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TO: Commissioner Tim Paulson, President
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Commissioner Newsha K. Ajami
Commissioner Sophie Maxwell
Commissioner Kate H. Stacy

THROUGH: Dennis J. Herrera, General Manager

FROM: Steven R. Ritchie, Assistant General Manager, Water

RE: Revised Water Supply Assessment for the SFMTA Potrero Yard Modernization Project

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Summary

Introduction

The California Water Code (Sections 10910 through 10915) requires urban water suppliers like the San Francisco Public Utilities Commission (SFPUC) to furnish a Water Supply Assessment (WSA) to the city or county that has jurisdiction to approve the environmental documentation for certain qualifying projects (as defined in Water Code Section 10912(a)) subject to the California Environmental Quality Act (CEQA). The WSA process typically relies on information contained in a water supplier's Urban Water Management Plan (UWMP) and involves answering specific questions related to the estimated water demand of the proposed project. This memo serves as the WSA for the proposed San Francisco Municipal Transportation Agency (SFMTA) Potrero Yard Modernization Project (proposed project), for use in the preparation of an environmental impact report by the San Francisco Planning Department (case no. 2019-021884ENV, San Francisco Planning Department).

This WSA is a revision to and supersedes the WSA that was previously prepared for the same proposed project, formerly known as the 2500 Mariposa Street/SFMTA Potrero Bus Yard Project, dated September 25, 2020 and approved on October 27, 2020 (Resolution No. 20-0216). This WSA was revised to account for (1) refinement of the project description resulting in a smaller overall project size with less commercial use and fewer housing units and (2) recent changes to San Francisco retail water demand projections reflecting the adopted Housing Element 2022 Update described in the next section.

1.1.1 2020 Urban Water Management Plan and 2023 Interim Water Demand Projections

The Commission, by Resolution No. 21-0100, adopted the SFPUC's current 2020 UWMP. The water demand projections in the UWMP incorporated housing unit growth projections from the Housing Element 2022 Update objective and employment growth projections from the 2017 Land Use Allocation (LUA 2017); San Francisco Planning Department provided both projections. Since the SFPUC's adoption of the 2020 UWMP in June 2021, the Planning Commission certified the Housing Element 2022 Update

Environmental Impact Report (Housing Element EIR) in November 2022. The Housing Element EIR, which supported the City's adoption of the Housing Element in January 2023, assumed slightly higher housing unit projections than those used in the 2020 UWMP, but was still in line with the objective to produce an average of 5,000 housing units per year. Nonetheless, as a result of the slightly higher housing unit projections associated with the Housing Element EIR, the SFPUC determined that its 2020 UWMP no longer accounted for all projected retail water demands.

The SFPUC will not be updating its UWMP until 2025. Therefore, during this interim period, the SFPUC has prepared the 2023 Interim Water Demand Projections (Attachment A) to document the SFPUC's projected retail water supplies when compared to projected retail water demands associated with the adopted Housing Element 2022 Update. The San Francisco Planning Department provided the updated housing unit projections for SFPUC to update its water demand projections. The water demand projections are presented in five-year increments through 2045, meeting Water Code requirements.

Growth associated with the proposed project was encompassed within the growth projections used in the 2020 UWMP, and therefore encompassed within the updated growth projections used in the 2023 Interim Water Demand Projections. Consequently, water demand associated with the proposed project was encompassed within the water demand projections in the 2020 UWMP, and therefore encompassed within the 2023 Interim Water Demand Projections. In other words, **the proposed project has already been accounted for in SFPUC's water supply planning**.

The WSA for a qualifying project within the SFPUC's retail service area[1] may use information from the UWMP and, as applicable, the 2023 Interim Water Demand Projections. Therefore, ***the 2020 UWMP and 2023 Interim Water Demand Projections are incorporated by reference throughout this WSA, as shown in bold, italicized text.*** The 2020 UWMP and 2023 Interim Water Demand Projections may be accessed at www.sfpuc.org/uwmp.

