

Looking at Groundwater Sustainability through a Local Lens

Vignettes on Local Groundwater Conditions in the Sacramento Valley: 2017-18

Local leaders on the Sacramento Valley floor are well organized and coordinated with respect to Sustainable Groundwater Management Act (SGMA) implementation. The entire Sacramento Valley floor is covered by Groundwater Sustainability Agencies (GSAs) and the local entities are all working hard towards the completion of Groundwater Sustainability Plans (GSPs) by January 2022 that will address relevant undesirable results in SGMA. The [Fact Sheet: The State of Sacramento Valley Groundwater](#) shows this in more detail.



To provide context to local groundwater management in the Sacramento Valley and the ongoing efforts for active and conjunctive management of surface and groundwater resources, we have compiled the following vignettes on groundwater conditions prepared by local leaders throughout the Sacramento Valley. These vignettes provide a glimpse into the current groundwater conditions across the Sacramento Valley floor through a local lens, which reflects how GSAs will be approaching sustainable water management into the future. These vignettes also show the active engagement of local agencies that are working together to implement SGMA and to sustainably manage water resources in the region for [multiple benefits](#). These vignettes together offer a snapshot of current groundwater (2017-2018) conditions, with an emphasis on how the groundwater aquifers have responded to the recent wet years after a long series of dry years since the turn of the century.

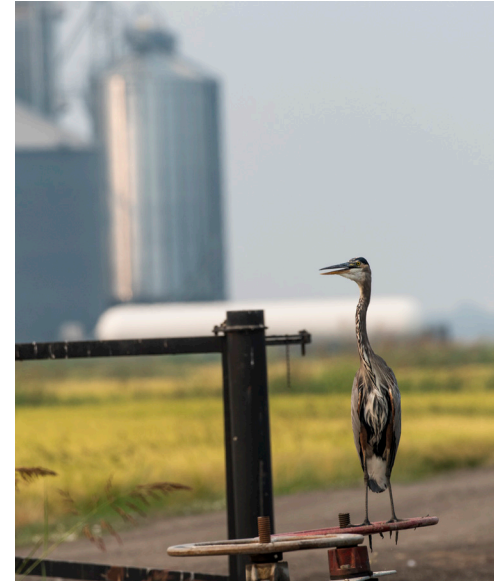


Groundwater resources are an essential part of the Sacramento Valley as groundwater provides nearly 30 percent of the region's water supplies, with this percentage greatly increasing during dry years and during sustained droughts. The active management and preservation of Northern California's groundwater resources is thus critical to the economic, social and environmental fabric of the region.

Looking at Groundwater Sustainability through a Local Lens

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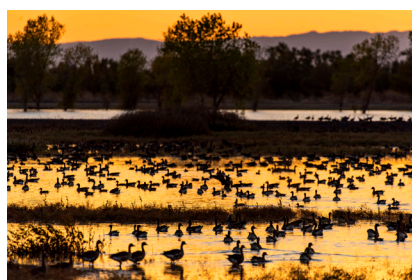
As part of ongoing efforts to achieve sustainability, water leaders, organizing through the Northern California Water Association (NCWA), have made a concerted effort over the past several years to assess Sacramento Valley groundwater resources, both for groundwater levels and quality. In 2014, Macaulay Water Resources, Davids Engineering, and West Yost Associates prepared a [Sacramento Valley Groundwater Assessment](#), which provides an overview of the Sacramento Valley's groundwater resources and the evolving efforts to better understand and actively manage the resources to provide sustainable benefits for the Sacramento Valley. The report provides a discussion on the historical development of land and water resources; the ongoing efforts for sustainable groundwater management; the effects of increasing use of groundwater; and recommendations for the future. Most importantly, the report summarizes long-term trends within the Sacramento Valley that affect our groundwater resources.



Although groundwater levels in the Sacramento Valley have been generally consistent--draw down during dry years and then recovery in wet years--we are starting to see certain areas where groundwater levels are not recovering as they have in the past. While we cannot yet distinguish fully between the impacts from dry years that you would expect from what may be longer-term changes to the Sacramento Valley water balance, we know the lack of available surface supplies and the expanding and intensifying use of groundwater in the Sacramento Valley are contributing to this dynamic. Efforts proposed by the State Water Board and others to redirect surface water resources away from this region will further compound these challenges and will further tax the groundwater resources.



With the pressures on the Sacramento Valley's water resources and the challenges we face in providing reliable water supplies for various beneficial purposes in the Valley, our objective is to help bring the region together to actively manage our water resources—both surface and groundwater—to assure sustainable water supplies for cities and rural communities, farms, fish, birds and recreation. We will also work together to expand our ability to store our surface water resources (i.e., [Sites Reservoir](#)) and help recharge the groundwater resources.

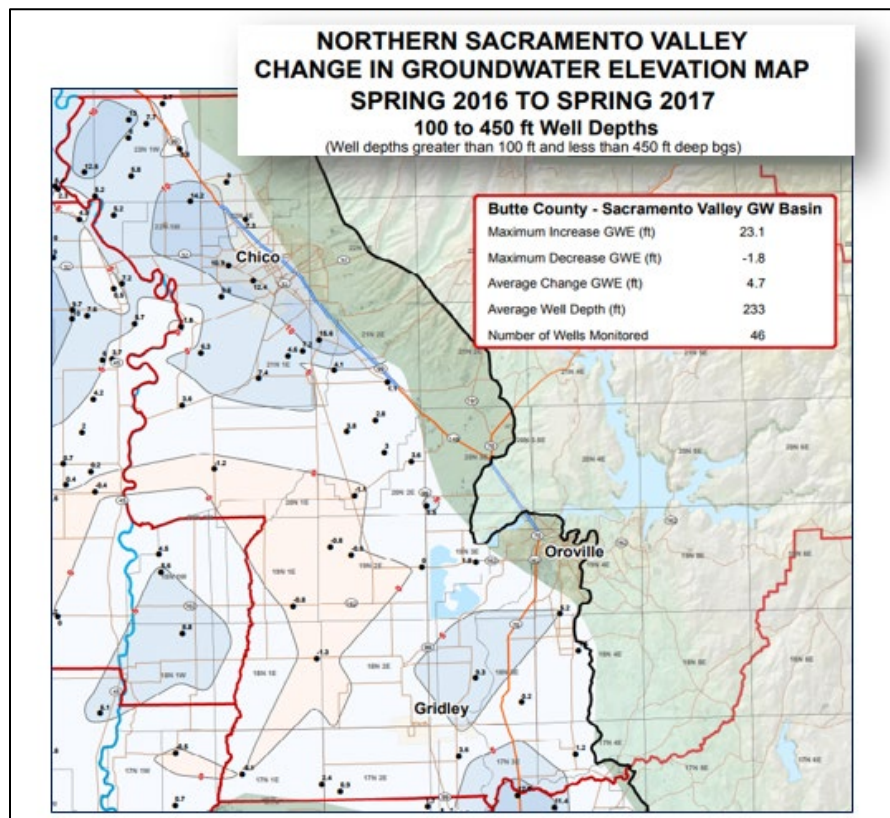


2017 Wet Year Provides Welcome Bump to Groundwater Levels in Butte County

THURSDAY, FEB 8TH, 2018

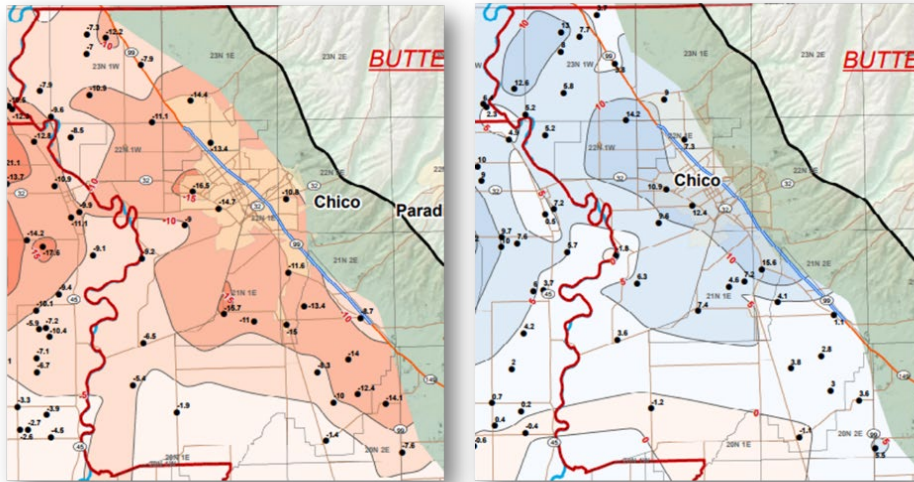
Dr. Christina Buck, Assistant Director of the Department of Water and Resource Conservation, Butte County

With a historically wet 2017 in the Sacramento River Hydrologic region, there was great anticipation of the results from the spring 2017 groundwater level monitoring conducted by the Department of Water Resources. In Butte County, spring groundwater levels (measured in March) showed an overall average 4.7 foot increase compared to their spring 2016 levels in 46 comparable wells (100-450 ft. depth). Although it may sound moderate, this is a significant increase over the changes we had observed during the past couple of severely dry years. As during the dry years, water levels remained relatively stable, mostly +/- 1 foot of change, in surface water irrigated areas in the County. Groundwater levels have the greatest swings within years and between years in areas that are dependent on groundwater pumping for irrigation and on the east side of the valley. In Butte County, this is mostly north and south of Chico where groundwater irrigated orchards are grown and the City of Chico is served by groundwater. The southern part of the county is characterized largely by surface water irrigated rice, with the exception of the Highway 70 corridor that has orchards served by a mix of groundwater and surface water.



