater outflow from San Juan

Table G-11. Water Balance for Water Year 2012 (AFY)

	Pacheco	Bolsa Southeast	San Juan	Hollister West	Hollister East	Tres Pinos	Zone 6 Subtotal	Bolsa	Paicines	Tres Pinos Creek Valley	Grand Total
Inflows											
Stream percolation											
Natural streamflow	564	0	42	0	261	0	867	0	24	429	1,320
Reservoir releases	0	0	0	0	0	1,321	1,321	0	122	0	1,443
CVP Percolation	0	0	0	0	0	0	0	0	0	0	0
Deep percolation through soils											
Rainfall	3,560	944	4,804	1,779	4,752	1,013	16,852	6,529	799	129	24,309
Irrigation	1,096	364	1,687	492	2,049	278	5,964	1,928	107	43	8,043
Reclaimed water percolation	0	0	2,043	303	0	196	2,541	0	0	0	2,475
Groundwater inflow	3,109	2,476	132	2,024	980	1,849	10,571	6,676	0	--	17,791
Total	8,257	4,363	8,673	4,522	7,962	4,817	38,594	15,133	1,053	601	55,381
Outflows											
Wells											
Agricultural	5,303	1,546	5,205	2,589	5,217	1,590	21,450	14,869	1,072	432	35,800
Domestic and M & I	158	4	528	2,568	624	2,233	6,115	0	0	0	6,142
Groundwater outflow	2,766	1,324	1,213	2,476	1,926	2,000	11,705	0	0	2,003	17,349
Total	8,661	3,052	9,335	8,216	7,851	5,823	42,937	12,847	1,072	2,435	59,291
Storage change											
Inflows - outflows	(404)	1,311	(662)	(3,693)	112	(1,005)	(4,343)	2,285	(19)	(1,834)	(3,911)
Water level change	(882)	53	0	640	(1,096)	601	(683)	2,144	0	0	1,461

Adjustments

Agricultural pumping is based on reported groundwater use

Table G-12. Water Balance for Water Year 2013 (AFY)

	Pacheco	Bolsa Southeast	San Juan	Hollister West	Hollister East	Tres Pinos	Zone 6 Subtotal	Bolsa	Paicines	Tres Pinos Creek Valley	Grand Total
Inflows											
Stream percolation											
Natural streamflow	340	0	214	0	163	0	716	0	69	246	1,031
Reservoir releases	0	0	0	0	0	677	677	0	151	0	828
CVP Percolation	0	0	0	0	0	0	0	0	0	0	0
Deep percolation through soils											
Rainfall	1,036	248	1,530	549	1,210	313	4,886	1,891	293	24	7,094
Irrigation	1,134	375	1,681	515	1,970	312	5,987	2,231	140	64	8,422
Reclaimed water percolation	0	0	1,055	166	0	209	1,430	0	0	0	2,475
Groundwater inflow	3,109	2,476	132	2,024	980	1,849	10,571	6,676	0	--	17,791
Total	5,547	3,678	5,565	3,316	4,243	3,507	25,856	10,798	654	334	37,641
Outflows											
Wells											
Agricultural	4,056	2,344	10,497	2,999	4,420	580	24,896	14,869	1,404	639	42,728
Domestic and M & I	101	4	548	2,656	1,009	1,872	6,190	0	0	0	6,191
Groundwater outflow	2,766	1,324	1,213	2,476	1,926	2,000	11,705	0	0	2,003	17,349
Total	9,421	3,176	13,294	6,983	8,832	5,648	47,353	14,869	1,404	2,642	66,267
Storage change											
Inflows - outflows	(3,873)	502	(7,729)	(3,667)	(4,589)	(2,141)	(21,497)	(4,071)	(750)	(2,309)	(28,627)
Water level change	(597)	(918)	(6,239)	(1,730)	351	(586)	(9,718)	(674)	0	0	(10,392)

Adjustments

Agricultural pumping is based on reported groundwater use

H SGMA SUPPORT

List of Documents

- Resolution No. 2017-03
- MOU with SCVWD

RESOLUTION NO. 2017-03

A RESOLUTION OF THE BOARD OF DIRECTORS SAN BENITO COUNTY WATER DISTRICT'S DECISION TO BECOME THE GROUNDWATER SUSTAINABILITY AGENCY FOR THE BOLSA, HOLLISTER, AND SAN JUAN SUBBASINS WITHIN SAN BENITO COUNTY

WHEREAS, on September 16, 2014, the Sustainable Groundwater Management Act (SGMA) was signed into law and adopted into the California Water Code, commencing with Section 10720; and