As described in detail in ***Section 7.3.1*** of the UWMP, in December 2018, the State Water Resources Control Board (SWRCB) adopted amendments to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan Amendment). The City, along with multiple other water agencies, filed suit in early 2019 challenging the validity of the Bay-Delta Plan Amendment. That lawsuit, which is consolidated with other legal challenges, is currently pending in Sacramento Superior Court. In January 2021, the SWRCB moved to implement the Bay-Delta Plan Amendment on the Tuolumne River by issuing a water quality certification under Section 401 of the Clean Water Act in the Federal Energy Regulatory Commission (FERC) licensing proceedings for the hydropower projects associated with the New Don Pedro and La Grange dams. The City and other water users on the Tuolumne River have filed pending legal and administrative challenges to these SWRCB actions. FERC has not yet reissued a license for the New Don Pedro Hydropower Project, and the legal challenges to the water quality certification are pending and remain unresolved. Alongside the water quality certification, on August 8, 2022, the SWRCB issued a CEQA Notice of Preparation for an alternative means of implementing the Bay-Delta Plan Amendment.

Recognizing the obstacles to implementing the Bay-Delta Plan Amendment, the SWRCB, by Resolution No. 2018-0059 adopting the Bay-Delta Plan Amendment,

[1] SFPUC's "retail service area" refers to water customers inside the City and County of San Francisco (City), as well as select areas outside of the City.

directed staff to help complete a "Delta watershed-wide agreement, including potential flow measures for the Tuolumne River" by March 1, 2019, and to incorporate such agreements as an "alternative" for a future amendment to the Bay-Delta Plan to be presented to the SWRCB "as early as possible after December 1, 2019." In accordance with the SWRCB's instruction, on March 1, 2019, the SFPUC, in partnership with other key stakeholders, submitted a proposed project description for the Tuolumne River that could be the basis for a voluntary substitute agreement with the SWRCB (Proposed Voluntary Agreement). Since 2019, SFPUC has participated in negotiations with the State and other stakeholders regarding the Proposed Voluntary Agreement. On November 9, 2022, SFPUC signed a non-binding Memorandum of Understanding with various representatives of the State environmental and resource agencies, outlining conceptual deal points for a Tuolumne River Voluntary Agreement. As of the date of the issuance of this Water Supply Assessment, those negotiations remain ongoing.

Implementation of the Bay-Delta Plan Amendment is uncertain given the ongoing negotiations, litigation, and regulatory proceedings; these are further described in ***Section 7.3.1*** of the UWMP. Given the current uncertainty regarding the extent and timing of the implementation of the Bay-Delta Plan Amendment, this WSA analyzes water supply and demand through 2045 under three scenarios: (1) No implementation of the Bay-Delta Plan Amendment or the Proposed Voluntary Agreement (Scenario 1), (2) Implementation of the Proposed Voluntary Agreement (Scenario 2), and (3) Implementation of the Bay-Delta Plan Amendment (Scenario 3).

1.1.2 Basis for Requiring a WSA for the Proposed Project

Except for the WSA approved on October 27, 2020 (Resolution No. 20-0216), which is superseded by this revised WSA, the proposed project has not been the subject of a previous WSA, nor has it been part of a larger project for which a WSA was completed.

The proposed project qualifies for preparation of a WSA under Water Code Section 10912(a) because it is a mixed-use development that includes more than 500 dwelling units. The proposed project is characterized further in Section 1.2.

1.2 Proposed Project Description

The project sponsor team proposes to redevelop and replace the Potrero Yard Trolley Coach Facility at 2500 Mariposa Street (Potrero Yard). The proposed project would accommodate the expansion of the SFMTA's transit vehicle fleet in a new replacement structure that would include space for bus parking and circulation (up to 213 buses); SFMTA maintenance, operation, and administrative uses; and joint development uses. The new 1,235,866 gross-square-foot (GSF) structure would occupy the 4.4-acre (192,000 square feet) site and rise to heights ranging from 70 to 150 feet. The new structure would contain a four-level, approximately 70-foot-tall replacement transit facility plus a mix of commercial, residential, and childcare uses in the remainder of the proposed project as part of a joint development program between the City and a private development consortium. The joint development program would include a ground-floor commercial use (2,931 GSF) and residential entry lobbies, with residential uses along Bryant Street on the second through sixth floors adjacent to the replacement transit facility. Most of the residential development would be atop the replacement transit facility on the 7th to 13th floors. The proposed project includes 513 residential units (531,912 GSF).

