

Appendix I: State Water Project Peak Day Demands for Customers of the San Bernardino Valley MWD



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Geotechnical
Environmental and
Water Resources
Engineering

Upper Santa Ana River Watershed Integrated Regional Water Management Plan

Task 15 – State Water Project Peak Day Demands for Customers of the San Bernardino Valley Municipal Water District

Submitted to: San Bernardino Valley Municipal Water
District

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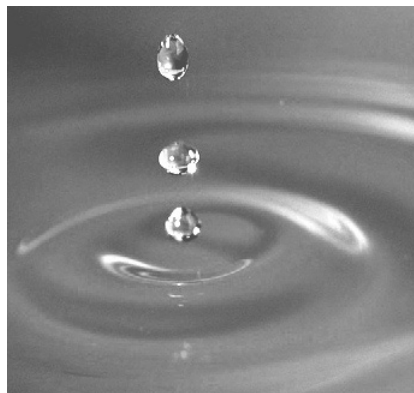


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Water Supply Contingency Work Group July 2007 sketch

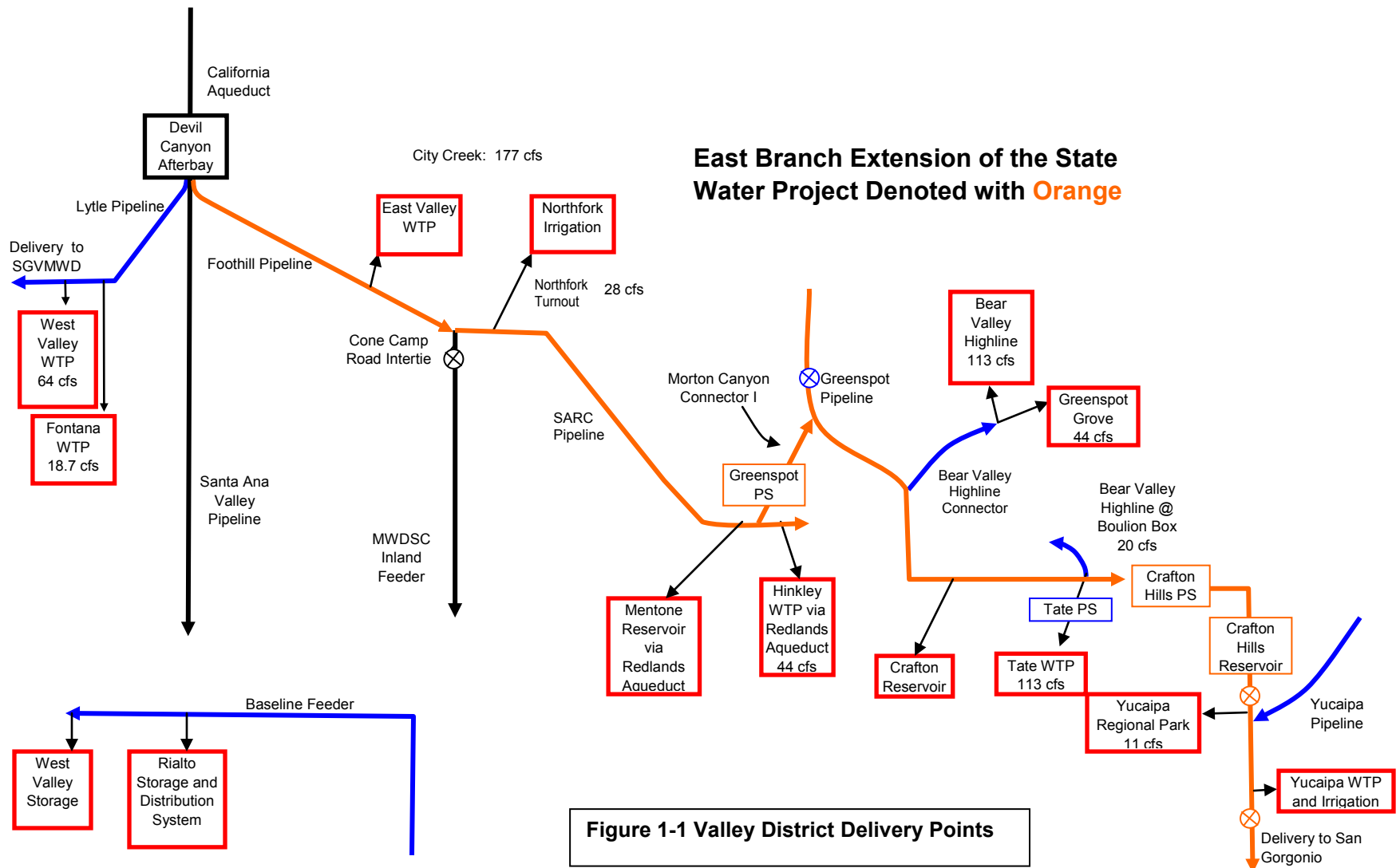
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1 Introduction

