

Calaveras County Water District - Supporting Analysis and Calculations for “Water Supply Reliability Certification Form for Urban Water Suppliers”

Summary

The Calaveras County Water District (District), has submitted to State Water Resources Control Board (SWRCB) “Worksheet 1 – Total available water supply for individual water supplier”, requesting a conservation standard of 0% for calendar year 2016. The following contains information that was used to support the District’s analysis of total supplies, and shows that the District has more than ample supplies to meet demands in any type of water year, or multiple dry years. The District has aggregated all of the available supplies as requested by the State in: “Worksheet 1” and the analysis herein contains a more exact breakdown of available supplies to support our request at the actual watershed and individualized service area supply level.

It is important to note that by percentage, the District and its customers have, and continue to, conserve water at a level that is amongst the highest in the state. We recognize the pressure that the SWRCB was under to implement a drought response program, resulting from the Governor’s necessary Executive Orders issued in 2014 and 2015. We also recognize that we were subject to a set of regulations (for which we continue to comply) that were unable to fully evaluate local conditions in setting conservation standards. Given the fact that we exist in an “imperfect world”, we aim to show that the District has more than ample supplies to continue to serve water during an intensive drought, and is fully prepared to respond to any given interruption in supply.

Background on Calaveras County Water District Water Supplies and Conservation

The backdrop of Calaveras County is one of one of unparalleled beauty; from the celebrated Big Trees to the rolling foothills of the western portions of the County, which are paired with a plentiful water supply. The County has seen many “boom and bust” economic cycles over the past few centuries; most notably the Gold Rush Mining Era, which gave way to the cyclical timber harvest, agriculture, and rock mining industries of the 20th century. All of this has led to bursts of infrastructure buildup, followed by unproductive and often lingering downturns, during which a rigid economy has continued to persevere.

To a lesser known extent, the housing market crash and resultant economic downturn of the late 2000’s continues to seriously impact the District, as significant water and wastewater infrastructure and investment continues to remain idle. This includes a wealth of past investments in water storage and delivery. Since the 1960’s, the District has wisely invested in the development of large water supply projects that were meant to serve a much wider population on a shorter timeframe. That future growth outlook continues to be bright in the District’s service areas due to abundant developable land and access to major freeway hubs, but the timeline for realizing maximum growth has slightly been revised or “pushed out” as a result of the economic downturn. As a result of the largely unrealized demand and changes in water use behaviors on a residential level over time, the District continues to have adequate water supplies for the purposes of the timeframe being analyzed.

Overview of Current Conservation Efforts

As the largest water provider in Calaveras County, Calaveras County Water District (CCWD) views conservation as an integral part of its water resources strategy, and we have been dedicated to working with our regional partners to reach the community at large, above and beyond our 13,000 customers. One of our most effective efforts to date has been the formation of “Calaveras Conserves”, a countywide conservation group that included every water supplier in the region. The highlights of this very successful coordinated outreach effort established by staff from CCWD can be seen here: www.calaverasconserves.com.

As a result of our comprehensive conservation efforts since early 2014, CCWD and its customers heeded the call to action by the State, and the District was in the top 20% of water suppliers statewide by total percentage conserved over 2013 baseline levels. In calendar year 2015, customers reduced their water usage by more than 28% when compared to the same time period in 2013. That trend continues to hold in 2016, see Figure 1.

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The District is also well on track to meet the SBX7-7 20% reduction by 2020 goals, which was included as part of the suite of landmark water conservation legislation passed in 2009. The drought is not over, and we anticipate customers will continue to be diligent in their water conservation efforts until the state water supply outlook is better; and our current messaging reflects that attitude.

Even though our water supplies are adequate to meet the needs of our customers and the data supports a conservation standard of 0%, the District passed Ordinance 2016-01 that implements an updated Water Shortage Contingency Plan (WSCP), which is Chapter 8 of the 2015 Urban Water Management Plan ([2015 UWMP](#)) update. Even at Stage 0 of our updated WSCP, the District continues to enforce ongoing water efficiency measures to avoid water waste and will enforce all permanent water conservation measures ordered by Gov. Brown and the State Water Resources Control Board on an ongoing basis.

