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Beaumont-Cherry Valley Water District

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July 25, 2016

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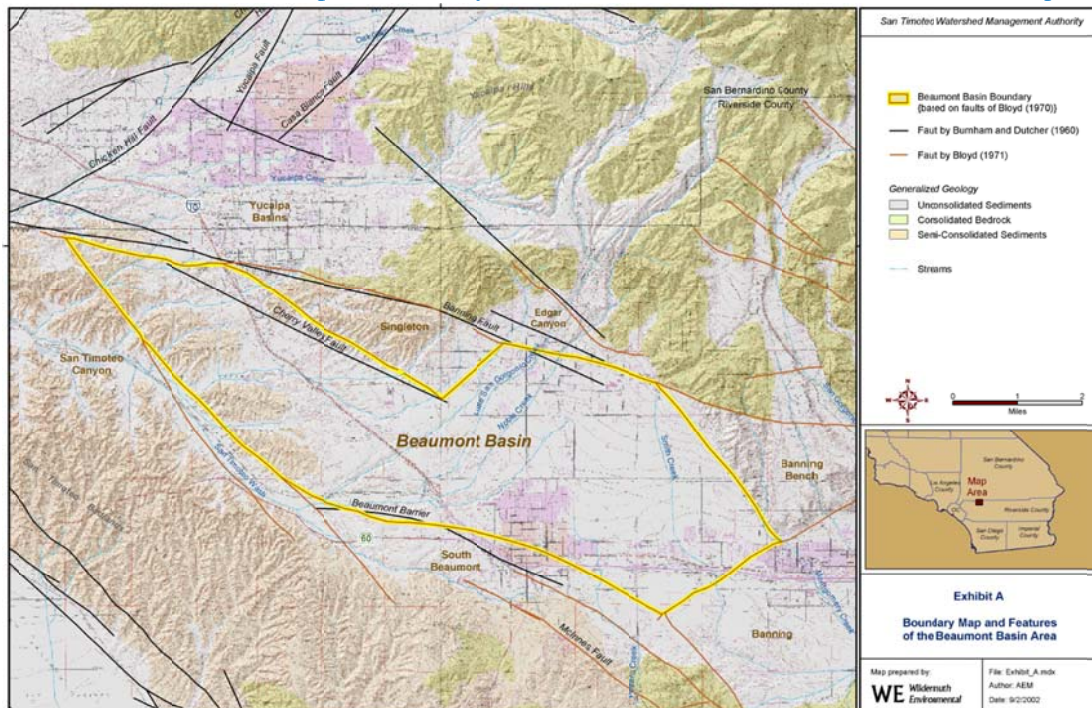
Subject: Beaumont-Cherry Valley Water District
Drought Conservation Self Certification (Stress Test)
Water Supply and Demand Analysis and Supporting Calculations

BCVWD General Information

The Beaumont-Cherry Valley Water District's (District) water supplies are provided by ground water produced in two groundwater basins, the Beaumont Basin (an adjudicated groundwater basin) and a second groundwater basin associated with Edgar Canyon. Figure 1 below shows the general location of the Beaumont Basin and Edgar Canyon:

Figure 1 – Boundary Map and Features of the Beaumont Basin Area

(Source of Map: Exhibit A of Judgement Pursuant to Stipulation Adjudicating Water Rights in the Beaumont Basin) (<http://documents.yvwd.dst.ca.us/bbwm/documents/formation/exhibita.pdf>)



Beaumont Basin:

The Beaumont Basin was adjudicated in 2004 and is the District's primary source of potable water. Various studies performed by local entities and USGS identify that the Beaumont Basin is one of the largest storage units in the San Geronio Pass area covering an area of about 27 square miles with at least 1.1 million acre-feet of water in storage. Documentation

related to the adjudication identifies conjunctive use storage within the Beaumont Basin is currently a minimum of 200,000 acre feet. This Basin is managed by the Beaumont Basin Watermaster.

Under the adjudication, all water that is recharged and/or extracted by each producer is monitored and reported in an annual report prepared by the Beaumont Basin Watermaster. This report includes a storage account for each producer which provides a running and historic accounting of all waters recharged, stored, and extracted. All producers within the Beaumont Basin must replenish water extracted from the basin on an annual basis or adjust each producers water storage account (stored water within the Basin) to reflect the adjusted running balance of water stored within the Beaumont Basin.

The amount of water an appropriator such as the District can produce without incurring a replenishment assessment varies from year to year based on a combination of the following:

- Water transfers between Appropriators
- Transfers of remaining basin safe yield capacity (unused production) from Overlying Producers (as identified in the Beaumont Basin Adjudication)
- Water pumped from the Appropriators storage account
- New yield created by the Appropriator

The District is authorized by storage agreement on file with the Beaumont Basin Watermaster to store up to 80,000 acre feet of water in the basin. The Districts storage account balance as of January 1, 2015 is 28,930 acre feet. A link to this information is provided below:

<http://documents.yvwd.dst.ca.us/bbwm/documents/2014annualreport150731.pdf> (See Table 3-8)

Replenishment of the Beaumont Basin by Beaumont-Cherry Valley Water District is provided by purchases of imported State Project Water from the San Geronio Pass Water Agency (SGPWA). This water is recharged into the Beaumont Groundwater Basin (Beaumont Basin) at the District's Noble Creek Recharge Facilities. These recharge facilities have a recharge capacity of at least 25,000 acre feet per year (based upon historical recharge rates).