The change maps show that areas with the greatest declines during the dry years (north and south of Chico, 2011-2015), also experienced the greatest increases during the 2017 wet year. Groundwater levels dropped during the recent drought (2011 to 2015) on the order of 5 to 20 feet in the Vina, Chico, Durham and east side areas. In 2017, water levels in these areas increased 5 to 15 feet. Other parts of the county saw more moderate changes both during the dry and wet years, largely due to reliable surface water supplies.

**DWR CHANGE IN GROUNDWATER ELEVATION MAPS
PORTION OF BUTTE COUNTY
100 to 450 ft. WELL DEPTHS**



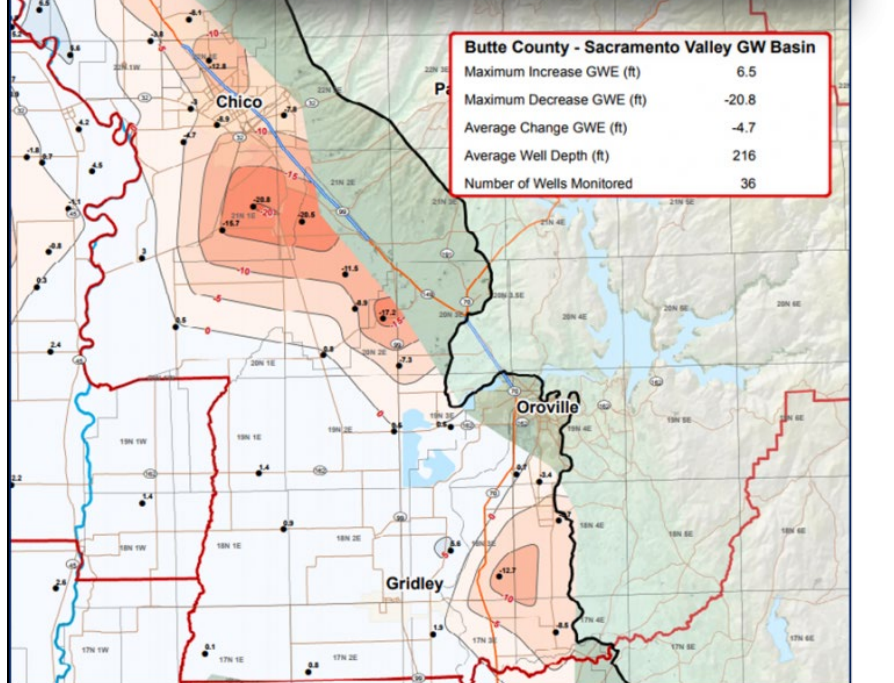
**Spring 2011 to Spring 2015
Declines during multiple dry years**

**Spring 2016 to Spring 2017
Recovery during wet year**

Although the historically wet year largely made up for the most recent severely dry year(s), generally speaking it was not enough to compensate for the cumulative effects of multiple dry years since the mid-2000s. The DWR change map comparing 2004 to 2017 continues to show areas of decline in northern Butte County with the greatest declines south of Chico in the Durham area. Several wells in this area are still down 15 to 20 feet compared to their 2004 levels. It will take multiple wet years, or other direct or indirect (in-lieu) recharge efforts to bring groundwater levels up in this area.

**NORTHERN SACRAMENTO VALLEY
CHANGE IN GROUNDWATER ELEVATION MAP
SPRING 2004 TO SPRING 2017
100 to 450 ft WELL DEPTHS**

(Well depths greater than 100 ft and less than 450 ft deep bgs)



It is important to remember that each monitoring well tells its own story since they vary in depth, well type (irrigation, domestic, dedicated monitoring wells), location, and surrounding conditions, however spring levels overall give a big picture view of basin conditions and how they change throughout the County and over time.

Although areas of decline still exist in the county, the wet year provided much needed recharge to the basin and an opportunity for water levels to recover significantly. We continue to experience great extremes in California hydrology from historically dry to historically wet conditions within just a few years. These big swings in the surface water system generally lead to moderate annual changes in the groundwater system in Butte County, both up and down. Managing our water resources with the reality of these extremes is our challenge and opportunity.

Sustainable Groundwater Management in Colusa County

THURSDAY, NOV 30TH, 2017

Mary Fahey, Colusa County Water Resources Manager

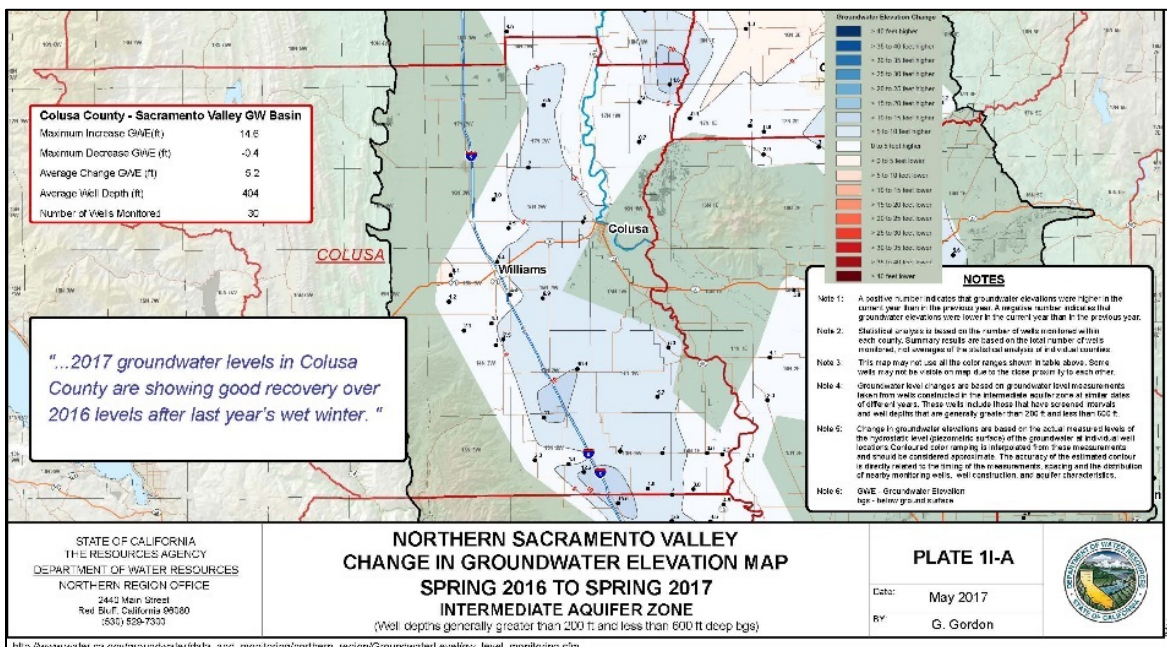
These are historic times for groundwater management in California, with the onset of the Sustainable Groundwater Management Act (SGMA), and recent extreme drought conditions that were followed by one of the wettest winters on record.

Prior to this last winter, a ten year stretch of generally dry conditions existed in the Sacramento Valley, creating many challenges for water managers. Challenges, yes, but these extreme conditions have also provided an excellent opportunity to evaluate the resiliency of the groundwater system.

In Colusa County, groundwater conditions are generally good, however groundwater levels in the southwest portion of the County were drawn down considerably during the drought, which is not surprising. This area of the County is ideal for growing tree crops, but it is also an area where surface water supplies were cut back several years, including a 0% allocation in 2014 for the first time in history, and again in 2015.

Despite these challenges, 2017 groundwater levels in Colusa County are showing good recovery over 2016 levels after last year's wet winter. This is illustrated on DWR's groundwater level change map below.