The purpose of this task is to determine the adequacy of the San Bernardino Valley Municipal Water District's (Valley District) current facilities to meet its customer's peak demand today and in the future.

Valley District is a State water contractor (SWC) and imports water from the State Water Project (SWP) for both direct delivery and for artificial recharge. Since SWP water is untreated, direct deliveries are primarily to surface water treatment plants with the remainder being for irrigation.

Deliveries are made from a number of "turnouts" on Valley District's facilities. Figure 1-1 is a simplified sketch of the various turnouts on Valley District's system.



2 Local Agency Peak Day Supply and Demand

This section includes a review of purveyors' overall peak day demand as well as the subject of this analysis, the SWP peak day demand. Information regarding SWP peak day demand was obtained from the purveyors' Urban Water Management Plans and, in the absence of this data, from discussion with the water purveyors. The Foothill Pipeline, SARC Pipeline, Greenspot Pipeline, East Branch Extension Pipeline, Greenspot Pump Station, Crafton Hills Pump Station, Crafton Hills Reservoir and Bryant Street Pipeline make up the East Branch of the SWP. San Gorgonio Pass Water Agency, a SWC, receives water through the East Branch Extension of the SWP so their capacities in this system are also included.

Note that as purveyors typically deal in units of million-gallons-per-day (MGD), those units have been used here for the purveyors. The conversion between MGD and cfs is: 1.55 cfs/day = 1 MGD.

2.1 City of San Bernardino

San Bernardino takes deliveries off the Foothill Pipeline at Sweetwater Spreading Grounds and at Waterman Spreading Grounds. These deliveries are recharged and then extracted from seven of the City's nearby wells.

**Table 2-1 – City of San Bernardino Peak Day Supply and Demand
(MGD)**

	Current	Future	Remarks
Supply			
Local Surface Water SWP Water	0	0	San Bernardino uses no local surface water. See below.
Groundwater			
Produced by wells under influence of surface water	14	14	The five DC wells and EPA 6 and 7 wells respond within six to seven months to recharge in the Devil Canyon area. The production capacity of these wells is 9,700 gpm. Total groundwater production capacity is 70,000 gpm.
Other wells	101		
Total groundwater	115		
Total Supply	115		
Demand			
Peak Day	102	157	In 2002, San Bernardino's "Max Day" was 47,000 gpm. The City suggests using a factor of 1.5 to convert to "Peak Day." Per UWMP, year 2005 demand was 47,501 afy and year 2025 demand is projected to be 73,504 afy. Future Peak Day projected proportionately.
SWP Peak Day - cfs		15	
Note:			