Edgar Canyon:

The District also pumps water from shallow wells located in Edgar Canyon which the District owns overlying water rights to. This area has been managed by the District since the late 1890's. The pumping capacity from these wells varies based on weather conditions as the aquifer is limited and storage is small. Groundwater levels and groundwater production respond quickly to recharge related to stream flows within Edgar Canyon. During wet years more water can be pumped than during dry years.

The average annual production from the Edgar Canyon sources is 2,259 acre feet. For the purpose of this analysis the District has chosen to use 1,601 acre feet of production per year for each of the 3-years required. This amount is based on the average percentage of the total production historically available during drought events. A complete description of Edgar Canyon well capacities and historic pumping may be found in the Districts 2013 Urban Water Management Plan Update (http://www.bcvwd.org/pdf/BCVWD_UWMP2013.pdf)



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Water Supply Analysis:

The District has prepared a historic water production (demand) analysis utilizing baseline demands from 2013 and 2014 as required by the State Water Resources Control Board (SWRCB). The District has also prepared a water demand projection for 2017 through 2019 and supply analysis of available supply components including groundwater supplies, projected State Water Project Supplies (used for replenishment) and water available in the District's Beaumont Basin Storage Account (i.e. stored water supply). This analysis is described hereafter.

BCVWD 2013-2015 Water Production Summary

Table 1 sets forth the District's total annual water production from the Beaumont Basin and Edgar Canyon for the years 2013 through 2014. This data was used to determine the District's baseline water demand for 2017 through 2019.

Table 1
2013-2014 BCVWD Groundwater Production
(Baseline Demands Moving Forward)

Year	2013 (AF)	2014 (AF)	Baseline Demand (average of 2013-2014 production) (AF)
Potable Water Production (AF)	12,829	12,778	12,804

The average total production from the Edgar Canyon wells for the period of 2013-2014 was 1,542 acre feet (this production was the result of 2 canyon wells being out of service for repairs). As described above, the District used an available water supply of Edgar Canyon of 1,601 acre feet per year (the 2 wells were repaired in 2015 thereby increasing production capacity to historic levels). The 1,601 acre foot supply provides approximately 12.5% of the baseline demand shown in Table 1 for the analysis.

2017-2019 Demand Projections

The annual demand the District used moving forward for 2017, 2018, 2019 is 12,804 acre feet per year as shown in Table 1 above and in accordance with projection criteria set forth by the SWRCB.

2017-2019 Supply Projections

For the 2017 through 2019 supply and demand analysis, the District has four possible sources of water supply available. Those sources include groundwater from the Beaumont Basin and Edgar Canyon, imported water (used to replenish the Beaumont Basin), and water in the District's storage account in the Beaumont Basin. In order for the District to access water supplies moving forward, the District performed an analysis of available imported water available from the SGPWA and water in the District's Beaumont Basin storage account.

In order to analyze total water supply, the BCVWD projected the District's Beaumont Basin storage account through the end of 2016. This projection was based the District's 2015 water

storage account balance and 2016 State Water Project (imported water) availability which is being used by the District for 2016 basin replenishment and demand offsets.

BCVWD Projected Storage Account Balance Through 2016

The Districts 2016 projection includes a projection of the water allocation of unused Overlying production (redistributed to the District as part of the adjudication water accounting procedures) and actual and projected production quantities from the District's wells located within the Beaumont Basin.

The projected demands for 2016 also included demands related to new home additions within the District Service Area and were based on a projected growth rate in the District service area of 450 connections per year. Specifically, the City of Beaumont Department of Building and Safety provides yearly reporting of the building permits issued by the City of Beaumont. This data shows that the City of Beaumont issued approximately 455 new home permits annually between 2013 and 2015. A link to this information is provided below:

<http://www.ci.beaumont.ca.us/DocumentCenter/View/2428>

The Community of Cherry Valley (also within the District service area) is slow growing at this point and in recent years has added three to five homes per year.

State water project (imported water) deliveries for 2015-16 are based on the actual quantities delivered and recharged by the District in 2015 and projected quantities anticipated for 2016 based on the current State Water Project allocation of 60%. The SGPWA has an annual State Water Project entitlement of 17,300 acre feet. The District purchases an average of 85% of all of the water delivered to the SGPWA service area.