The SFMTA estimates that construction would take four years to complete, with construction beginning in fall of 2024 and building occupancy by the end of 2028. If the proposed project were to be constructed in phases the replacement transit facility

would be constructed and in operation by October 2027. Housing would be constructed and fully occupied as soon as Fall 2028.

For additional details on the proposed project, see Attachment B.

2.0 Water Supply

This section reviews San Francisco's existing and planned water supplies.

2.1 Regional Water System

See ***Section 3.1 of the UWMP*** for descriptions of the San Francisco Regional Water System (RWS), ***Section 6.1 of the UWMP*** for water rights held by City and County of San Francisco, and ***Section 7.1 of the UWMP*** for the SFPUC Water System Improvement Program (WSIP).

2.2 Existing Retail Supplies

Retail water supplies from the RWS are described in ***Section 6.1 of the UWMP***.

Local groundwater supplies, including the Westside Groundwater Basin, are described in ***Section 6.2.1 of the UWMP***.

Local recycled water supplies, including the Harding Park Recycled Water Project and Pacifica Recycled Water Project, are described in ***Section 6.2.1 of the UWMP***.

2.3 Planned Retail Water Supply Sources

The San Francisco Groundwater Supply Project is described in ***Section 6.2.1.1 of the UWMP***.

The Westside and Treasure Island Recycled Water Projects are described in ***Section 6.2.2 of the UWMP***.

2.4 Summary of Current and Future Retail Water Supplies

A breakdown of water supply sources for meeting SFPUC retail water demand through 2045 in normal years is provided in ***Section 6.2.5 of the UWMP***. For dry years, see the next section.

2.5 Dry-Year Water Supplies

A description of dry-year supplies developed under WSIP is provided in ***Section 7.2 of the UWMP***.

2.6 Additional Water Supplies

The SFPUC is increasing and accelerating its efforts to acquire additional water supplies and explore other projects that would increase overall water supply resilience through the Alternate Water Supply Program. A description of the Alternative Water Supply Program and the supplies being studied is provided in ***Section 7.4 of the UWMP***.

3.0 Water Demand

This section reviews the projected retail water demands and the demand associated with the proposed project.

3.1 Projected Retail Water Demand

The projected retail water demand through 2045 is described in ***Section 4.1 of the UWMP and updated in the 2023 Interim Water Demand Projections (Attachment A)***. This section of the UWMP also describes the methodology used for demand projections and the factors considered. Updates specific to the to the change in housing unit projections are described in the 2023 Interim Water Demand Projections.

3.2 Proposed Project Water Demand

The project sponsor's consultants provided a memo describing the methods and assumptions used to estimate the water demand of the proposed project, along with the resulting demand (Attachment B).

Because the proposed project must comply with San Francisco's Non-potable Water Ordinance (Article 12C of the San Francisco Health Code), estimates for both potable and non-potable demands were submitted as part of the WSA request. The Non-potable Water Ordinance requires new development projects with 100,000 square feet or more of gross floor area, that apply for a site permit after January 1, 2022, to install and operate an onsite non-potable water system. Commercial buildings must meet their toilet and urinal flushing and drain trap priming demands through the collection, treatment, and use of available blackwater and condensate. Residential and mixed-use buildings must meet their toilet and urinal flushing, irrigation, clothes washing, and drain trap priming demands through the collection, treatment, and use of available graywater and condensate. While not required, residential and mixed-use projects may use treated blackwater if desired. As indicated in the water demand memo provided on behalf of the project sponsor in Attachment B, the proposed project would exceed the requirements of the Non-potable Water Ordinance by reusing bus washdown water in addition to using rainwater and graywater to meet toilet and urinal flushing, clothes washing, irrigation, and drain trap priming.