2.2 East Valley Water District

**Table 2-2 – East Valley Water District Peak Day Supply and Demand
(MGD)**

	Current	Future	Remarks
Supply (Potable only)			
Surface Water			Philip A Disch SWTP (Plant 134) capacity is 4 MGD. Intent is to expand in future to 8 MGD. Water Supply source varies seasonally. In early summer, local supply may meet majority of demand. By September and October, in-lieu (supplied by the SWP) may be more than 50 percent of supply. It is rare to exceed local and in-lieu supply. However, due to Seven Oaks water quality challenges, it has been happening in the last few years. Plant may be expanded to 8 MGD per 2005 UWMP. Per 2005 UWMP, well capacity, including inactive wells, is 38.74 MGD.
Local	0 to 4	0 to 8	
In-Lieu	0 to 4	0 to 8	
SWP	0 to 4	0 to 8	
Total	4	8	
Groundwater	31.4		
Total Supply	35.4		Per Ron Buchwald, supply is 104% of peak demand of 34 MGD.
Demand (Potable only)			
Peak Day	34	50	2007 peak from Ron Buchwald, August 16, 2007. UWMP projects annual consumption to increase from 22,428 in 2005 to 32,940 afy in 2025. Assume future peak day increases proportionately.
SWP Peak Day - cfs		12.4	
Note: Irrigation deliveries off the North Fork Canal are not included in this analysis.			

2.3 City of Redlands

**Table 2-3 – City of Redland Peak Day Supply and Demand
(MGD)**

	Current	Future	Remarks
Supply			
Surface Water			<p>Hinkley WTP is 14 MGD and Tate WTP is 14.9 MGD. Capacity of Tate is sometimes reported as 12 MGD. Tate may be expanded to 18 MGD in the future.</p> <p>Water Supply source varies seasonally. Hinkley WTP is typically all SWP water during the summer. Tate is typically all local surface water during the early summer and only 50 percent local surface water by late summer. Hinkley's local supply is Upper Santa Ana. Tate's local supply is Mill Creek.</p> <p>Turbidity of local surface water and bromides in SWP water limit capacity of Tate. A proposed project will improve the processes at Tate to eliminate these restrictions.</p>
Local	6 to 12	6 to 14.9	
SWP	13 to 18	13 to 28.9	
Total Surface	25	25	
Groundwater	30 to 35		Limited by production capacity
Total Supply	45 to 50		
Demand			
Peak Day	49.5	71	UWMP projects demand increasing from 45,500 afy in 2005 to 65,300 afy in 2030. Presume proportionate increase in peak day.
SWP Peak day- CFS		21.7	
Note: Plant capacities from UWMP, Table 3-1. Seasonal variation information from Chris Diggs, City of Redlands.			

2.4 Yucaipa Valley Water District

**Table 2-4 – Yucaipa Valley Water District Peak Day Supply and Demand
(MGD)**

	Current	Future	Remarks
Potable System			
Supply (Not including non-potable system)			
Surface Water			Regional Water Filtration Facility will be 12 MGD once construction is complete. It will be run at 4 MGD initially. Supply is SWP delivered by SBVWMD. While Valley District can deliver Mill Creek water, during the summer, Mill Creek water is not available. Oak Glen SWTP is 0.75 MGD. Supplied by local surface water. During summer, local supply is typically 0.15 MGD. No near-term SWTP expansion plans. Yucaipa will maintain well capacity equal to peak day demand.
Local	0.15	0.15	
SWP	4	12	
Total Surface	4.15	12.15	
Groundwater	12	25	
Total Supply	16.15	37.15	
Demand (Not including non-potable system)			
Peak Day	17	25	Current per Jack Nelson. UWMP Table 27 shows potable demand increasing by 47% (from 14,400 af in 2005 to 21,200 af in 2025). Presume that peak day increases similarly.
SWP Peak day-CFS		18.8	
Non-potable System (It is assumed that non-potable deliveries could be eliminated during a peak day for potable demands)			
Supply		25.6	
SWP		25.4	
Filter backwash water		0.0	
Recycled Water		8.54	
		34.2	
Note: Data from Jack Nelson, Assistant General Manager, East Valley Water District, August 15, 2007 and September 7, 2007.			

