

MEMORANDUM

Date: April 11, 2008

From: EDAW (M.Cubed)

To: Mike Togonolini, Tom Francis

Re: Potential Impact of Water Shortages on Landscaping Services Sector
within EBMUD Service Area

The current approach for estimating economic impacts of water shortages on EBMUD commercial and industrial water users relies on a 1994 SFPUC study. Using data from a survey of commercial and industrial water users served by SFPUC, this study estimated relationships between the magnitude of sector water shortages and changes in payroll and sales. WSMP 2040 uses these relationships to translate system water shortages into changes in commercial and industrial payroll, employment, and regional value added.

Implicit to this approach is the assumption that water is a primary input to production and constraints on the supply of this input limit production and hence employment and payroll. This is a reasonable way to describe how water shortages impact many water-intensive industries and businesses. For example, a chemical manufacturer uses water in its processes, as well as for cooling, heating, and sanitation. In the short-run, the ability to substitute other inputs for water in the production process may be limited and reductions in water supply may thus require changes in output and employment levels.

However, not all industry sectors considered vulnerable to water shortages follow this general model. The landscape services sector is one exception. Water shortages do not affect this sector's ability to supply its services. Rather, water shortages may reduce the demand for landscape services. Put another way, water shortages impact the landscape services sector indirectly through changes in demand. These indirect impacts are not presently accounted for in the WSMP 2040 shortage cost estimates.

Limited information on how water shortages impact the landscape services sector is available. We have identified two studies, the first sponsored by the State Water Contractors and the second sponsored by Metropolitan Water District, which examined the impact of drought on California's landscape services sector. The first study examined how the combination of drought and recession impacted statewide payroll and employment within the landscape services sector in 1991. Through a survey of landscape service sector employers, the second

study estimated how much of the total impact could be attributed to the drought alone, the recession alone, or was not separable.

Results are summarized in the following table. The study estimated that between 1990 and 1991 California's landscape service sector payroll fell by \$217 million and that 11%, or about \$23.9 million, was attributable to the drought alone. That is, the drought alone was estimated to reduce 1991 forecast payroll by 1.7%.

RAND (1996) estimated that water shortages in California's urban areas averaged 14% in 1991, implying a payroll elasticity of 0.12.¹

1991 Statewide Landscape Services Sector Payroll Impact (Million \$)

1991 Forecast Payroll	1991 Actual Payroll	Difference	% Drought Related	\$ Drought Related	1991 Statewide Urban Water Shortage*	Implied Payroll Elasticity
\$1,421.5	\$1,204.5	-\$217	11%	-\$23.9	-14%	0.12

*RAND 1996. "Drought Management Policies and Economic Effects in Urban Areas of California, 1987-1992."

The following table shows the size of the landscape services sector in Alameda and Contra Costa counties, as reported in the 2002 Economic Census.

Landscape Services in Alameda and Contra Costa Counties, 2002

County	No. Establish.	Sales (\$1,000)	Ann. Payroll (\$1,000)	Employees
Contra Costa	306	\$203,747	\$63,166	2,593
Alameda	262	\$338,827	\$131,079	4,557
Total	568	\$542,574	\$194,245	7,150

The next table shows the potential impact to annual payroll, employment, and value added for 10%, 15%, 20%, and 25% shortages. These impacts are for all of Alameda and Contra Costa Counties. Impacts to EBMUD service area would need to be scaled down to account for portions of the counties that fall outside its service area.

Landscape Services Impacts in Alameda and Contra Costa Counties, 2002.

Water Shortage	Employment	Payroll (Mil. \$)	Value Added (Mil. \$)*
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¹ Payroll elasticity is defined as the percentage change in landscape sector payroll given a one percent change in urban water supply. An elasticity of 0.12 means that a 10% urban shortage would reduce landscape sector payroll by 1.2%.

10%	71	\$2.3	\$3.3
15%	107	\$3.5	\$5.0
20%	143	\$4.6	\$6.6
25%	179	\$5.8	\$8.6

* Based on ratio of value added to payroll for IMPLAN sector 458 "Services to Building and Dwellings," which includes NAICS 5617 "Landscape Services."

References

- Foster Associates, Inc. 1994. "The Impact of Water Shortage and Recession on California's Green Industry." Report to Metropolitan Water District of Southern California and Council for a Green Environment. August 8, 1994.
- RAND 1996. "Drought Management Policies and Economic Effects in Urban Areas of California: 1987-1992." RAND, Santa Monica, CA.
- Spectrum Economics, Inc. 1992. "Preliminary Report: The Impact of Drought on California's Green Industry." Report to State Water Contractors and Metropolitan Water District of Southern California. WRINT SWC Exhibit Number 20.