

APPENDIX M
Water Storage Memorandum

MEMORANDUM

TO: Amber Sharpe (David J. Powers & Assoc) DATE: December 6, 2022
FROM: Leif Coponen, PE JOB#: DPOW.121.21.002
SUBJECT: **DRAFT** Moffett Park Specific Plan Update – Potable Water Storage Analysis

David J. Powers & Associates has retained Schaaf & Wheeler to determine impacts from the Moffett Park Specific Plan Update Project (Project) on the City of Sunnyvale's (City) potable water storage capacity. This memorandum and its findings will be used to assist the City with planning efforts. The Project proposes amendments to the Moffett Park Specific Plan (MSPS) to change the land use types and intensity of development within the MPSP area. The MPSP encompasses 1,270 acres located in the northernmost portion of the City and is bounded by State Route (SR) 237 to south, Moffett Federal Airfield and golf course to the west, San Francisco Bay to the north, and Caribbean Drive and Baylands Drive to the east. Currently, the MPSP area has a mix of land uses, including commercial, office, and industrial. The adopted MPSP allows a total of 230,000 square feet of commercial uses and 24,100,000 square feet of office, industrial, and R&D uses. For the purposes of this analysis, the land use types and intensities adopted as part of the MPSP are considered pre-Project. The Project proposes amendments to the existing MPSP within the MPSP area, resulting in a net increase of approximately 20,000 residential units, 935,303 square feet of commercial, 7,900,000 square feet of office, industrial, and R&D, and 326,000 square feet of institutional.

The potable water storage analysis is based on the City's 2010 Water Utility Master Plan (WUMP) criteria, specifically the recommendation from California State Water Resources Control Board Division of Drinking Water (DDW) that suburban users of the Hetch-Hetchy system provide the equivalent of 8 hours of maximum-day demand in water storage for each pressure zone. This storage volume is in addition to fire-fighting water storage volumes.

Potable water demand projections are taken from the City's 2020 Urban Water Management Plan (UWMP) for Year 2020 and 2040; used to represent Existing Condition and Future Cumulative Condition, respectively. Total water demand is assumed to be 17.13 MGD in 2020 and 21.77 MGD in 2040, which represents average-day demands. In order to calculate maximum-day demand, a peaking factor of 1.93 is used based on the WUMP comparing Table-4-15 2033 Potable Water Demand by Pressure Zone and Table 6-22 CDPH Recommendations for 2033 Water Storage. Water demand by pressure zone ratio is also calculated based on WUMP Table 4-15 and then applied to the UWMP demand projections.

The required storage versus active storage in the City is detailed in Table 1 and 2 pre- and post-Project. Table 1 provides comparisons for Existing Condition. Table 2 provides comparisons for Future Cumulative Condition. The maximum active storage in the City is 25 MG. However, the City estimates that the total available storage capacity is 19.70 MG due to operational constraints and seismic retrofit restrictions.

The fire flow volume in Table 1 and 2 corresponds to the requirement in the WUMP Table 2-3 and is estimated from the largest fire flow requirement in each pressure zone. Based on the WUMP, the fire flow volume is calculated as 4,000 gpm for 4 hours.

Table 1: DDW Storage Recommendations (Existing)

Pressure Zone	Maximum Active Storage* (MG)	Operational Active Storage* (MG)	Fire Flow (MG)	Existing Condition Demand					
				Pre-Project			Post-Project		
				ADD (mgd)	8 Hours of MDD (MG)	DDW Requirement (MG)	ADD (mgd)	8 Hours of MDD (MG)	DDW Requirement (MG)
1	15.00	13.13	0.96	10.32	6.64	7.60	16.27	10.47	11.43
2 and 3	10.00	6.57	1.92	6.81	4.38	6.30	6.81	4.38	6.30
Total	25.00	19.70	2.88	17.13	11.02	13.90	23.08	14.85	17.73

* Maximum and Operational Active Storage from Table 6-22 in the WUMP (IEC, 2010)

Table 2: DDW Storage Recommendations (Future)

Pressure Zone	Maximum Active Storage* (MG)	Operational Active Storage* (MG)	Fire Flow (MG)	Future Cumulative Condition Demand					
				Pre-Project			Post-Project		
				ADD (mgd)	8 Hours of MDD (MG)	DDW Requirement (MG)	ADD (mgd)	8 Hours of MDD (MG)	DDW Requirement (MG)
1	15.00	13.13	0.96	13.12	8.44	9.40	19.07	12.27	13.23
2 and 3	10.00	6.57	1.92	8.65	5.56	7.48	8.65	5.56	7.48
Total	25.00	19.70	2.88	21.77	14.00	16.88	27.72	17.83	20.71

* Maximum and Operational Active Storage from Table 6-22 in the WUMP (IEC, 2010)

The City has adequate storage capacity to meet DDW criteria with existing water demands for both pre-Project and post-Project. The City also has adequate storage capacity for Future Cumulative Condition pre-Project. However, the City does not have adequate storage capacity to meet DDW criteria in the future with post-Project water demands. Prior to exceedance of the storage capacity, the City should investigate ways to mitigate the deficit. Potential solutions include counting groundwater wells with backup power as additional storage, constructing additional storage tanks, and structural retrofitting of existing tanks to allow full use of existing tank volumes.