2.5 West Valley Water District

**Table 2-5 – West Valley Water District Potable Peak Day Supply and Demand
(MGD)**

	Current	Future	Remarks
Potable System			
Supply			
Surface Water			<p>Oliver P Roemer Water Filtration Facility treats SWP water and Lytle Creek water. Plant capacity is 14.4 MGD. Future (Phase 3) expansion will add 6.0 MGD. Rialto owns 1.5 MGD of this capacity. Maximum Lytle Creek surface diversions are 3.3 MGD (UWMP).</p> <p>Proposed North Villages WFF (to be located in the Lytle Creek North Planned Development) will be 4.0 MGD (ultimate capacity of 6.0 MGD). Served by Glen Helen Turnout of the San Gabriel Feeder (no local supply)</p> <p>The City of SB, on behalf of Valley District, produces 4.5 MGD of groundwater for West Valley during the summer. This water is boosted into the Baseline Feeder by the Encanto Pump Station.</p>
Local	3.3	3.3	
SWP	5.0	23.1	
Total	8.3	26.4	
Groundwater			
Conveyed by Baseline Feeder	4.5	20.0	
Not conveyed by Baseline Feeder	4.5	20.0	
Total	31.3	60.0	
Total Supply	44.1	106.4	
Demand			
Peak Day	36.2	73.2	
SWP Peak day-CFS		40.9	
Non-potable System (It is assumed that non-potable deliveries could be eliminated during a peak day for potable demands)			
Supply			
SWP			
Filter backwash water			
Note: Data provided by Tom Crowley, Assistant General Manager, email dated August 28, 2007.			

2.6 City of Rialto

**Table 2-6 – City of Rialto Peak Day Supply and Demand
(MGD)**

	Current	Future	Remarks
Supply (Potable only)			
Surface Water			<p>The City of Rialto has 1.5 MGD capacity in the Oliver P Roemer Water Filtration Facility. (The plant, operated by West Valley, treats SWP water and Lytle Creek water. Capacity is 14.4 MGD. Future, Phase 3, expansion will add 6.0 MGD.) Rialto's rights to Lytle Creek Surface Water are limited to 1040.7 gpm or 1.5 MGD.</p> <p>The Baseline Feeder conveys water from Rialto's City Well #4a (3,200 gpm or 4.6 MGD to Rialto) and conveys water produced by the City of San Bernardino for Rialto.</p>
Local	1.5	1.5	
SWP	—	—	
Total	1.5	1.5	
Groundwater			
Conveyed by Baseline Feeder	—	—	
Not conveyed by Baseline Feeder	—	—	
Total	—	—	
Total Supply	—	—	
Demand (Potable only)			
Peak Day ¹	20.8	23.6	<p>Per UWMP, Page 12, 20.8 MGD + Marygold. UWMP projects population increase from 97,878 in 2005 to 111,128 in 2030. Peak day presumed to increase similarly (113.5%).</p> <p>Wheeling agreement with Marygold Mutual will expire in 2008 and Marygold's demand is not included in these figures.</p>
SWP Peak day - cfs	-----	N/A	
¹ Recent estimate of peak demand for Rialto is 26 MGD and future peak demand might be as high as 43.8 MGD. The City of Rialto is currently re-examining their future peak demand.			

2.7 Fontana Water Company

**Table 2-7 – Fontana Water Company Peak Day Supply and Demand
(MGD)**

	Current	Future	Remarks
Supply			
Surface Water			
Local	29	29	
SWP	29	29	
Total	29	29	
Groundwater	72	-	
Total Supply	101	-	
Demand			
Peak Day	71	77	
SWP Peak Day-CFS	54	54	
¹ Water System Master Plan (November 2013) Table 5-5			

Updated January 2015

3 Peak Day Demand on Valley District Facilities

Section 2 summarized the water demands and supplies as well as peak day water demand of the purveyors. However, purveyors may have groundwater supplies (or other sources) to help meet their peak day demand. After discussion with agencies' staff and review of their UWMP data, Table 3-1 was summarized the future peak day SWP demand and the delivery point from Valley District facilities. Based on this preliminary examination, Valley District's turnouts are sized to meet SWP Peak Day demand. Additional conveyance capacity is needed in the East Branch Extension of the SWP to meet ultimate demands. The Department of Water Resources, Valley District, and SGPWA are currently planning the construction of the second phase of the East Branch Extension, which will provide this additional capacity.