Figure 1

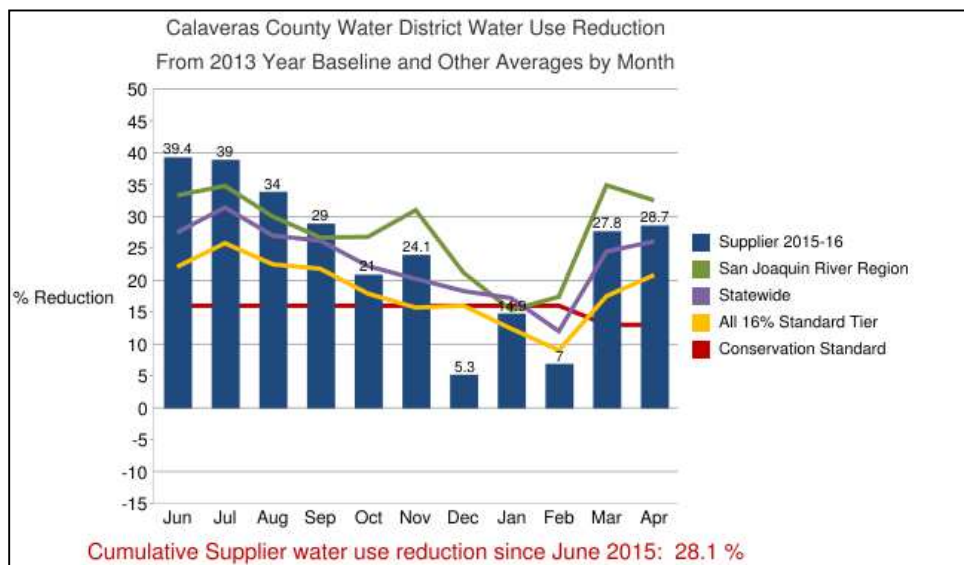