As we move into the era of SGMA, The Colusa Groundwater Authority, which will be implementing SGMA in Colusa County, will be coordinating with other Groundwater Sustainability Agencies to plan and implement projects and programs that will preserve and enhance sustainable groundwater conditions locally.



Making “Sustainable” More than a Word: Glenn County

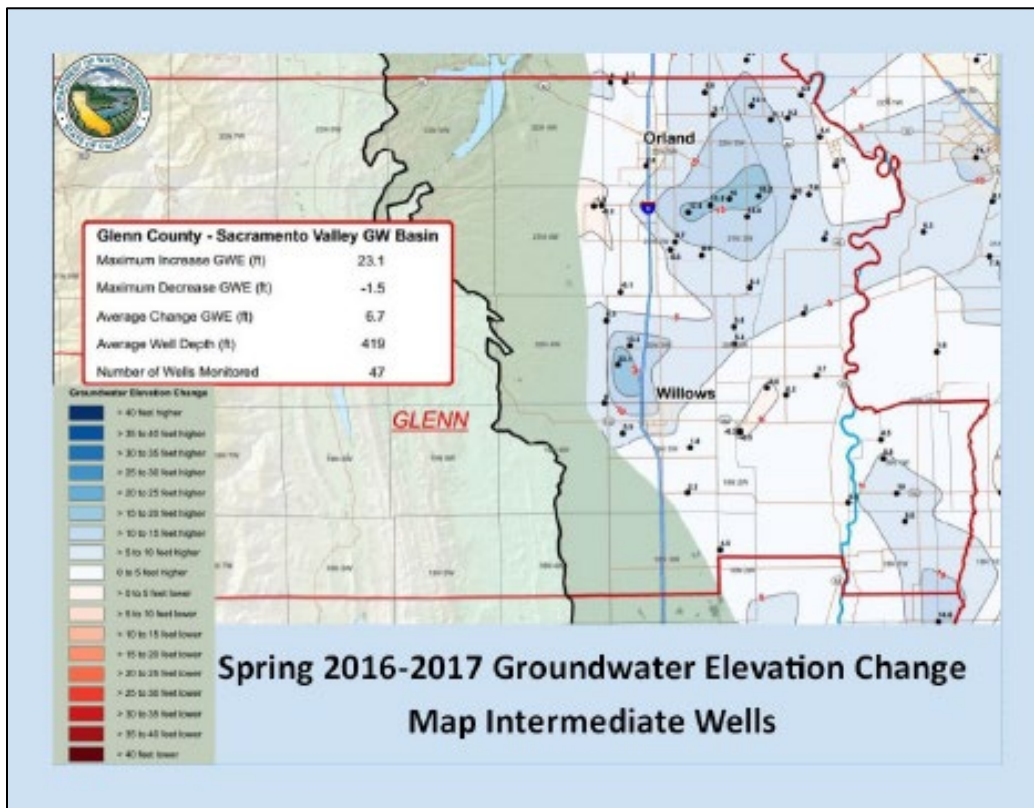
THURSDAY, JAN 11TH, 2018

Lisa Hunter, Glenn County Groundwater Authority

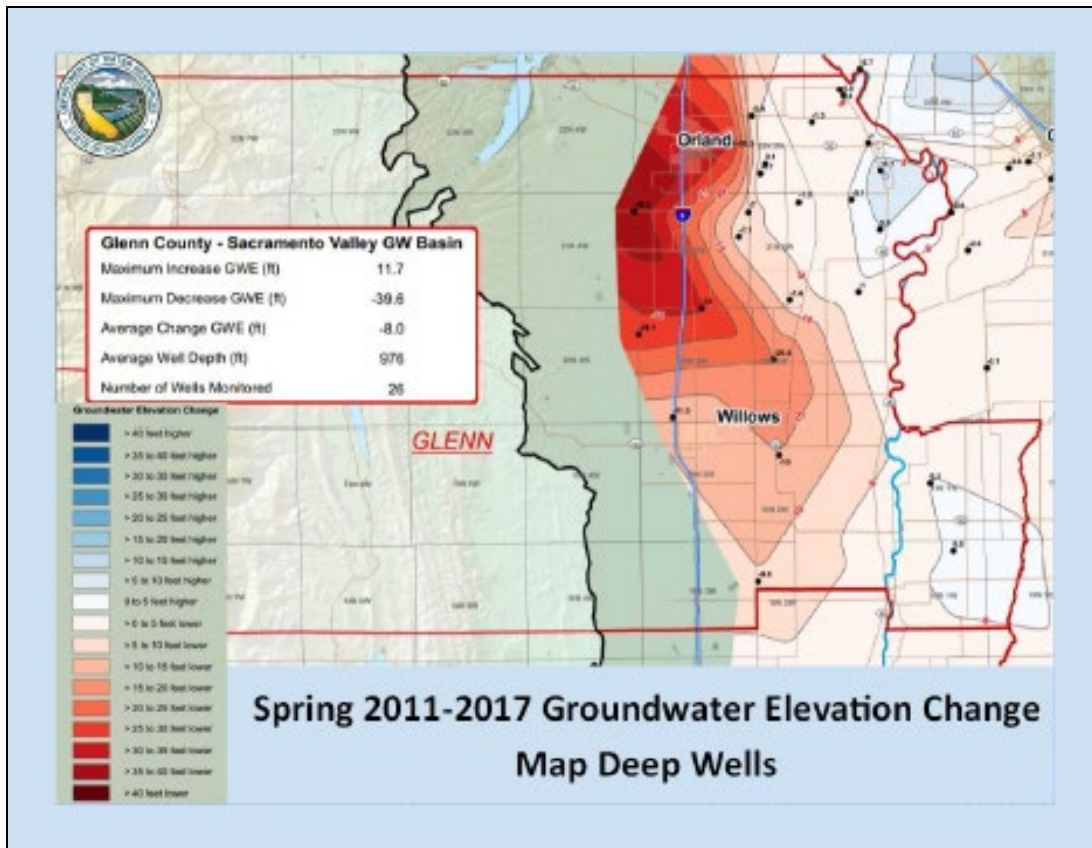
The driest years on record since 1895 were recorded between 2011 and 2014 causing a statewide drought of emergency. This was a driving force for the Sustainable Groundwater Management Act (SGMA) which will build upon the coordinated efforts to manage groundwater sustainably in Glenn County. The drought was followed by a historic wet year. The 2016-17 season, surface water was at its highest levels in some areas since 1997. Between October 1 and April 12, 49 atmospheric rivers made landfall on the West Coast.

The following is based on comprehensive data from 126 wells monitored in Glenn County in the shallow, intermediate and deep zones with comparisons from previous years of groundwater elevation data.

In Glenn County and in many other areas of the state when comparing spring 2016 to 2017 groundwater levels there are recovering groundwater elevations. In Glenn County according to the Department of Water Resources (DWR) Groundwater Information Center, Northern Region Groundwater Level Evaluation data, and the Shallow-Intermediate Spring Groundwater Elevation Change maps in the shallow zone the maximum change is +18.3 ft. with an average change of +6.2 ft. with an average well depth of 116 ft. from monitoring 53 wells. The maximum change for the intermediate zone is +23.1 ft. with an average change of +6.7 ft. with an average well depth of 419 ft. from monitoring 47 wells.



2011 is considered to be pre-drought conditions by DWR and can be used as a baseline year when comparing historical to current groundwater elevation conditions. When comparing spring 2017 to spring 2011 levels in deep wells, the maximum change is -39.6 ft. with an average change of -8 ft. with an average well depth of 976 ft. from monitoring 26 wells.



In the Sacramento Valley Basin, in general there is recovery in the comparison of 2016-17 groundwater levels. However when using comparisons from previous years, groundwater levels have not recovered to pre-drought conditions according to the Spring 2017 Groundwater Level Data Summary and the Groundwater Elevation Change maps provided by DWR. In general the Sacramento Valley Basin is still recovering to pre-drought conditions in all zones. The deep aquifer zone has the furthest to recover with approximately 10 ft. in Glenn County; however, there are some areas of recovery in the deep zone in the Sacramento Valley Basin at large.