WHEREAS, the legislative intent of SGMA is to provide for the sustainable management of groundwater basins, to enhance local management of groundwater, to establish minimum standards for sustainable groundwater management; and to provide local groundwater agencies with the authority and the technical and financial assistance necessary to sustainably manage groundwater; and

WHEREAS, Water Code Sections 10725 et al. and 10726 et al. detail additional new powers and authorities granted to Groundwater Sustainability Agencies to implement sustainable groundwater management in the basins under their jurisdictions; and

WHEREAS, the San Benito County Water District Act (California Water Code Appendix, Chapter 70) provides the District with broad groundwater management authority, including the authority to conserve water for beneficial and useful purposes by spreading, storing, retaining, and causing such waters to percolate into the soil within or without the District; and

WHEREAS, the District's statutory boundary overlies the Bolsa, Hollister, and San Juan Subbasins within San Benito County; and

WHEREAS, the Bolsa, Hollister, and San Juan Subbasins are deemed by the California Department of Water Resources (DWR) to be medium-priority basins and therefore require the development of a Groundwater Sustainability Plan; and

WHEREAS, establishing the District as the Groundwater Sustainability Agency will enable the District to prepare and implement a Groundwater Sustainability Plan (GSP) for the Bolsa, Hollister, and San Juan Subbasins within San Benito County, and to best work with DWR and the State Water Resources Control Board to resolve groundwater and surface water issues related to the Bolsa, Hollister, and San Juan Subbasins within San Benito County; and

WHEREAS, the District is committed to its legislatively created mandate to manage the surface water and groundwater resources within its jurisdiction; and

WHEREAS, prior to adopting a resolution of intent to establish the District as a Groundwater Sustainability Agency, Water Code Section 10723 requires the local agency to hold a public hearing, after publication of notice pursuant to California Government Code Section 6066, on whether or not to adopt a resolution to establish a Groundwater Sustainability Agency; and

WHEREAS, pursuant to Government Code 6066, notices of a public hearing on whether or not to adopt a resolution to establish a Groundwater Sustainability Agency were published on January 27, 2017 and February 3, 2017; and

WHEREAS, on February 8, 2017, this District held a public hearing regarding the adoption of a resolution to establish the District as the Groundwater Sustainability Agency for the Bolsa, Hollister, and San Juan Subbasins within San Benito County;

NOW, THEREFORE BE IT RESOLVED that the Board of Directors of the San Benito County Water District:

1. Hereby establishes the District as the Groundwater Sustainability Agency for the Bolsa, Hollister, and San Juan Subbasins within San Benito County; and

2. Hereby authorizes the District Manager or his designee to provide a copy of this resolution and a Notice of Intent to the California Department of Water Resources within 30 days and to otherwise comply with the requirements of Water Code Section 10723.B(a); and

3. All the recitals in this Resolution are true and correct and the District so finds, determines, and represents.

PASSED AND ADOPTED at a Special Meeting of the Board of Directors of San Benito County Water District by the following vote on February 8, 2017:

AYES: Tobias, Tonascia, Bettencourt, Flores & Huenemann
NOES: None
ABSENT: None
ABSTAIN: None

John Tobias
President

ATTEST:

Sara Singleton
Assistant Manager

DOCUMENT #

MOU 00150

MEMORANDUM OF UNDERSTANDING BETWEEN SANTA CLARA VALLEY WATER DISTRICT AND SAN BENITO COUNTY WATER DISTRICT FOR SUSTAINABLE GROUNDWATER MANAGEMENT ACT COMPLIANCE

THIS MEMORANDUM OF UNDERSTANDING ("MOU"), made in the State of California on July 5, 2017, is by and between the Santa Clara Valley Water District ("SCVWD"), and the San Benito County Water District ("SBCWD"), each a "Party" and collectively the "Parties."

This MOU sets forth the respective roles and responsibilities of the Parties regarding coordination to sustainably manage groundwater in the Hollister Area Subbasin and San Juan Bautista Area Subbasin.