Both potable and non-potable demands for the project were estimated using the SFPUC's Non-potable Water Calculator and supplemented with additional estimates for bus washing and cooling tower demands. The SFPUC reviewed the memo to ensure that the methodology is appropriate for the types of proposed water uses, the assumptions are valid and thoroughly documented along with verifiable data sources, and a professional standard of care was used. The SFPUC concluded that the demand estimates provided on behalf of the project sponsor are reasonable. Water demand associated with the proposed project over the 20-year planning horizon is shown in the following Table 1.

The non-potable demand estimates in Table 1 are based on building uses anticipated at the time the WSA was requested, i.e., during the planning and environmental review stage of the proposed project. It is understood that these estimates will likely change as the proposed project's design progresses, and information submitted for the WSA request is not part of the proposed project's compliance with the Non-potable Water Ordinance. City review and approval of a proposed onsite water system must be performed separately through the Non-potable Water Program. However, the intent of providing a breakdown of potable and non-potable demand estimates in this WSA is to demonstrate that the proposed project will incorporate water reuse per City requirements and the proposed project's sustainability goals, if any. As noted earlier,

the total demand of the proposed project, regardless of non-potable use, is already encompassed in the 2023 Interim Water Demand Projections. Furthermore, total demand represents the most conservative estimate and accounts for back-up potable supplies that must be provided by the SFPUC in the event that non-potable supplies serving the proposed project are unavailable.

Table 1: Water Demand Based on Project Phasing (mgd)

	2025	2030	2035	2040	2045
Potable Demand	--	0.029	0.029	0.029	0.029
Non-potable Demand	--	0.027	0.027	0.027	0.027
Total Demand	--	0.056	0.056	0.056	0.056
Potential Potable Water Savings as Percentage of Total Demand	--	48%	48%	48%	48%

mgd = million gallons per day

Notes:
Total demand conservatively assumes that all demands are met with potable supplies.

The San Francisco Planning Department has determined that the proposed project is encompassed within the housing projections described in the Housing Element 2022 Update and the employment projections from LUA 2017, as indicated in the letter from the Planning Department to the SFPUC (Attachment A). Therefore, the demand of the proposed project is also encompassed within the San Francisco retail water demands that are presented in the ***2023 Interim Water Demand Projections***, which considers retail water demand based on the housing and employment projections provided by the Planning Department. The following Table 2 shows the demand of the proposed project relative to total retail demand.

Table 2: Proposed Project Demand Relative to Total Retail Demand

	2025	2030	2035	2040	2045
Total Retail Demand (mgd)[1]	71.3	73.0	75.0	77.9	81.1
Total Demand of Proposed Project (mgd)	--	0.056	0.056	0.056	0.056
Total Demand of Proposed Project as Percentage of Total Retail Demand[2]	--	0.08%	0.07%	0.07%	0.07%

Notes:
1. Retail water demands per ***Table 3 of the 2023 Interim Water Demand Projections***.
2. The proposed project is accounted for in the housing and employment projections provided by the Planning Department; therefore, total demands associated with the proposed project are accounted for in the 2023 Interim Water Demand Projections.

4.0 Conclusion

4.1 Comparison of Projected Supply and Demand

For all scenarios presented here, local supplies (i.e., supplies not from the RWS) correspond to those in ***Table 6-5 of the UWMP***. Procedures for determining RWS supply availability per the SFPUC's Water Shortage Allocation Plan (WSAP) are described in ***Section 8.2.4 of the UWMP***.

As explained previously in Section 3.2, water demands associated with the proposed project are already captured in the retail demand projections presented in the UWMP. The proposed project is expected to represent up to 0.08% of the total retail water demand. Total retail demands correspond to those in ***Table 3 of the 2023 Interim Water Demand Projections*** and reflect both passive and active conservation, onsite water reuse savings, and water loss.