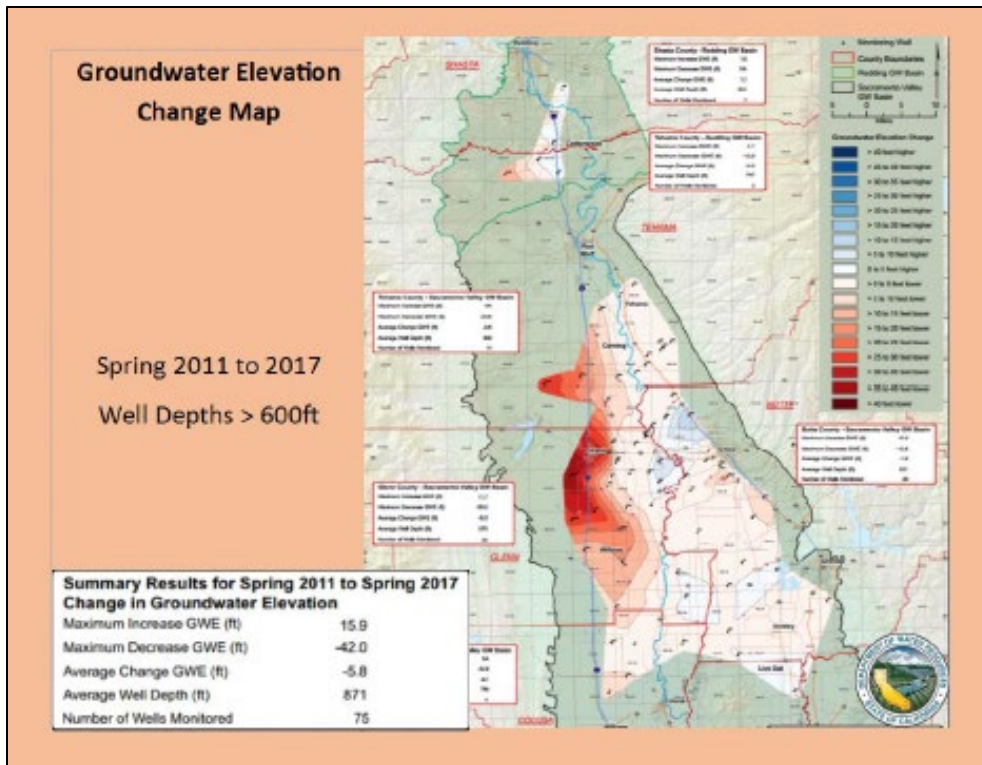
In summary for the Sacramento Valley Basin using the Sacramento Valley Monitoring Grid groundwater elevations recorded by Department of Water Resources in spring of 2017:

Shallow-Intermediate Zones

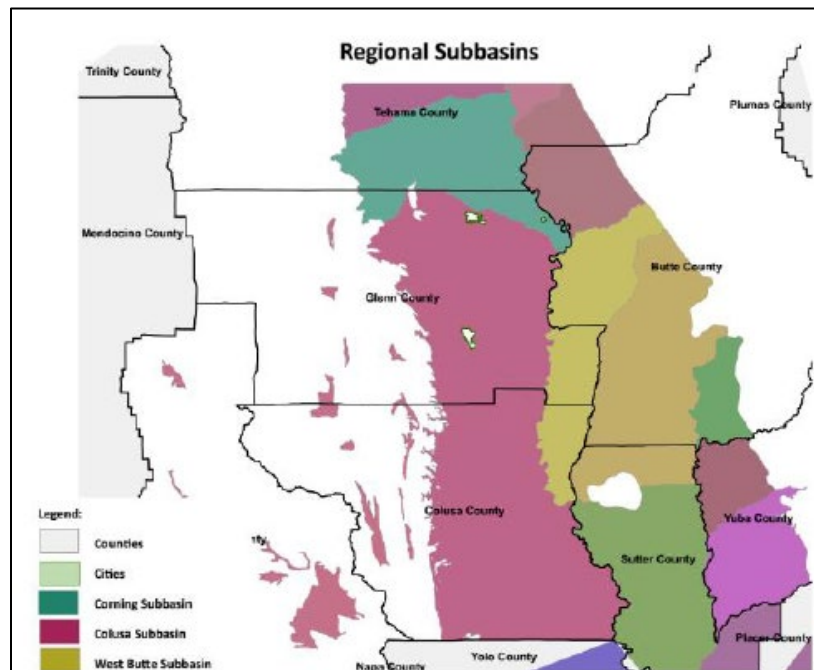
Average groundwater levels in the intermediate aquifer zones continue to increase (+4.3 ft. in the last year) but still down by 3.5 feet since before the drought and down by 7.2 feet from 2004.

Deep Aquifer Zones

Average groundwater level change in the deep aquifer zones were up about 6 feet this year compared to -1.1 last year indicating that there is a lag time of about a year for seeing a notable change in the deep zone. Groundwater levels are still down by 5.8 feet since before the drought and down by 10.7 feet from 2004.



Glenn County has dedicated staff and resources for SGMA development and implementation in order to achieve sustainability and comply with SGMA. There are three subbasins required to be managed under SGMA in Glenn County, each of which has taken a slightly different approach to SGMA development and implementation. Glenn County partners with other eligible local agencies in each subbasin to prepare for and implement SGMA. Glenn County is also part of the Northern Sacramento Valley Integrated Regional Water Management (NSV IRWM) group which coordinates on regional water issues including SGMA. Our commitment throughout the region is to effectively manage our region's water resources and balance community interests to develop the Groundwater Sustainability Plans through a coordinated effort. This commitment to groundwater management will facilitate reliable water for Glenn County and our region.



Blog Citation:

[Northern Region Groundwater Level Evaluation
Spring 2017 Groundwater Level Data Summary-Final Draft](#)

Glenn County Resources

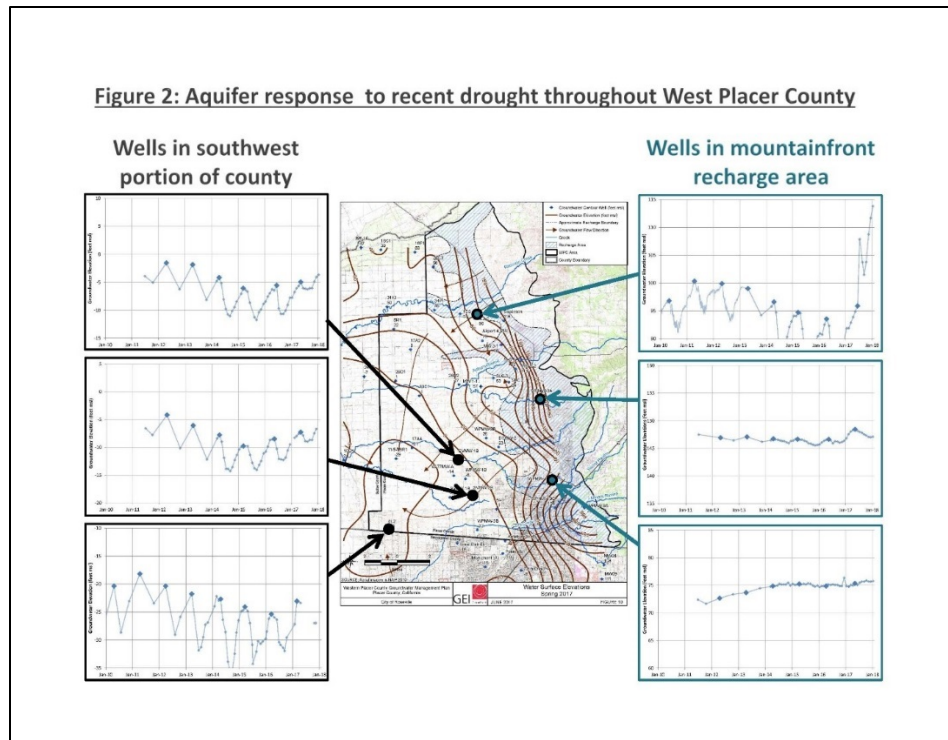
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Send Glenn County SGMA Comments by email – glennsgma@countyofglenn.net

[Glenn County SGMA updates](#)

Figure 2: Aquifer response to recent drought throughout West Placer County



Water that recharges into the ground at the mountainfront eventually makes its way west and south, but that takes time. A more immediate approach to encouraging recharge and “banking” water underground at the locations where it is needed is to use Aquifer Storage and Recovery (ASR) wells. These specially designed and operated wells essentially run their pump in reverse to store water underground during wet years, then extract it during dry years. The City of Roseville has drilled a number of these wells, obtained permits and performed successful pilot testing. Other water providers in the region have been looking at this approach. ASR has the distinct advantage of getting the water directly into the deeper parts of the aquifer, past any surface clay layers or other conditions that might limit infiltration when water is simply spread on the ground surface. The feasibility of ASR as a regional conjunctive use strategy does have regulatory and financial hurdles (i.e. they are expensive to build and it takes energy both to store and extract the water). However, the State Water Resources Control Board has taken measures to clarify the permitting process by issuing a general waste discharge requirement for ASR projects.