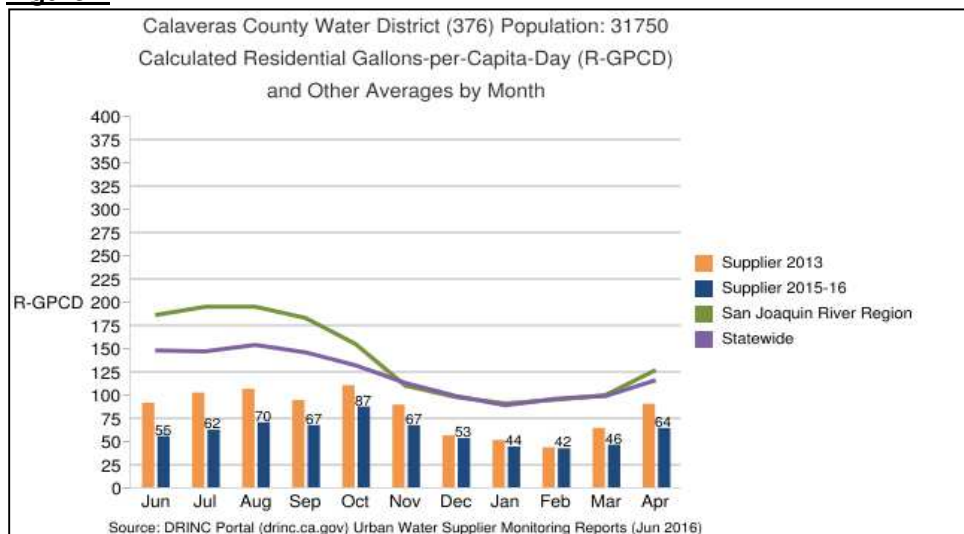
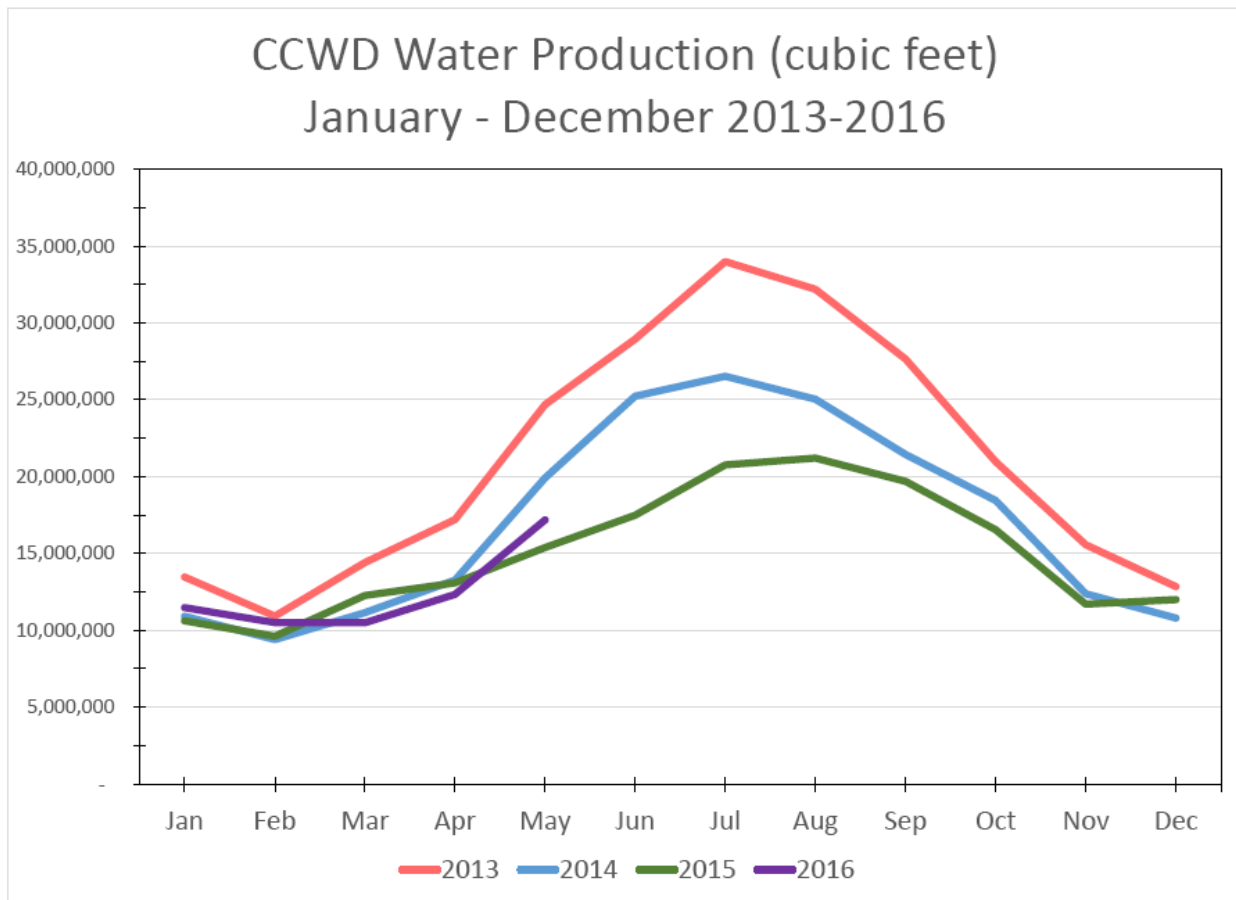