4.1.1 Scenario 1: No Implementation of the Bay-Delta Plan Amendment or the Proposed Voluntary Agreement

Table 3 below is adapted from ***Table 5 of the 2023 Interim Water Demand Projections*** and compares the SFPUC's retail water supplies and demands through 2045 during normal year, single dry-, and multiple dry-year periods under Scenario 1.

As shown in Table 3, under Scenario 1 without implementation of the Bay-Delta Plan Amendment, existing and planned supplies would meet all projected RWS demands in all years. Even though system-wide shortages of RWS supplies would occur in the 4th and 5th years of a multi-year drought at 2045 projected levels of demand, retail customers would reduce their demands by 5% as required by the Water Supply Agreement between SFPUC and its Wholesale Customers. To achieve a small reduction such as this, the SFPUC may prohibit certain discretionary outdoor water uses and/or call for voluntary water use reduction by its retail customers pursuant to its Water Shortage Contingency Plan (***Appendix K of the UWMP***). The required level of water use reduction is well below the SFPUC's RWS level of service (LOS) goal of limiting water use reduction to no more than 20% on a system-wide basis (i.e., an average throughout the RWS) in drought years. In 2008, by Resolution No. 08-0200, the Commission adopted this goal.

4.1.2 Scenario 2: Implementation of the Proposed Voluntary Agreement

A Voluntary Agreement has yet to be accepted by SWRCB as an alternative to the Bay-Delta Plan Amendment and thus the shortages that would occur with its implementation are not known with certainty. However, given that the objectives of the Proposed Voluntary Agreement are to provide fishery improvements while protecting water supply through flow and non-flow measures, the RWS supply shortfalls under the Proposed Voluntary Agreement would be less than those under the Bay-Delta Plan Amendment, and therefore would require water use reductions of a lesser degree than that which would occur under Scenario 3. The degree of water use reduction would also more closely align with the SFPUC's RWS LOS goal of limiting water use reduction to no more than 20% on a system-wide basis in drought years.

4.1.3 Scenario 3: Implementation of the Bay-Delta Plan Amendment

Table 4 below provides projected supplies and demands under Scenario 3. The RWS is projected to experience significant shortfalls in single dry and multiple dry years through 2045, regardless of whether the proposed project is constructed. These significant shortfalls are a result of implementation of the Bay-Delta Plan Amendment

and not attributed to the incremental retail demand associated with the proposed project. Shortfalls would range from about 11 to 29 mgd, corresponding to water use reduction in the retail service area ranging from 15-36%, over the next 20 years.

Table 3: Projected Supply and Demand Comparison Under Scenario 1 (No Implementation of the Bay-Delta Plan Amendment or the Proposed Voluntary Agreement) (mgd)

		Normal Year	Single Dry Year[1]	Multiple Dry Years[2]				
				Year 1	Year 2	Year 3	Year 4	Year 5
2025	Total Retail Demand[3]	71.3	71.3	71.3	71.3	71.3	71.3	71.3
	Total Retail Supply[4]	71.3	71.3	71.3	71.3	71.3	71.3	71.3
	Shortfall	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Shortfall as % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2030	Total Retail Demand[3]	73.0	73.0	73.0	73.0	73.0	73.0	73.0
	Total Retail Supply[4]	73.0	73.0	73.0	73.0	73.0	73.0	73.0
	Shortfall	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Shortfall as % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2035	Total Retail Demand[3]	75.0	75.0	75.0	75.0	75.0	75.0	75.0
	Total Retail Supply[4]	75.0	75.0	75.0	75.0	75.0	75.0	75.0
	Shortfall	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Shortfall as % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2040	Total Retail Demand[3]	77.9	77.9	77.9	77.9	77.9	77.9	77.9
	Total Retail Supply[4]	77.9	77.9	77.9	77.9	77.9	77.9	77.9
	Shortfall	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Shortfall as % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2045	Total Retail Demand[3, 5]	81.1	81.1	81.1	81.1	81.1	77.0	77.0
	Total Retail Supply[4]	81.1	81.1	81.1	81.1	81.1	81.1	81.1
	Shortfall	0.0	0.0	0.0	0.0	0.0	4.1	4.1
	Shortfall as % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%	5.3%	5.3%