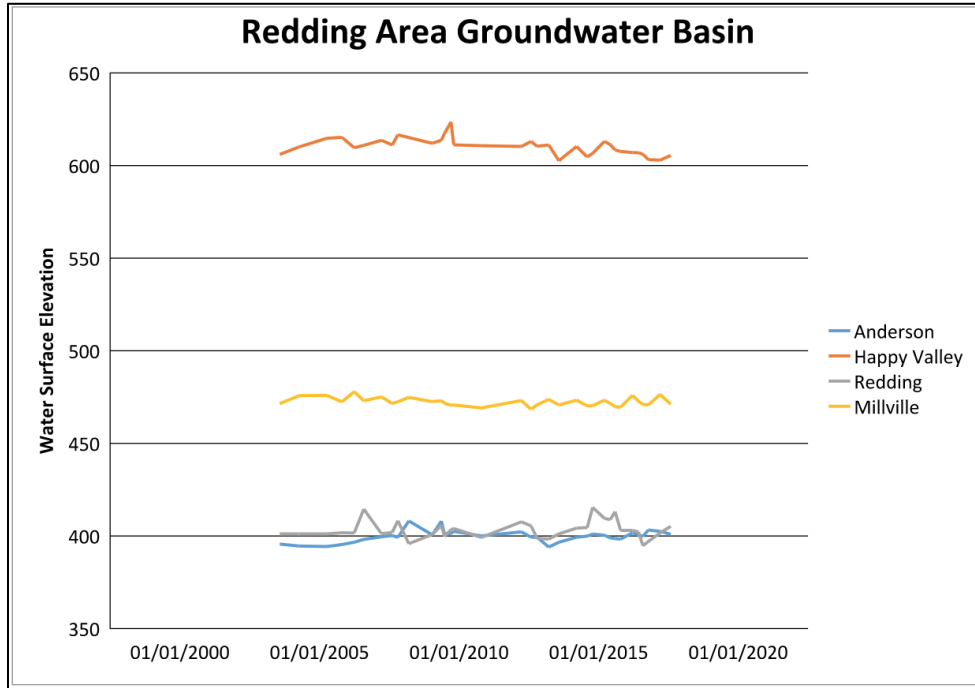
* Note that 2012 was used because many of the dedicated monitoring wells used by the WPGSA were drilled in 2011 and therefore 2012 provided the first recorded “spring-high” water level at those sites.

Shasta County – Sustainable Groundwater Management

FRIDAY, OCT 6TH, 2017

Charleen Beard, Associate Engineer, Shasta County

The Redding Area Groundwater Basin underlies south central Shasta County. It is a healthy basin with minimal water elevation changes over the past fourteen years as you can see from the four locations shown on the graph below. Surface water supplies were curtailed during the recent drought and local water districts and landowners turned to groundwater. Impacts to groundwater levels were moderated by basin geology and applied surface water from overlying land uses. Representative well levels are shown below.



The Enterprise-Anderson Groundwater Sustainability Agency was formed to manage groundwater in an affordable and sustainable manner. The Agency and its members will work together with other local agencies and the community to accomplish these goals.

This blog is part of an ongoing series showing sustainable groundwater management in different parts of the Sacramento Valley. For more information on Sacramento Valley groundwater, see the [Fact Sheet: The State of Sacramento Valley Groundwater](#).

Redding Groundwater Basin			
Water Surface Elevation Changes over Time			
		Since 2004	Since 2016
Shallow	Wells (<200')	0.4' increase	1.6' increase
Intermediate	Wells (200-600')	1.0' increase	4.4' increase
Deep	Wells (>600')	3.6' increase	2.9' increase

Conjunctive use supports sustainable ground water in South Sutter County

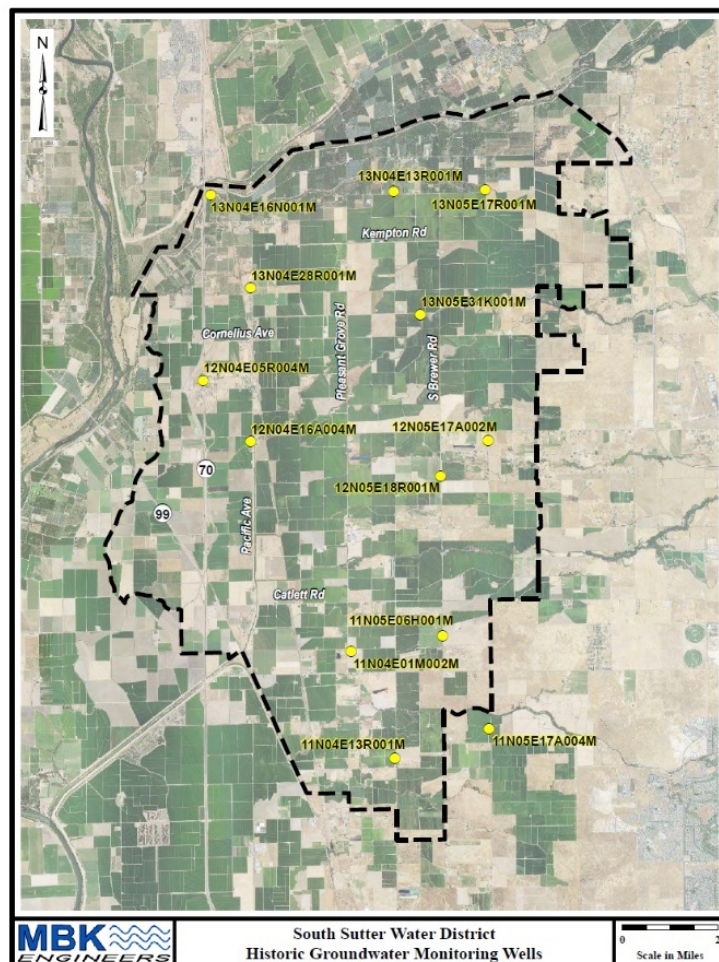
THURSDAY, FEB 22ND, 2018

Brad Arnold, General Manager, South Sutter Water District

Conjunctive use is the practice of using surface water in conjunction with ground water to meet water demands.

South Sutter Water District was formed to provide surface water for irrigation to help meet the increasing demand on ground water to irrigate crops in South Sutter County.

The South Sutter Water District was formed in the late 1950's and built the New Camp Far West Reservoir on the Bear River. This reservoir has been providing surface water for agriculture since 1964. For over 50 years this surface water supply has provided additional ground water recharge, helped increase and stabilize ground water levels within South Sutter County. Since the first surface water deliveries 13 wells have been monitored in the water district and have confirmed the benefit of surface water deliveries to sustain ground water and improve ground water levels in the basin.



The following table of ground water levels at 13 wells located within South Sutter Water District show that ground water depths have recovered to pre drought levels. This is a good example of sustainable ground water management utilizing conjunctive use.

SSWD Historic Groundwater Monitoring Wells (Depth to Water in Feet ¹)											
State Well No.	Region	2009	2010	2011	2012	2013	2014	2015	2016	2017	Δ2016 - 2017
13N04E13R001M		30.2	27.1	27.2	23	56.3	49.8	53.1	67.4	28.6	38.8
13N04E28R001M	Northern	13.5	14.8	13.1	16	32.8	-	-	-	-	-
13N04E16N001M	Region	18	16.5	13.7	11.4	19.6	23.6	24.7	20.1	16.3	3.8
13N05E17R001M		32.9	26.4	18.6	18.2	39.7	48.3	48.2	38.7	25.6	13.1
12N05E17A002M		56.5	53.7	49	54.8	63.1	72.3	76.1	80.8	69.6	11.2
12N05E18R001M	Central	55.7	46.5	46.7	70.2	72.6	71.6	100.8	97.7	69.7	28
12N04E16A004M	Region	13.1	10.6	15.5	11.4	40.4	37.8	46	21.8	14.5	7.3
13N05E31K001M		26.2	20.8	20.6	31.2	37.2	39.1	46.1	25.5	25.7	-0.2
12N04E05R004M	Western Region	25.2	22.1	20.4	23.8	29.6	31	32.7	24.5	-	-
11N05E06H001M		68	59.8	54.6	64.3	75.7	73.7	-	-	-	-
11N04E01M002M	Southern	46.9	42.4	38.9	51.3	53.4	67.1	68	72.2	63.1	9.1
11N04E13R001M	Region	72.9	81.2	71.3	80.3	103.6	90	87	108.9	80.7	28.2
11N05E17A004M		93.3	88.8	91.9	93.3	97.9	102.9	103	110.4	98.4	12

¹Depth to water measurements taken in the fall of each year.