If we assume all Purveyors peak day demands coincide, the SARC Pipeline has a total future peak day demand of 144 cfs. Delivery to spreading grounds for the City of San Bernardino is 15 cfs that can be interrupted and rescheduled for when peak day demands on the pipeline do not exceed its capacity. SARC has a capacity of 72 cfs.

Table 4-5
Future Peak Day SWP Demand for SBVMWD

		Peak Day SWP Demand (cubic-feet per second)												
		SWP East Branch Extension												
Delivery Point (Turnout)	Turnout Capacity	Foothill Pipeline	SARC Pipeline	Greenspot Pump Station	Morton Canyon Connector	Greenspot Pipeline	Crafton Hills PS	Crafton Hills Reservoir	EBX Reach 1 Pipeline	EBX Reach 2 Pipeline	EBX Reach 3 Pipeline	Tate Pump Station	Yucaipa Pipeline	Devil Canyon - Azusa Pipeline
City of San Bernardino (Sweetwater (16 in) and Waterman (30 in) Spreading Ground Turnouts)	35 cfs and 135 cfs, respectively	15.0												
East Valley WTP (Northfork Turnout (two 12in), City Creek (20in) Turnout (alternate))	16 cfs and 65 cfs, respectively	12.4	12.4											
Bear Valley - Northfork Irrigation (Northfork Turnout)	16 cfs	4.0	4.0											
Mentone Reservoir (SARC – Bear Valley Sandbox Turnout)		6.0	6.0											
City of Redlands - Hinckley WTP (SARC – Bear Valley Sandbox (two parallel 30 in) Turnout)	40 cfs	21.7	21.7											
Bear Valley Highline (Bear Valley Highline Connector and/or Bear Valley Highline – Bouillioun Box Turnout)	20 cfs	4.0	4.0	4.0	4.0	4.0								
Greenspot Grove (Bear Valley #1 Turnout, _ cfs)	6 cfs	1.5	1.5	1.5	1.5	1.5								
Crafton Water Company (Crafton - Unger Turnout) (20 in)	25 cfs	6.0	6.0	6.0	6.0									
City of Redlands - Tate WTP (Tate Treatment Plant Turnout) (24 in) Tate Pump Station	32 cfs	27.9	27.9	27.9	27.9							27.9		
Yucaipa Regional Park (Yucaipa Regional Park Turnout) (8 in)	6 cfs	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5					
Yucaipa Non-potable system, untreated SWP (Yucaipa Valley Water District #1	60	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6				
Yucaipa WTP (Yucaipa Valley Water District #1 Turnout)		18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6				
San Gorgonio Pass Water Agency - Current		16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0			
San Gorgonio Pass Water Agency - Future		16.0					16.0	16.0	16.0	16.0	16.0			
West Valley Water District – Oliver P. Roemer WFF (Lytle Creek Turnout)	32 cfs													40.9
West Valley Water District - North Villages WFF (Glen Helen (30 in)	10 cfs													2.6
Fontana Water Company (Lytle Creek Turnout, 14 cfs)	14 cfs													18.7
Facility Peak Day Demand:		175.2	144.2	100.1	100.1	100.1	76.7	76.7	76.7	76.2		27.7	0.0	67.5
Facility Conveyance Capacity		288.0	72	70	70	80	135	104	104	104				110

Notes:

City of San Bernardino: Per Matt Litchfield, they produce 14 MGD from the affected wells, or 21.7 cfs. Per, "Water Supply Contingency Work Group, June 2007, maximum SWP deliveries are 15 cfs.

East Valley: Future WTP capacity will be 8 MGD or 12.4 cfs.