Figure 2



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Analysis and Breakdown of Aggregated Surface Water Supplies in "worksheet #1"

The District's water supplies were aggregated in the following tables and descriptions break down the surface water supplies available to the CCWD in the multiple service areas across three different watersheds, based on an analysis of water years 2013-2015. It is important to note that the District has large amounts of storage that go unused, and there are contractual agreements in place that place maximums or minimums of supplies in multiple dry year scenarios.

In order to be conservative, the analysis presents some of the available supplies in terms of contracts, regulations, etc., in order to be more up front with the SWRCB about what exactly is available to the District in any given year (i.e. CCWD's actual supplies in reservoirs are not equivalent with actual available supply). Therefore, the district has provided the breakdown both in terms of what was available in water year storage for 2013-15, along with what is available by contract, etc., in separate portions of the table. In all cases, the contract amount supersedes the amount that actually is available in the reservoirs. This is true for New Hogan (Calaveras River) and New Spicer Reservoir (Stanislaus River). However, it should be noted that the District has not approached any of the contracted maximums at any time in history.

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1) **Calaveras River: Jenny Lind Service Area** - The Jenny Lind Service Area water is derived from the Calaveras River, and is accessed by releases made by the Stockton East Water District, acting as the Watermaster for New Hogan Reservoir deliveries. Jenny Lind system receives surface water from New Hogan Reservoir through a non-Central Valley Water Project contract with the United States Bureau of Reclamation, whereby CCWD invested heavily in a “conservation storage pool” at New Hogan when it was built. The contracted amount for the water in New Hogan is typically estimated at 31,278 acre-feet per year (AFY) based on average long-term estimated yield, of which CCWD uses only a fraction at this time. Per contract, the minimum yield for New Hogan supplies for CCWD is 7,700 AFY, which is an amount that can’t suffer a deficit in any given year. This is more than twice the typical usage for CCWD’s Jenny Lind Service Area on an annual basis. Since, CCWD is not the only user of this supply, therefore, the true **absolute minimum** available supply available to CCWD in any significant drought year should be 7,700 AF. CCWD has a surplus even in these years.

Jenny Lind Potable Supplies – Calaveras River (New Hogan Reservoir)			
Water Year Type	Water Supply Available AFY	Notes	
Average Year	31,278	This is the contracted amount of water available to the District in an average year based on “safe yield”.	
Single-Dry Year	7,700	This is the absolute minimum supply available to District in any year type, and can’t suffer a deficit.	
Multiple-Dry Years	7,700	This is the absolute minimum supply available to District in any year type, and can’t suffer a deficit.	
Water Year Availability by Contract (CCWD Source – 2015 UWMP 7.21)	Minimum Water Available (a)	Water Produced (b)	Surplus (a-b)
WY 2017 Projection (2013)	31,278 AFA	2,170	29,108
WY 2018 Projection (2014)	7,700 AFA	1,770	5,930
WY 2019 Projection (2015)	7,700 AFA	1512	6,188
Water Year Supply (Hydrology – Max Storage) (CCWD Source – CDEC)	Water Available (Max Storage (a))	Water Produced	Surplus (a-b)
WY 2017 Projection (2013)	167,617 AF	2,170	165,447
WY 2018 Projection (2014)	101,976 AF	1,770	100,206
WY 2019 Projection (2015)	66,132 AF	1,512	64,620

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2) Calaveras River: Sheep Ranch Service Area - The Sheep Ranch Service Area water is supplied by San Antonio Creek, a tributary to Calaveras River. Upstream of the Sheep Ranch community, CCWD has owned and operated White Pines Reservoir since 1970, which is an approximately 262 AF reservoir. White Pines has filled and spilled every year in its existence, and the historical hydrology supports this prior to 1970. The District also has access to the Historical Blagen Mill Pond upstream of White Pines Reservoir, which is an approximately 25 AF reservoir, for a total of 287 AF.

While the available supply is likely much more than the amount of storage included in the table below, the District is assuming an **absolute minimum** supply assigned only to available storage developed by the District. For this analysis, the District assumes four things: 1) The District would have access to the full storage at White Pines and the Blagen Mill Pond every year due to it “filling and spilling” every year since it was built, 2) the district currently maintains flow regimes to ensure year round water supplies are available to assigned downstream users, including Sheep Ranch, and has done so every year in existence, 3) there are approximate storage losses of a total of 50 AF of storage, with 25 AF to sedimentation over time, and a “deadpool storage” of 25 acre feet, 4) this is equivalent to a total of 227 AF storage per year, every year.

Sheep Ranch Supplies – San Antonio Creek (White Pines and Mill Pond)			
Water Year Type	Water Supply Available AFY	Notes	
Average Year	227	This is the water available to the District in any given year according to the assumptions in the paragraph above.	
Single-Dry Year	227	This is the water available to the District in any given year according to the assumptions in the paragraph above.	
Multiple-Dry Years	227	This is the water available to the District in any given year according to the assumptions in the paragraph above.	
Water Year Supply (Hydrology – Max Storage – “spills every year”) (CCWD Source – 2015 UWMP 7.21)	Water Available (Max Storage (a))	Water Produced	Surplus (a-b)
WY 2017 Projection (2013)	227 AF	14	213
WY 2018 Projection (2014)	227 AF	11	216
WY 2019 Projection (2015)	227 AF	9	217

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3) Mokelumne River: West Point Service Area – CCWD has a direct diversion water right of up to 1,830 AFA in Bear Creek, tributary to the Mokelumne River. CCWD also has a contract for 200 AFA purchased water supplies out of Schaads Reservoir, for which the District has a contract with Calaveras Public Utility District (CPUD) to access Pre-14 water rights in times of curtailment. CCWD is currently the only water supplier utilizing Schaads Reservoir, which has a total storage capacity of 2,425 AF. Per the Terms of the Contract, CCWD reserves the right to ask for more supplies above and beyond the 200 AFA contract amount. The analysis below does not consider this possibility for additional water; it could be obtained if necessary. Approximate CPUD Maximum storage in Schaads during the analysis period was as follows: 2013 – 1680 AF, 2014 – 1700 AF, and 2015 – 3021.