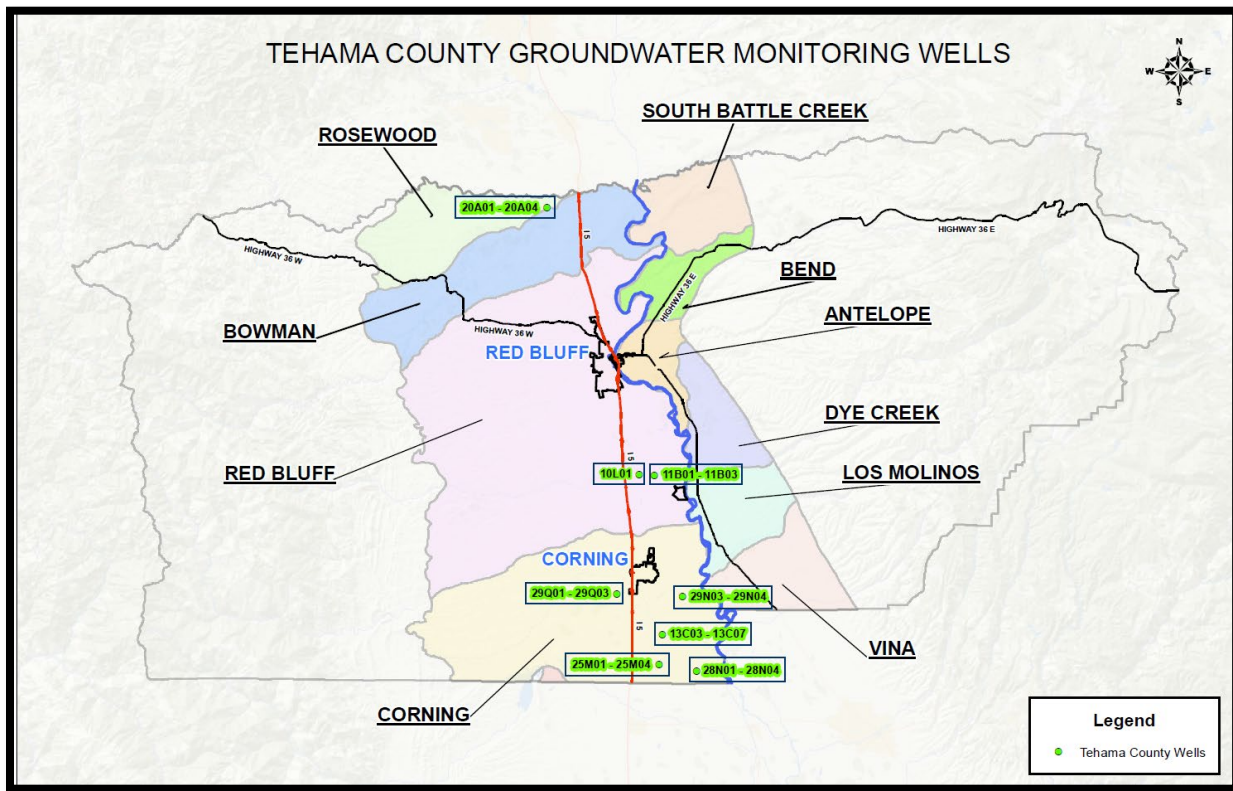
South Sutter Water District will continue to utilize the conjunctive use program to support the Sustainable Ground Water Management Act (SGMA) for this area.

Managing the Plethora of Groundwater Sub-basins in Tehama County

APRIL 18, 2018

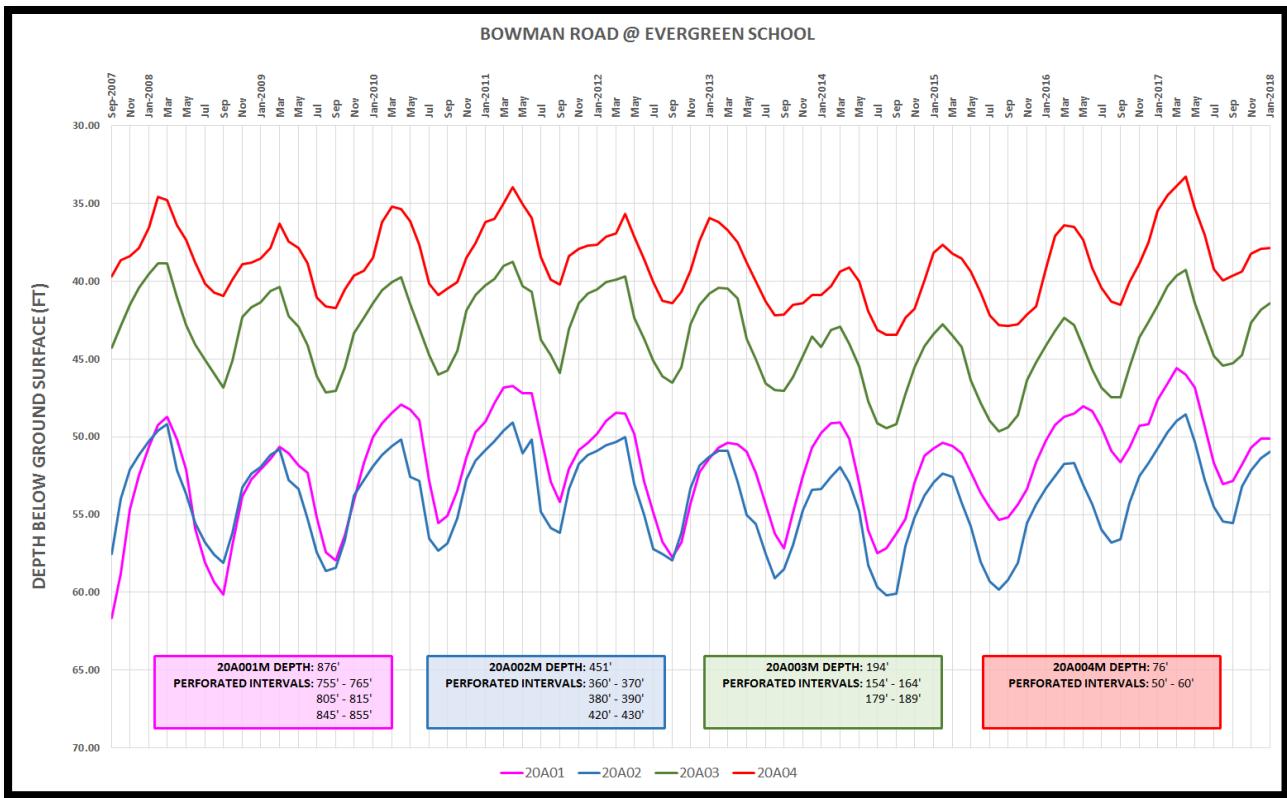
Ryan Teubert, CFM, Tehama County Flood Control & Water Resources Manager

The Tehama County Flood Control & Water Conservation District (District) has taken the lead on monitoring and managing groundwater resources within Tehama County (County) since the mid-1990s. The District currently monitors eight multi-completion wells throughout the County and provides the data to the California Statewide Groundwater Elevation Monitoring (CASGEM) program, as well as posting it on the District's website at: <http://www.tehamacountypublicworks.ca.gov/flood/default.html>. The California Department of Water Resources also monitors an additional 36 wells throughout the County.

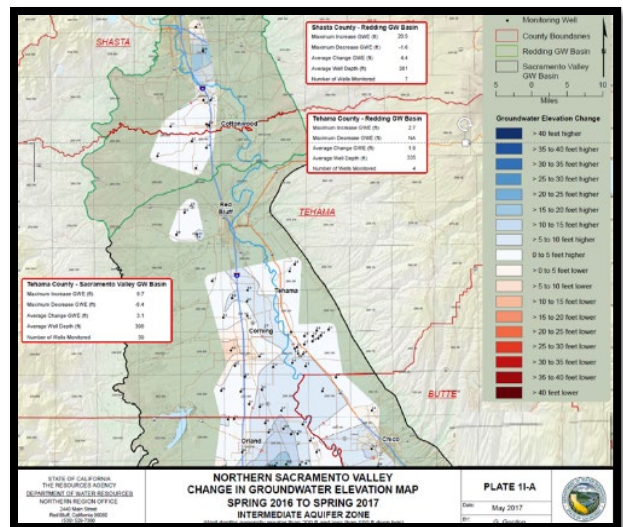
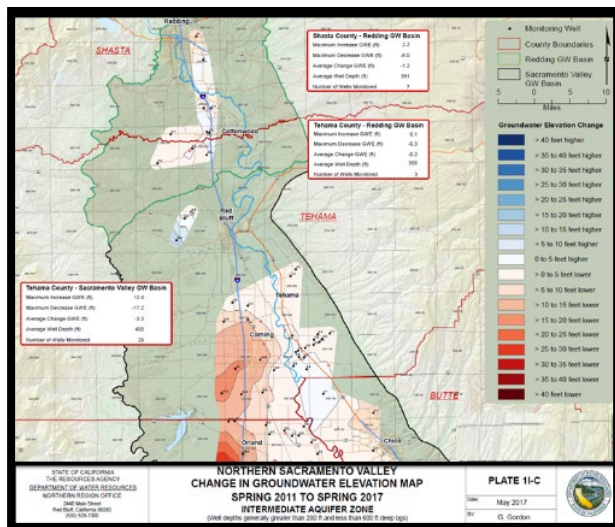


The District currently has portions of ten sub-basins located within its jurisdiction. The three sub-basins located in the northern part of the County are within the Redding Groundwater Basin, while the remaining seven sub-basins are located in the Sacramento Valley Groundwater Basin as defined by DWR. The District was recognized as the exclusive Groundwater Sustainability Agency in 2016 for all portions of the ten sub-basins located within the County.