Bear Valley - North Fork Irrigation: From Water Supply Contingency Work Group, June 2007. Future demand presumed to equal present demand.

Mentone Reservoir: From Water Supply Contingency Work Group, June 2007. Future demand presumed to equal present demand.

City of Redlands - Hinckley WTP: Per UWMP.

Crafton Water Company @ Unger Lane: From Water Supply Contingency Work Group, June 2007. Future demand presumed to equal present demand.

City of Redlands (Tate WTP): Per UWMP. Most days, plant receives all water from Mills Creek

Yucaipa Regional Park: From Water Supply Contingency Work Group, June 2007.

Yucaipa Non-potable: From Jack Nelson.

Yucaipa VWD - WTP: 12 MGD per Jack Nelson.

San Gorgonio Pass Water Agency: Agency has capacity rights to 16 cfs in the East Branch Extension Phase 1. EBX Phase II will add 16 cfs capacity. EBX Phase II includes new conveyance facilities from the Foothill Pipeline to Crafton Hills Pump Station and expansion of Crafton Hills Pump Station (NOP, DWR East Branch Extension Phase II Project EIR). San Gorgonio envisions acquisition of additional Table A Amount. Conveyance for that additional Table A Amount is not included.

West Valley Water District - Roemer WFF (not including deliveries for Rialto): Per Tom Crowley, maximum surface water demand is 26.4MGD including 3.3 MGD local surface water. This evaluation assumes no local surface water available and 4 MGD delivered to proposed North Villages WFF.

West Valley Water District - North Villages WFF: 4 MGD per Tom Crowley

West Valley Water District - Irrigation: Per UWMP, District provides irrigation water to Rancho Verde Golf Course. Water provided is a blend of local surface water, imported surface water and filter backwash water. Total consumption was 1,357 af in FY 2002/03. Assume that Peak Month is 13% of annual demand, Peak Day is 1/30 of Peak Month and filter backwash water amount is negligible.

Fontana Water Company: Fontana Water Company future peak day demand was developed without confirmation of calculations from Fontana.¹ Sandhill WTP will be 29 MGD per 2005 UWMP. Some of this water may be purchased from Metropolitan and conveyed through Metropolitan facilities.

City of Rialto - Roemer WFF: From 2005 UWMP.

West Valley Water District - groundwater deliveries: Data from Tom Crowley, West Valley

City of Rialto - groundwater deliveries:

Conveyance Capacities: Tate Pump Station an Lytle Pipeline from SAIC. SWP facilities from SWP Data Handbook, 2003. Baseline Feeder capacity based on 48-inch Diameter & 5 fps.

Turnout capacities: From Valley District

Baseline Feeder Capacity: Presumed to by 64 cfs based on 48-inch diameter and 5 feet per second velocity.

¹ Updated January 2015

4 References

Conversations with:

Sam Fuller, San Bernardino Valley MWD, July 2007
Ron Buchwald, East Valley, August 2007
Tom Crowley, West Valley, August 2007. Email on August 28.
Chris Diggs, Redlands, August 2007
Jack Nelson, Yucaipa Valley, August 2007
Matt Litchfield, August 2007

2005 Urban Water Management Plans:

East Valley Water District
Fontana Water Company
City of Redlands
West Valley Water District
Yucaipa Valley Water District

Fontana Water Company Water System Master Plan, November 2013²

State of California. 2003. Data Handbook, State Water Project.

State of California. 2007. Notice of Preparation, DWR East Branch Extension Phase II Project EIR.

Water Supply Contingency Work Group. July 2007 sketch

² Updated January 2015. This document used only to update Table 2-7.

Appendix A - Water Supply Contingency Work Group July 2007 Sketch

SAN BERNARDINO VALLEY RIVER WATERSHED INTEGRATED REGIONAL WATER MANAGEMENT PLAN
APPENDIX I – SBVWMD DIRECT-DELIVERY CUSTOMER PEAK DAY DEMAND