The District's projected 2016 SWP supply is 10,636 acre feet which is derived from 85% of the total SWP deliveries available from SGPWA for 2016. The District understands from data provided by the SGPWA that 12,513 acre feet of water will be available in 2016 to the SGPWA Service Area. Said supplies include the following supply components:

- 10,380 acre feet of available SGPWA SWP supply (SWP allocation @ 60% of 17,300= 10,380 af)
- 1,200 acre feet (SGPWA exchange program with CLAWA),
- 933 acre feet of carryover from 2015

Based upon available water supply as described above, the District prepared Table 2 to set forth an analysis of water supply and demands for 2016 in order to determine the District's projected Beaumont Basin Storage Account balance at the end of 2016. Data used in the District analysis includes demands associated with new home construction in 2016 and short term grading demands (projects that will end in 2016)



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Table 2
2015/2016 Water Supply and Demand Analysis
(Determination of 2016 Storage Account Balance)

Year	BCVWD Beaumont Basin Storage Account (AF)	Edgar Canyon Production (AFY)	Unused Overlier Rights (AF)	State Water Project Supply (AF)	Total Supply + Storage (AF)	Domestic Demand (AF)	Domestic Demand Increase Due to New Construction (480 Homes in 2016) (AF)	Total Domestic Demand (AF)	Short Term Construction Grading Demand (AF)	BCVWD Final Beaumont Basin Storage Account (AF)
2015	28,930	1,280	(1) 2,705	2,290	35,205	10,121	0	10,121	(2)	25,084
2016	25,084	1,300	(3) 2,707	10,636	39,727	10,121	292	10,413	336 (4)	28,978

(1) Actual Demand for 2015

(2) Edgar Canyon Production in 2015 lower than 1,601 due to well rehabilitation program

(3) Edgar Canyon Production in 2015 lower than 1,601 due to well rehabilitation program

(4) Projected Demand for 2016

As a final part of the District's 2017 through 2019 water supply projection, the District contacted the SGPWA and identified the projected deliveries of State Project Water that could be anticipated in the event the drought continues in California and State Water Project Supplies are curtailed for 2017 through 2019 as they were between 2013 through 2015. These delivery quantities were used to project the available replenishment amount that would be anticipated to be supplied to the District for 2017 through 2019. These quantities were provided by the SGPWA and are summarized in Table 3 as follows:

Table 3
2017 through 2019 State Water Project Drought Condition Supplies

Year	2017	2018	2019
SWP Supply (AF)	5,742	565	2,771

The SGPWA has posted their three year projection on their website and that projection is available via the following link:

<http://www.sgpwa.com/wp-content/uploads/2016/06/SWRCB-Emergency-Conservation-Regs-Three-Year-Projection-June-2016-pdf>

This data was used to project the baseline demand for analysis in the 2017-2019 water supply analysis and self-certification calculations.

BCVWD Final Water Supply Analysis Summary

Table 4, attached provides a summary of the District's Water Supply and Demand Analysis for 2017 through 2019 and shows that the District's available water supply (including water in storage in the Beaumont Basin) is sufficient to meet the three dry year demand as identified by the SWRCB in event the drought in California continues.

In addition, the District's analysis shows that in the event the drought continues and water supplies are diminished in the State Water Project supplies, the District will be required to withdraw water in storage in the District's Beaumont Basin Storage Account. The District anticipates the available storage account residual will be 12,661 acre feet at the end of 2019.

BCVWD_Water_Supply_Analysis_Stress Test_20150722.docx

BEAUMONT-CHERRY VALLEY WATER DISTRICT

Table 4
BCVWD Water Supply and Demand Analysis for 2017 through 2019

BCVWD Baseline Water Demands (Based on average of total yearly BCVWD Production for 2013 and 2014):

Year	Baseline Demand (acre ft)
2017	12,804
2018	12,804
2019	12,804

Water Supplies Available from the SGPWA (State Water Project Supplies):

Year	SWP Imported Water Supply (acre ft)
2017	5,742
2018	565
2019	2,771

Available Surface Water Supply (acre ft)

Year	Supply (acre ft)
2017	0
2018	0
2019	0

BCVWD Summary of Water Supply and Demand Analysis for 2017 through 2019

Year	Beaumont Basin Storage Account (AF) (1)	Edgar Canyon Production (AFY) (2)	Unused Overlying Rights (AF) (3)	State Water Project Supply (AF) (4)	Total Supply + Storage (AF)	Projected Demand	BCVWD Final Beaumont Basin Storage Account Balance (AF)
2017	28,978	1,601	2,659	5,742	38,980	12,804	26,176
2018	26,176	1,601	2,695	565	31,037	12,804	18,233
2019	18,233	1,601	2,860	2,771	25,465	12,804	12,661

Total Available Drought Water Supply at End of 2019 **12,661**

BCVWD water supply sources include the following:

- (1) Total water in BCVWD Storage Account beginning of each year
<http://documents.yvwd.dst.ca.us/bbwm/documents/2014annual> See Table 3-8
- (2) Edgar Canyon average annual historic production capability
- (3) Allocation of unused Overlying rights for the years 2017-2019 derived from projections in the 2014 Annual Report of the Beaumont Basin Watermaster (BCVWD receives 42.51% of all unused overlying rights)
<http://documents.yvwd.dst.ca.us/bbwm/documents/2014annua> See Table 3-6
- (4) Projected deliveries of State Project Water for replenishment (recharge) by BCVWD for the three year period (2017-2019) provided by SGPWA
<http://www.sgpwa.com/wp-content/uploads/2016/06/SWRCB-Emergency-Conservation-Regs-Three-Year-Projection-June-2016.pdf>