The District received a curtailment in 2015, and while the District has not yet experienced three consecutive years of curtailment, the State Water Resources Control Board may still issue curtailment notices at any time. To be conservative in this analysis, the District has assumed that the supply available in a multiple-dry year scenario (2015) would also be reduced as a result of curtailments. In a multiple-dry year scenario, the available supply was assumed to be 250 AF, with 200 AF supplied through the contract with CPUD and 50 AF supplied by storage in the regulating reservoir, which is offstream storage owned by CCWD to serve the West Point Service Area.

West Point Potable Water Supplies – Mokelumne River (Bear Creek, and Middle Fork Mokelumne (Schaads))			
Water Year Type	Water Supply Available AFY	Notes	
Average Year	2,030	Contracted amount water available to the District in an average year based on permitted water rights of Bear Creek, plus contracted supplies with CPUD.	
Single-Dry Year	250	This is the absolute minimum supply available to District in a year-round curtailment scenario.	
Multiple-Dry Years	250	This is the absolute minimum supply available to District in a year-round curtailment scenario.	
Water Year Availability by Water Rights/Supply and Contract (CCWD Source – 2015 UWMP 7.2.3)	Minimum Water Available AF (a)	Water Produced AF (b)	Surplus AF (a-b)
WY 2017 Projection (2013)	2,030 AFA	184	1,846
WY 2018 Projection (2014)	2,030 AFA	145	1,885
WY 2019 Projection (2015)	250 AFA	147	103

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4) Stanislaus River: Ebbetts Pass and Copper Service Areas – The District’s water supplies serving the Ebbetts Pass and Copper Service Area were developed as part of the North Fork Hydroelectric Project and New Spicer Reservoir, owned by the District and operated in partnership with Northern California Power Agency. The Ebbetts Pass service area receives water from the North Fork of the Stanislaus River via a diversion in the North Fork Hydroelectric Project’s Collierville Tunnel, and Copper Cove/Copperopolis receives water by means of the diversion and re-diversion of upstream storage at Tulloch Reservoir. It is important to note that while a total of 76,300 AFA of permitted water rights exist in Spicer for CCWD consumptive purposes, Water Rights Order 97-05 capped the use in the Ebbetts Pass and Copper Service areas at 8,000 (limited only by an agreement with NCPA – CCWD has more water available Spicer) AFA and 6,000 AFA respectively. Should the District need more water to serve customers in these areas, it could be addressed through a future State Board filing. However, for the purposes of this analysis, the District’s permitted right is assumed to be cumulative 14,000 AFA. It should be noted that the developable water supplies in New Spicer Reservoir have historically far exceeded that amount. The supply volumes in this analysis are based on the District’s accessible storage rights for consumptive water supply, and maximum storage during the analysis timeframe in Spicer Reservoir. This supply was assumed to be available in all years of a multi-year drought. It was assumed that a segment of the District’s Stanislaus River water rights would be curtailed (as they were in 2014 and 2015) and only the water that the District had stored in Spicer Reservoir prior to the curtailment would be available. That stored supply available post-curtailment in 2014 and 2015 is far above the District’s 14,000 AFA allotment for the Stanislaus River.