For a snapshot of the County, the Redding Groundwater Basin is an extremely healthy aquifer and has had only minimal draw-downs during the recent drought. The hydrograph below shows a multi-completion well within this basin, where you can see the minor draw-down during the drought and the full recovery experienced after the wet spring of 2017.

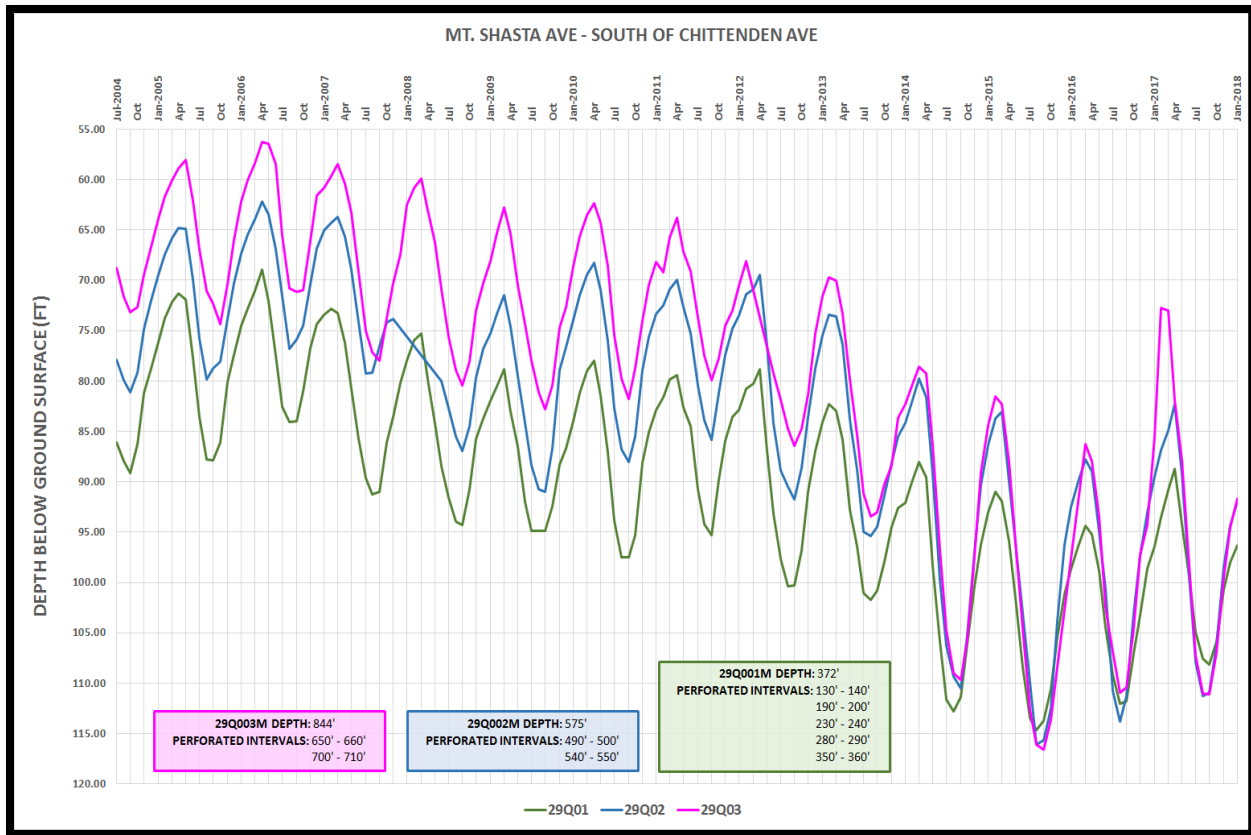


The portions of the Sacramento Groundwater Basin that are in Tehama County and either close to or east of the Sacramento River did fairly well through the drought as well. The maps below show that these sub-basins generally experienced only minimal draw-downs from 2011-2016 (left), and that they mostly recovered during the wet period between 2016-2017 (right). The sub-basins east of the Sacramento River benefit from users having access to surface water supplies along with being recharged from streams fed by the Cascade Mountain Range and the Sacramento River.



The areas in the southwestern portion of the County have experienced increased draw-downs during the recent drought, similar to what has occurred along the western portion of both Glenn and Colusa counties. The draw-down in Tehama County is likely due to several reasons, including the recent drought, a change in agricultural crop type and irrigation methods, surface water curtailments, less recharge potential from the eastern slopes of the Coastal Range and geologic conditions. As shown on the graph below, this area did experience an increase in groundwater

levels after the record setting precipitation of 2017. Although this was a welcome change, record precipitation levels can't be counted on to alleviate this issue.



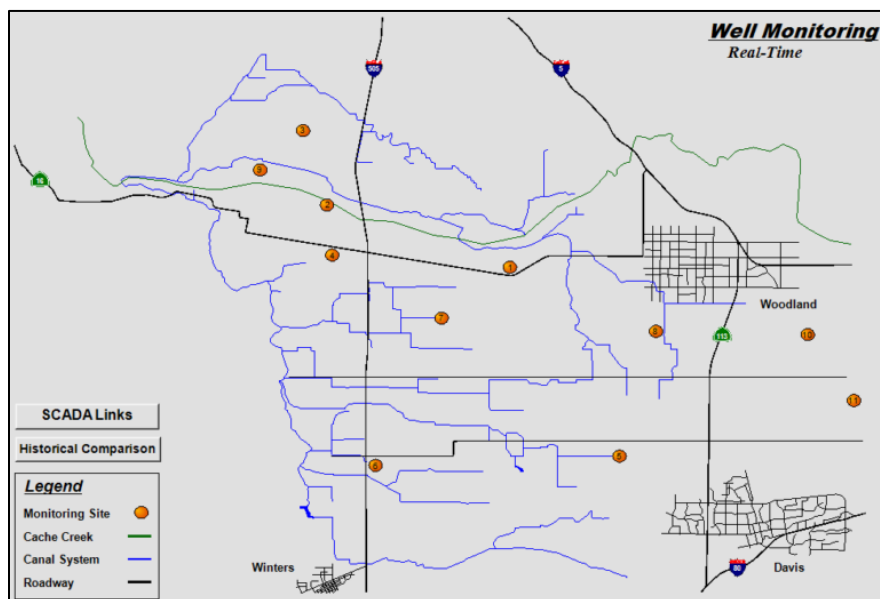
The Tehama County GSA is committed to the sustainable management of the numerous groundwater sub-basins located within the District. This includes coordinating with surrounding GSAs and DWR to develop a comprehensive monitoring program and Groundwater Sustainability Plans that will assist local agencies with making informed decisions that will further the sustainable management of the region's groundwater resources.

What is Sustainable Groundwater Management in Yolo County?

WEDNESDAY, SEP 20TH, 2017

Tim O'Halloran, General Manager, Yolo County Flood Control and Water Conservation District

During the recent drought, there were many stories about declining groundwater levels throughout California, which is expected when less surface water is available. What has not been covered as much is that in most areas groundwater returns to levels that existed before the extended dry years. This is the case in Yolo County, where due to the very wet winter we just experienced, most groundwater in the Yolo Sub-basin is in "good shape." To put numbers to what "good shape" means, the following table of groundwater levels at 11 selected sites throughout Western Yolo County show real-time groundwater level sensors. All 11 sensors are reporting (not unexpectedly) that groundwater levels have essentially recovered to pre-drought levels as of September 14, 2017.