Notes:
1. During all single dry years, no RWS system-wide shortages are in effect.
2. During multiple dry years, no RWS system-wide shortages are in effect until years 4 and 5 at 2045 levels of demand. During those years, a 10% system-wide shortage is in effect.
3. Total retail demands correspond to those in ***Table 3 of the 2023 Interim Water Demand Projections***.
4. Local supplies (i.e., supplies not from the RWS, including groundwater and recycled water) correspond to those in ***Table 6-5 of the UWMP***. Local supplies are assumed to be used before RWS supplies to meet retail demand.
5. As amended in 2018, the WSAP Tier One Allocation Plan requires retail customers to conserve a minimum of 5% during droughts. If, during a declared water shortage, retail demands on the RWS are lower than the retail allocation in a dry year, retail demands on the RWS will be reduced by 5%. This provision is in effect in years 4 and 5 of a multi-dry year sequence at 2045 levels of demand.

Table 4: Projected Supply and Demand Comparison Under Scenario 3 (Implementation of the Bay-Delta Plan Amendment) (mgd)

		Normal Year	Single Dry Year[1]	Multiple Dry Years[2]				
				Year 1	Year 2	Year 3	Year 4	Year 5
2025	Total Retail Demand[3]	71.3	71.3	71.3	71.3	71.3	71.3	71.3
	Total Retail Supply[4]	70.7	59.5	59.5	51.5	51.5	51.5	51.5
	Shortfall	0.0	-11.8	-11.8	-19.8	-19.8	-19.8	-19.8
	Shortfall as % of Demand	0.0%	-16.5%	-16.5%	-27.8%	-27.8%	-27.8%	-27.8%
2030	Total Retail Demand[3]	73.0	73.0	73.0	73.0	73.0	73.0	73.0
	Total Retail Supply[4]	72.4	61.4	61.4	53.4	53.4	53.4	53.4
	Shortfall	0.0	-11.6	-11.6	-19.6	-19.6	-19.6	-19.6
	Shortfall as % of Demand	0.0%	-15.9%	-15.9%	-26.8%	-26.8%	-26.8%	-26.8%
2035	Total Retail Demand[3]	75.0	75.0	75.0	75.0	75.0	75.0	75.0
	Total Retail Supply[4]	74.5	63.8	63.8	55.5	55.5	55.5	51.4
	Shortfall	0.0	-11.2	-11.2	-19.5	-19.5	-19.5	-23.6
	Shortfall as % of Demand	0.0%	-14.9%	-14.9%	-26.0%	-26.0%	-26.0%	-31.5%
2040	Total Retail Demand[3]	77.9	77.9	77.9	77.9	77.9	77.9	77.9
	Total Retail Supply[4]	77.4	66.4	66.4	57.9	57.9	52.0	52.0
	Shortfall	0.0	-11.5	-11.5	-20.0	-20.0	-25.9	-25.9
	Shortfall as % of Demand	0.0%	-14.8%	-14.8%	-25.7%	-25.7%	-33.2%	-33.2%
2045	Total Retail Demand[3]	81.1	81.1	81.1	81.1	81.1	81.1	81.1
	Total Retail Supply[4]	80.6	60.1	60.1	60.1	60.1	52.1	52.1
	Shortfall	0.0	-21.0	-21.0	-21.0	-21.0	-29.0	-29.0
	Shortfall as % of Demand	0.0%	-25.9%	-25.9%	-25.9%	-25.9%	-35.8%	-35.8%

