

MEMORANDUM
ON
ESTIMATED ADDITIONAL SAFE YIELD FROM MISSION GORGE
RESERVOIR NO. 3 SITE ON SAN DIEGO RIVER
by
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The additional safe yield from the San Diego River, obtained by constructing a reservoir of 44,200 acre-feet capacity, maximum water-surface elevation at 330 feet, at the Mission Gorge No. 3 site, was determined from four yield studies using different amounts of storage in the various reservoirs on the San Diego River. These studies covered the critical period of lowest run-off on the San Diego River extending from May 1895 to January 1905, inclusive. All the studies were made on a semi-seasonal basis. The season was divided into two parts, one, from October to April, the period of higher inflows and lower evaporation losses and drafts, and the other, from May to September, the period of low inflow and higher evaporation losses and drafts. Reservoir evaporation losses were calculated from flooded areas, based on the average quantity of water in storage during each of the semi-seasonal periods.

In all of the studies, El Capitan Reservoir was operated to regulate both the water available to the City of San Diego and that belonging to the La Mesa Irrigation District. The maximum amount of storage in the reservoir available to the city was assumed to be 106,900 acre-feet and to the district, 10,000 acre-feet. Reservoir evaporation losses were divided between the city and the district in proportion to the amount of water each had in storage in the reservoir at the beginning of each semi-seasonal period.

In all studies, the reservoirs were operated coordinately to furnish the largest possible safe yield to the City of San Diego. The entire assumed draft for the city was drawn from Mission Gorge Reservoir first. When the

storage in that reservoir was exhausted, the draft was next imposed upon the city's storage in El Capitan Reservoir and the water in San Vicente Reservoir was saved until the last. This method of reservoir operation gave the minimum reservoir evaporation losses.

All reservoirs were assumed to be full on May 1, 1895, the beginning of the critical period.

In the first study, the safe yield to the city was calculated from the present storage of 106,900 acre-feet at El Capitan, and 90,200 acre-feet at San Vicente. In the second study, the safe yield to the city was determined with the same storage at El Capitan and San Vicente, but with the addition of 44,200 acre-feet at the Mission Gorge No. 3 site. The increased safe yield, as determined from the second study, indicates the additional safe yield to be expected by the construction of the 44,200 acre-foot reservoir at the Mission Gorge No. 3 site. In the third study, it was assumed that the storage at the San Vicente Reservoir would be increased to 174,500 acre-feet, the amount recommended for that site in Bulletin 48 of the Division of Water Resources. The safe yield to the city was determined with this storage at San Vicente and 106,900 acre-feet at El Capitan. In the fourth study, the safe yield was determined with the same storage at El Capitan and San Vicente as in the third study, but with the addition of 44,200 acre-feet at the Mission Gorge No. 3 site. The difference in the safe yield between the third and fourth studies indicates the additional safe yield to be expected by the construction of the 44,200 acre-foot reservoir at the Mission Gorge No. 3 site. The results of their studies are summarized in the following tabulation:

Study	Maximum reservoir storage, in acre-feet			Safe Yield		Additional Safe Yield from Mission Gorge No. 3	
	El Capitan	San Vicente	Mission Gorge No. 3	Acre-feet per year	m.g.d.	Acre-feet per year	m.g.d.
1	106,900	90,200	0	16,800	15.0		
2	106,900	90,200	44,200	20,500	18.3	3,700	3.3
3	106,900	174,500	0	25,000	22.3		
4	106,900	174,500	44,200	28,900	25.8	3,900	3.5

Ed Fletcher Papers

1870-1955

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**Business Records - Reports - Meyer, C.B. - "Memorandum
on Estimated Additional Safe Yield from Mission
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