Ebbetts Pass Service Area Potable Supplies – Stanislaus River (New Spicer Reservoir)			
Water Year Type	Water Supply Available AFY	Notes	
Average Year	8,000	This is the contracted amount water available to the District by permitted right to serve the Ebbetts Pass and Copper Areas	
Single-Dry Year	8,000	This is the supply available to District in a year-round curtailment scenario, based on storage in New Spicer Reservoir.	
Multiple-Dry Years	8,000	This is the supply available to District in a year-round curtailment scenario, based on storage in New Spicer Reservoir.	
Water Year Availability by SWRCB Order 97-05 (Source 2015 UWMP 7.2.2)	Water Available AF (a)	Water Produced AF (b)	Surplus AF (a-b)
WY 2017 Projection (2013)	8,000	1,836	6,164
WY 2018 Projection (2014)	8,000	1,503	6,497
WY 2019 Projection (2015)	8,000	1,353	6,647

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Copper Cove Service Area Potable Supplies – Stanislaus River (New Spicer Reservoir)			
Water Year Type	Water Supply Available AFY	Notes	
Average Year	6,000	This is the contracted amount water available to the District by permitted right to serve the Ebbetts Pass and Copper Areas	
Single-Dry Year	6,000	This is the supply available to District in a year-round curtailment scenario, based on storage in New Spicer Reservoir.	
Multiple-Dry Years	6,000	This is the supply available to District in a year-round curtailment scenario, based on storage in New Spicer Reservoir.	
Water Year Availability by SWRCB Order 97-05 (Source 2015 UWMP 7.2.2)	Water Available AF (a)	Water Produced AF (b)	Surplus AF (a-b)
WY 2017 Projection (2013)	6,000	1,534	4,466
WY 2018 Projection (2014)	6,000	1,232	4,768
WY 2019 Projection (2015)	6,000	1,073	4,927
Ebbetts Pass and Copper Service Area Supplies Combined – Stanislaus River (Both Supplied by New Spicer Reservoir)			
Water Year Supply (Hydrology – Max Storage) (CCWD Source – CDEC)	Water Available (Max Storage (a))	Water Produced EP &CC AF (b)	Surplus AF (a-b)
WY 2017 Projection (2013)	144,600 AF	3,370	141,230
WY 2018 Projection (2014)	105,600 AF	2,735	102,865
WY 2019 Projection (2015)	70,100 AF	2,426	67,674

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Wallace Potable Water Supplies – Groundwater Wells			
Water Year Type	Water Supply Available AFY	Notes	
Water Year Availability (CCWD Source – 2015 UWMP 7.2.3)	Minimum Water Available AF (a)	Water Produced AF (b)	Surplus AF (a-b)
WY 2017 Projection (2013)	65 AFA	65	0
WY 2018 Projection (2014)	54 AFA	54	0
WY 2019 Projection (2015)	45 AFA	45	0

Analysis and Breakdown of Groundwater Supplies in “Worksheet #1”

The District has a small system that is reliant on groundwater within the Wallace Area. This area was recently annexed by the District and came under the administration of CCWD in late 2013. The District currently serves about 100 connections in the area, and has data supporting the ability to serve this area with little to no issue in a multi-year drought scenario. When the community was originally planned, it was scalable for a “full build-out” of 400 dwelling units or connections.

The question “Do you know the volume of water in the aquifer that is in your source(s) of groundwater?” was included in the SWRCB’s worksheets for the self-certification. A [2006 study commissioned by the Wallace Community Services District](#), and completed by ENGEIO Inc., showed that the sustainable yield of the aquifer appears adequate for meeting the water demand of the planned 400 equivalent dwelling units.

Further, the report states that the estimated water demand for that the 400 equivalent dwelling units was approximately 262 AFA, far exceeding current demands. Through their evaluation of hydrogeologic conditions, the report determined that approximately 392,000 gallons enters and leaves the site of the wells each day, amounting to approximately 438 acre-feet per year. The report states: “The sources of this groundwater are vast recharge areas located at and up-gradient of the Site. As mentioned earlier in the report, groundwater recharge from rainfall at the Site alone amounts to an estimated 5.8×10^7 (177 AF).”

“How many feet can you draw down without substantially affecting your ability to pump water?”

The wells are rated for pumping maximum of 200 GPM from 88’ down to 205’, but the pump is set at 363’. Per CCWD staff, pumping should not take place below 353 feet.

“At what depth is your water table?”

As of June 2013, static levels were at 115.3’ Per measurement by Wallace Lake Estates. [See source here.](#)
As of June 2016, the level was at 124.8’ (this figure was provided on June 21 by CCWD staff).

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Water Production

[Follow this link](#) to view CCWD’s Water Production Information. Units are Million Gallons (MG). Source, CCWD meters at every water treatment plant in our service areas. Production numbers are reported to the District Headquarters by the 10th of each month, and we report these same numbers to the State Water Resources Control Board by the 15th of each month.