		SCADA Links		Select Date						
		Well Map		09/14/17						
Well Monitoring										
<i>Depth to Water Historical Comparison</i>										
<i>(Daily Average DTW in feet)</i>										
Well	2009	2010	2011	2012	2013	2014	2015	2016	2017	Δ 2016 -2017
1.		96.9	94.8	99.1	108.3	131.8	134.3	122.3	110.3	12.0
2.		35.8	46.3	50.7	38.2	53.3	54.8	50.6	31.1	19.5
3.		48.1	39.6	45.7	52.4	82.7	76.8	61.5	40.3	21.2
4.			33.2	35.5	43.8	53.0	52.1	48.1	30.6	17.5
5.			17.2	19.7	22.3		35.9	35.7	23.7	12.0
6.				37.0	42.2	74.4	67.4	50.2	35.5	14.6
7.					16.3	43.1	50.2	27.1	20.7	6.4
8.					62.3	82.6	80.3	78.7	57.1	21.6
9.						77.4	73.0	59.5	41.4	18.2
10.						85.6		78.9	45.6	33.2
11.						31.2	26.2	27.0	16.6	10.4

Importantly, this area is part of a conjunctive management program, where surface and groundwater are managed together in a concerted and very purposeful way to serve water for beneficial use in Yolo County. Yolo County Flood Control and Water Conservation District also pursued additional [recharge programs](#) over the past several years—pursuant to Governor Brown’s Executive Order—that is also an important element to sustain our groundwater resources.



This in our view is sustainable groundwater management. These efforts for sustainability will continue to be advanced by the [Yolo Subbasin Groundwater Agency](#), which will be implementing the Sustainable Groundwater Management Act (SGMA) for this area.

For more information on Sacramento Valley groundwater, see the [Fact Sheet: The State of Sacramento Valley Groundwater](#).

Yuba County's groundwater status

OCTOBER 17, 2017

Curt Aikens, General Manager, Yuba County Water Agency

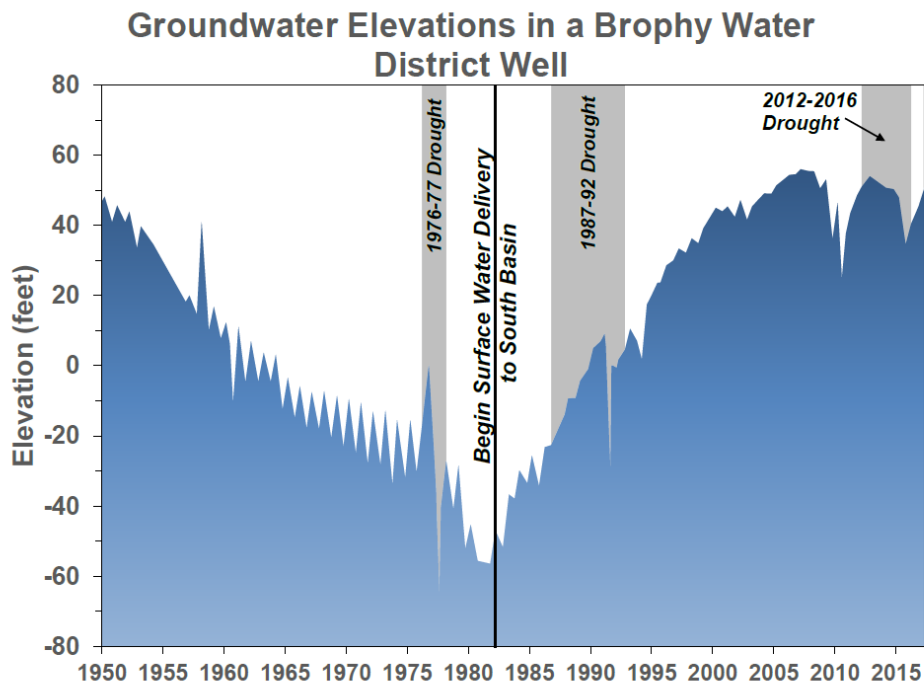
Since the Yuba County Water Agency's establishment in 1959, protecting and enhancing Yuba County's groundwater aquifer has been one of the Agency's foremost priorities.

YCWA works cooperatively with its eight irrigation districts - Member Units - to manage groundwater resources in the north and south Yuba subbasins.

Because of YCWA's careful stewardship of groundwater resources and supplementation with surface water to correct previous over-drafting of the aquifer, Yuba County's groundwater basin has recovered to historic levels and continues to remain within that range.

Using surface water supplies from New Bullards Bar Reservoir has led to the restoration of a sustainable aquifer, which is vitally important because groundwater is the sole source of municipal water for 80 percent of Yuba County's population.

The graph below illustrates groundwater recovery based on a well in the south Yuba subbasin. Since YCWA began using surface water to supplement groundwater usage for irrigation, groundwater levels have risen significantly. The graph also shows how the recent four-year drought drew levels down, and how this year's precipitation considerably helped those levels recover.



During the most-recent four years of drought, farmers made up for shortages of surface water by pumping groundwater. Groundwater levels dropped, but still remained within the historical range without reaching dangerously low levels. And despite surface water shortages and declining groundwater levels, Yuba County did not lose any irrigated acreage as a result of the drought.

In cooperation with California's Department of Water Resources, YCWA actively monitors groundwater levels, measures quality, conducts studies, and utilizes groundwater as a resource for the benefit of the county and state.

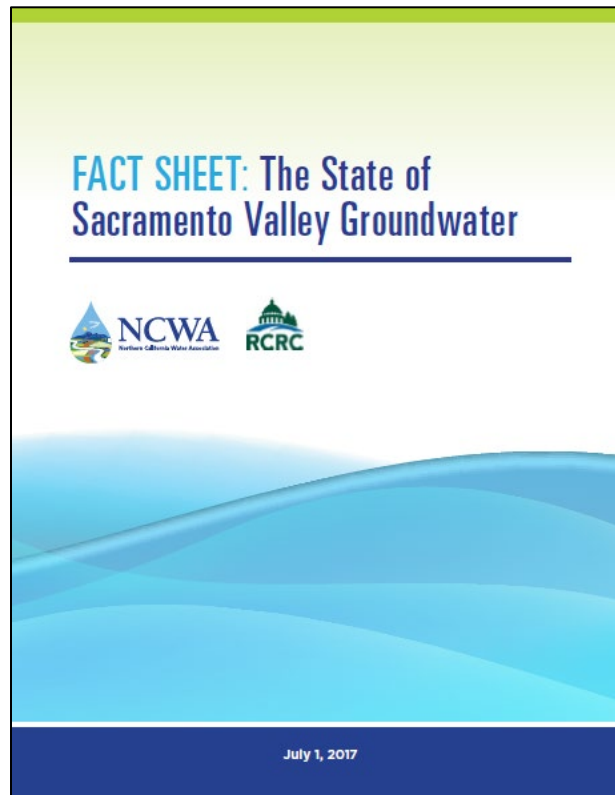
Additionally, the Agency has taken all of the necessary steps to be recognized as a groundwater sustainability agency for Yuba County.

Surface water and groundwater conjunctive management is at the core of YCWA's commitment to resource management. Proper groundwater management helps provide a buffer against drought and climate change, and contributes to a reliable water supply regardless of weather patterns.

Advancing Groundwater Management in the Sacramento Valley

FRIDAY, JUL 14TH, 2017

Local agencies have organized in the Sacramento Valley through Groundwater Sustainability Agencies (GSAs) and they are poised to advance the next generation of groundwater management in California. The recent fact sheet shows [The State of Sacramento Valley Groundwater](#) and the collaboration across the entire Sacramento Valley floor, which includes ten counties and nearly 100 special water districts and companies working together with landowners.



The GSAs are building upon the foundation that local agencies have developed over the past several decades, working with the Department of Water Resources (DWR) and others, to better understand and sustainably manage surface and groundwater resources in the Sacramento Valley. Local agencies will be making major investments over the next five years to advance sustainable groundwater management as they develop Groundwater Sustainability Plans that will be completed by 2022. Successful groundwater management is largely dependent upon the availability of affordable and reliable surface supplies. Active conjunctive management of surface and groundwater has been essential to keeping the region in balance. Continuing this active management will be increasingly important in the Sacramento Valley to effectively serve high quality water for multiple beneficial uses, including farms, cities and rural communities, fish, birds and recreation.

Groundwater is a vital part of the Sacramento Valley's water supply. The recent consecutive dry years in Northern California have illuminated the pressures on Sacramento Valley's water resources and the challenges we face in providing reliable and affordable water supplies for various beneficial purposes in the Valley, including farms, cities and rural communities, fish, birds, and recreation. Groundwater provides nearly 30% of the region's water supplies, with this percentage greatly increasing during dry years and during sustained droughts.



by Leslie Morris



By Ken Davis



By Steve Beckley