RECITALS

WHEREAS, the SCVWD, an independent special district created by the Legislature of the State of California, manages groundwater and is the primary water resource agency for Santa Clara County, supplying wholesale water, providing flood protection and serving as environmental steward for clean, safe creeks and healthy ecosystems; and

WHEREAS, the SBCWD, a water conservation and flood control district, preserves the economic and environmental health and well-being of San Benito County through the control, management and conservation of waters and the provision of water services in a practical, cost-effective and responsible manner; and

WHEREAS, the Sustainable Groundwater Management Act ("Act"), enacted by the State of California, provides that local agencies may become a Groundwater Sustainability Agency ("GSA") and adopt a Groundwater Sustainability Plan ("GSP") to manage groundwater basins within the local agency's statutory jurisdiction; and

WHEREAS, the Act and this MOU define "basin" as a basin or subbasin identified and defined in California Department of Water Resources (DWR) Bulletin 118; and

WHEREAS, the Act requires that the entirety of each medium- and high-priority basin, as defined by DWR, be covered by a GSA by June 30, 2017 to avoid potential state intervention; and

WHEREAS, the service area of each Party overlies two common groundwater basins as defined by the Act and DWR: the Hollister Area Subbasin (DWR Basin 3-3.03) and the San Juan Bautista Area Subbasin (DWR Basin 3-3.04), collectively the "Common Basins"; and

WHEREAS, the SBCWD manages groundwater within San Benito County, including the majority of the Common Basins and the entirety of the Bolsa Area Subbasin (DWR Basin 3-3.02); and

WHEREAS, small portions of the Common Basins are located within Santa Clara County; and

WHEREAS, in terms of surface area, Santa Clara County contains less than ten percent of the Hollister Area Subbasin and less than one percent of the San Juan Bautista Area Subbasin; and

WHEREAS, the SCVWD has not previously conducted groundwater management activities in the Santa Clara County portions of the Common Basins other than permitting the construction, modification, and destruction of wells; and

WHEREAS, following a public hearing on February 8, 2017, the SBCWD Board of Directors adopted Resolution 2017-03 establishing the SBCWD as the GSA for the portions of the Common Basins located within San Benito County; and

WHEREAS, following a public hearing on June 13, 2017, the SCVWD Board of Directors adopted Resolution 17-38 establishing the SCVWD as the GSA for the portion of the Common Basins in Santa Clara County; and

WHEREAS, the action of each Party to adopt a resolution to become the GSA and submit related notification to DWR ensures the entirety of the Common Basins is covered by a GSA with no areas of overlap; and

WHEREAS, each Party is a local agency qualified to prepare and adopt a GSP under the Act; and

WHEREAS, the entirety of each basin subject to the Act that is not in a condition of critical overdraft must be addressed by a GSP by January 31, 2022; and

WHEREAS, if there are multiple GSAs within a basin, the GSAs can develop a single GSP for the entire basin or separate GSPs, provided there is a related coordination agreement; and

WHEREAS, for the purposes of this MOU, "GSP" is defined as one or more GSPs developed by the Parties for the entirety of the Common Basins; and

WHEREAS, GSAs are responsible for ensuring long-term groundwater sustainability through implementation of a GSP; and

WHEREAS, the Parties wish to provide a framework for cooperative groundwater management efforts in the Common Basins to ensure the Act is implemented effectively, efficiently, fairly, and at the lowest reasonable cost.

NOW, THEREFORE, in consideration of the recitals and mutual obligations of the Parties expressed herein, the Parties agree as follows:

1. Purpose

The purpose of this MOU is to establish an understanding between the Parties with regard to preparing a GSP for the Common Basins, including responsibilities and funding obligations.

2. Term

a) This MOU shall become effective upon its execution by both Parties.

b) This MOU will terminate when the Parties agree, in writing, that the GSP is complete to the satisfaction of DWR.

c) Payment obligations under Article 6, Cost Sharing and Payment, and Article 11, Cancellation, shall survive discharge or termination of this MOU until obligations are satisfied.

3. Responsibilities of the Parties

General responsibilities of the Parties regarding the Common Basins are as follows:

a) Ensure all required GSA filings are complete and submitted to DWR by the June 30, 2017 statutory deadline.

b) Develop a schedule to prepare a GSP for the Common Basins for consideration by the Board of Directors of both Parties.

c) Share relevant data on geology, hydrogeology, operations, or other information that may be needed to develop or implement a GSP.

d) Coordinate to conduct stakeholder outreach related to GSP development and adoption.

e) Submit the GSP to DWR by the January 31, 2022 statutory deadline.

f) Ensure all work related to this MOU is performed in accordance with the California Environmental Quality Act and other applicable laws.

g) Coordinate to respond to public comments on the GSP for the Common Basins, as applicable.

h) Address any issues or deficiencies raised by DWR during their review of the GSP within the required time.

i) Explore the role of each Party in implementing the GSP to ensure long-term sustainability and compliance with the Act. The role of each Party will be documented in a future MOU or other agreement. This MOU does not obligate either Party to implement specific groundwater management actions in the Common Basins.