Notes:
1. During a single dry year, system-wide shortages of 30 – 40% are in effect (see ***Table 8-3 of the 2020 UWMP***). For this analysis, shortages greater than 20% are considered to have the same retail/wholesale allocation as the maximum Stage 4, 16-20% system-wide shortage in the Water Shortage Allocation Plan (WSAP).
2. During multiple dry years, system-wide shortages of 30 – 55% are in effect (see ***Table 8-3 of the 2020 UWMP***). For this analysis, shortages greater than 20% are considered to have the same retail/wholesale allocation as the maximum Stage 4, 16-20% system-wide shortage in the WSAP.
3. Total retail demands correspond to those in ***Table 3 of the 2023 Interim Water Demand Projections***.
4. Local supplies (i.e., supplies not from the RWS, including groundwater and recycled water) correspond to those in ***Table 6-5 of the UWMP***. Local supplies are assumed to be used before RWS supplies to meet retail demand.

4.2 Potential for Shortages in SFPUC Service Area

The inflow to SFPUC reservoirs can vary greatly from year to year, based on the hydrology of the region. When inflows are low during dry years, the potential exists for water supply shortages in the SFPUC service area. The occurrence of shortages depends on the magnitude and duration of dry conditions, and also on the system demand for water supply.

- In an evaluation of historical hydrology (1920 – 2017) combined with 2020 system demand, the potential for water supply shortages due to dry hydrology is low.

- When projected system demand in 2045 (an increase over 2020 demand) is evaluated along with historical hydrology, the potential for shortage increases but remains relatively low.
- When large increases in instream flow requirements (such as those associated with the Bay-Delta Plan update) are included in either of the above evaluations, the potential for water shortages in the SFPUC system increases markedly. The instream flow requirements are analogous to an increase in demand in this evaluation.

4.3 Water Use Reduction Implications to the Proposed Project

While the levels of water use reduction described above apply to the retail service area as a whole (i.e., 15-36% under Scenario 3), the SFPUC may allocate different levels of water use reduction to individual retail customers based on customer type (e.g., dedicated irrigation, single family residential, multi-family residential, commercial) to achieve the required level of retail system-wide demand reduction. Allocation methods and processes that have been considered in the past and may be used in future droughts are described in the SFPUC's 2020 Water Shortage Contingency Plan (***Appendix K of the UWMP***). For both residential and commercial customers, the SFPUC may implement varying levels of water use reductions based on the baseline level of water use, e.g., require less reduction from customers that use less water to begin with. Under the 2020 Water Shortage Contingency Plan, the allocation method or combination of methods that would be applied during water shortages caused by drought would be subject to the discretion of the General Manager.

In accordance with the Water Shortage Contingency Plan, the level of water use reduction that would be imposed on the proposed project would be determined at the time of a drought or other water shortage and cannot be established with certainty prior to the shortage event. However, newly constructed buildings, such as the proposed project, have water-efficient fixtures and non-potable water systems that comply with the latest regulations and should be better prepared than older buildings to meet the required reductions.

4.4 Findings

Regarding the availability of water supplies to serve the proposed project beginning in 2027, the SFPUC finds, based on the entire record before it, as follows:

- During normal years, the SFPUC's total projected water supplies will meet the projected demands of its retail customers, including those of the proposed project, existing customers, and foreseeable future development under Scenario 1, Scenario 2, and Scenario 3.
- During single dry years and multiple dry years under Scenario 1—No implementation of the Bay-Delta Plan Amendment or a Voluntary Agreement—the SFPUC can meet the projected demands of its retail customers, including those of the proposed project, existing customers, and foreseeable future development without the need for water use reduction beyond the LOS goal of 20% system-wide water use reduction.
- During single dry years and multiple dry years under Scenario 2—Implementation of a Voluntary Agreement—the SFPUC would still face a shortfall in single dry and multiple dry years, thus requiring water use reduction, but to a lesser degree and in closer alignment to the LOS goal of no more than 20% system-wide water use reduction compared to that which would occur under Scenario 3. Because negotiations in furtherance of the November 9, 2022 Voluntary Agreement Memorandum of Understanding continue in earnest, and litigation challenging the adoption of the Bay-Delta Plan Amendment remains pending, SFPUC further finds that the supply and demand that would result under Scenario 2 are more likely to occur than those projected in Scenario 3.