4. Responsibilities of SBCWD

a) SBCWD will act as the contracting entity under this MOU. Subject to approval by SBCWD's authorized representative, SBCWD shall be responsible for executing any Consultant Contract(s) to undertake development of the GSP. SBCWD shall conduct a consultant procurement process that satisfies its own internal consultant procurement policies/criteria.

b) Share relevant data and information with SCVWD as requested.

c) Notify SCVWD of the Consultant(s) selected to develop the GSP.

d) Solicit SCVWD comments on any Consultant Contract(s) related to GSP development prior to execution.

e) Review Consultant invoices for approval and report disputes, if any, to SCVWD within five (5) working days of receipt of invoice. Pay approved invoices and provide copies of invoices to SCVWD with requests for reimbursement as described in Article 6.

f) Solicit SCVWD comments on Consultant deliverables prior to acceptance.

5. Responsibilities of SCVWD

a) Share relevant data and information with SBCWD as requested.

b) Provide comments on proposed Consultant Contract(s) within five (5) working days of receipt.

c) Provide comments on Consultant deliverables within five (5) working days, or other schedule as mutually agreed upon. The SCVWD technical review period for the draft GSP will be a minimum of ten (10) working days.

d) Reimburse SBCWD in accordance with Article 6.

6. Cost Sharing and Payment

The estimated Consultant cost to develop a GSP for the Common Basins is expected to be less than $250,000. Additional Consultant work may be needed to respond to issues raised during DWR review of the GSP. SCVWD agrees to reimburse SBCWD for 10% of the total Consultant cost, with a maximum contribution of $35,000, unless additional funding is authorized in writing through an amendment pursuant to Article 13 of this MOU.

a) SBCWD shall request reimbursement from SCVWD by submitting invoice(s) for incurred Consultant contract costs no more than once a calendar quarter. The invoice(s) shall clearly indicate the SCVWD cost share and shall be accompanied by adequate supporting documentation of related Consultant contract costs, including the hourly rates, hours spent, and information on activities performed in support of the scope of services specified in the Consultant contract(s).

b) Following review and approval of an invoice by SCVWD, SCVWD shall disburse to SBCWD the approved amount within thirty (30) days of receipt of the invoice.

c) An invoice may be rejected by SCVWD only if the invoice contains a material error or paying the invoice would result in SCVWD exceeding its maximum contribution described in this Article. SCVWD shall notify SBCWD of any invoice so rejected, and the reasons therefore.

d) Costs incurred by SBCWD for "in-kind" services including staff time and overhead costs, as well as costs for Consultant oversight, meetings, travel, and incidental expenses shall not be reimbursable by SCVWD.

7. Hold Harmless, Indemnification, Remedies, and Insurance

To the extent permitted by California State law and in proportion to fault, each Party will indemnify, defend, and hold all other Parties and their directors, officers, agents, and employees safe and harmless from any and all claims, suits, judgments, damages, penalties, costs, expenses, liabilities and losses (including without limitation, sums paid in settlement of claims, actual attorneys' fees, paralegal fees, consultant fees, engineering fees, expert fees, and any other professional fees) that arise from or are related in any way to each Party, its employees, officers, or other agents in the operation and/or performance of this MOU; provided, however, that no Party shall indemnify or hold harmless another Party for that Party's own negligent acts, errors, or omissions, or willful misconduct, in the operation and/or performance of this MOU or the performance of the Consultant(s).

Notwithstanding the preceding paragraph, where more than one Party is named in a suit challenging the GSP regarding the Common Basins, or made subject to a claim or penalty regarding the same, the Parties shall coordinate and undertake a joint defense, utilizing a joint defense agreement to the extent possible, subject to the approval of the Parties. Each Party agrees that, to the greatest extent practicable, it shall cooperate in such defense and execute any waivers and/or tolling agreements that may be necessary in order to provide for a single joint defense of such a suit, claim, or imposition of penalty. Any communications between the Parties and any of their respective consultants and attorneys engaged in the joint defense shall be privileged as joint defense communications. Work performed during the joint defense by Consultants or attorneys, to the extent allowed by law, shall be considered attorney work product. Nothing in this paragraph is intended to require a joint defense under circumstances where it would be legally impermissible or under circumstances where it is wholly impractical.

This indemnity provision shall survive the termination of this MOU and the termination of any Party's participation in this MOU. Further, each Party will be liable to the other Party for attorneys' fees, costs, and expenses, and all other costs and expenses whatsoever, which are incurred by the other Party in enforcing this indemnity provision.

In all Consultant contracts funded in whole or part by the Parties, SBCWD shall name the SCVWD and its respective officers, agents, and employees as additional insureds and additional indemnitees in the insurance coverage and indemnity provisions customarily used in the SBCWD professional service contracts.

8. Disputes

Any claim that a Party may have against the other Party regarding the performance of this MOU including, but not limited to, claims for compensation will be submitted to such other Party. The Parties will attempt to negotiate a resolution of such claim and if necessary process an amendment to this MOU or a settlement agreement to implement the terms of any such resolution.

9. Cancellation

If a Party elects to terminate its participation in this MOU, it may do so by delivering to the other Party a written notice of intention to terminate. Termination shall take effect thirty days following the receipt of notice by the other Party. No portion of the terminating Party's financial contribution provided under this MOU shall be refunded to the terminating Party.

10. Maintenance and Inspection of Books, Records, and Reports

The Parties will, upon reasonable advance written notice, make available for inspection by the other Party all records, books, and other documents directly relating to the GSP or groundwater management for the Common Basins. Prior to release of such documents (other than in response to a request under the California Public Records Act, a subpoena, or court order), all draft information shall be approved by both Parties for finalization and release.

11. MOU Not a Precedent

The Parties intend that the provisions of this MOU will not bind the Parties as to the provisions of any future agreement between them. This MOU was developed specifically for the specified MOU term and purpose.

12. Notices

Any notice, demand, or request made in connection with this MOU must be in writing and will be deemed properly served if delivered in person or sent by Unites States mail, postage prepaid, to the addresses specified herein.

Santa Clara Valley Water District
Attention: Garth Hall, Deputy Operating Officer, Water Supply
5750 Almaden Expressway
San Jose, CA 95118

San Benito County Water District
Attention: Jeff Cattaneo, District Manager
30 Mansfield Road, PO Box 899
Hollister, CA 95024

Any Party may change such contact or address by notice given to the other Party as provided herein.

13. Amendments

The MOU may be amended in the form of written amendment executed by both Parties.

14. Assignment

No Party shall assign, sublet, or transfer this MOU or any of the rights or interests in this MOU without the written consent of the other Party.

15. Severability

The partial or total invalidity of one or more parts of this MOU will not affect the intent or validity or remaining parts of this MOU.

16. Governing Law

This MOU will be deemed a contract under the laws of the State of California and for all purposes shall be interpreted in accordance with such laws.

17. Interpretation

This MOU shall be deemed to have been prepared equally by both Parties, and its individual provisions shall not be construed or interpreted more favorably for one Party on the basis that the other Party prepared it.

18. Contractual Restriction on Consultant's Use of Study Materials

Each Party shall ensure that reasonable contractual restrictions on the consultant's use of the study material and handling of confidential material are included in a written agreement with the consultant.

19. No Third-Party Beneficiaries

This MOU does not and is not intended to confer any rights or remedies upon any person or entity other than the Parties.

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In WITNESS WHEREOF, the parties have executed this MOU as of the effective date.

San Benito County Water District

Approved as to Form

NAME DAVID E. PIRAL
General Counsel

Jeff Cattaneo
General Manager

7/5/17
Date

Santa Clara Valley Water District

Approved as to Form

Erick Soderlund
Assistant District Counsel

Norma Camacho
Interim Chief Executive Officer

6/19/2017
Date

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LIST OF ACRONYMS

AF	acre-foot
AFY	acre-foot per year
ag	agriculture
CASGEM	California Statewide Groundwater Elevation Monitoring
CDHSPH	California Department of Public Health
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CIMIS	California Irrigation Management Information System
COC	Constituent of Concern
CVP	Central Valley Project
District or SBCWD	San Benito County Water District
DWR	California Department of Water Resources
DWTP	Domestic Wastewater Treatment Plant
ET	evapotranspiration
ft	feet
gpd	gallons per day
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
gw	groundwater
IRWMP	Integrated Regional Water Management Plan
ITRC	Irrigation Training and Research Center, California Polytechnic State University
IWTP	Industrial Wastewater Treatment Plant
M&I	Municipal and Industrial
MGD	million gallons per day
OCR	Optical Character Recognition
pdf	Adobe Acrobat Portable Document Format
PVWMA	Pajaro Valley Water Management Agency
RW	recycled water
RWQCB	Regional Water Quality Control Board
SCVWD	Santa Clara Valley Water District
SEIR	Supplemental Environmental Impact Report
SGMA	Sustainable Groundwater Management Act
SLDMWA	San Luis & Delta-Mendota Water Authority
SSCWD	Sunnyslope County Water District
USBR	U.S. Bureau of Reclamation
UWMP	Urban Water Management Plan
WRA	Water Resources Association of San Benito County
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant
WY	water year