- During single dry years and multiple dry years under Scenario 3—Implementation of the Bay-Delta Plan Amendment—the SFPUC cannot reliably meet the projected demands of its retail customers, including the proposed project, existing customers, and foreseeable future development, without water use reduction at a level greater than that required to achieve the LOS goal of a maximum of 20% system-wide average water use reduction. The SFPUC estimates it would impose up to 36% water use reductions across the retail service area.
- The SFPUC's 2020 Water Shortage Contingency Plan describes allocation methods and processes that may be used in future droughts. For both residential and commercial customers, the SFPUC may implement varying levels of water use reductions based on the baseline level of water use, e.g., require less reduction from customers that use less water to begin with. For the proposed project specifically, these policies may result in lower levels of mandatory water use reduction as a result of the installation of water-efficient plumbing fixtures and non-potable water systems associated with new construction.
- Under Scenario 3, the relatively small volume of water demand generated by the proposed project itself would not exacerbate the projected shortfalls resulting from implementation of the Bay-Delta Plan Amendment. Regardless of whether the proposed project is constructed, with implementation of the Bay-Delta Plan Amendment, the SFPUC's existing and planned water supplies will not meet the water demands of its retail service area in dry years without significant demand reductions.

Approval of this WSA by the Commission is not equivalent to approval of the development project for which the WSA is prepared. A WSA is an informational document required to be prepared for use in the City's environmental review of a project under CEQA. It assesses the adequacy of water supplies to serve the proposed project and cumulative demand.

Furthermore, this WSA is not a "will serve" letter and does not verify the adequacy of existing distribution system capacity to serve the proposed project. A "will serve" letter and/or hydraulic analysis must be requested separately from the SFPUC City Distribution Division to verify hydraulic capacity.

While this WSA contains information provided by or on behalf of the project sponsor regarding the proposed project's plans for onsite water reuse and demand estimates using the SFPUC's Non-potable Water Calculator, any information submitted to the SFPUC for preparation of this WSA does not fulfill the requirements of the Non-potable Water Ordinance. City review and approval of a proposed onsite water system must be performed separately through the Non-potable Water Program.

If there are any questions or concerns, please contact Steve Ritchie at (415) 934-5736 or SRitchie@sfwater.org.

Attachments: Attachment A, 2023 Interim Water Demand Projections
Attachment B, SFMTA Potrero Yard Modernization Project Demand Memo

Attachment A –

2023 Interim Water Demand Projections

2023 Interim Water Demand Projections

for the City and County of San Francisco

Prepared by:

San Francisco Public Utilities Commission

September 2023

San Francisco Water Power Sewer

Services of the San Francisco Public Utilities Commission

Table of Contents

List of Tables

List of Appendices

1.0 Introduction

1.1 Purpose of Water Supply Assessments

The California Water Code (Sections 10910 through 10915) requires urban water suppliers to evaluate water supply availability to inform environmental review for qualifying projects ("water demand projects") defined in Water Code Section 10912(a). Water Code Section 10910 requires the preparation of a "water supply assessment" (WSA) for water demand projects that include a determination of whether available water supplies are sufficient to serve the demand generated by the project, as well as reasonably foreseeable cumulative demand over a 20 year period, including years of normal precipitation, single dry, and multiple dry years. If the water supplies needed by a water demand project were accounted for in the water supplier's most recently adopted Urban Water Management Plan (UWMP), under Water Code Section 10910(c)(2), the water supplier may incorporate the requested information from the UWMP in preparing a WSA for a water demand project.

1.2 Purpose of this Document

The SFPUC most recently adopted the 2020 UWMP update for the City and County of San Francisco in June 2021. As described in the 2020 UWMP, Section 4.1.2, Projected Retail Demands, the 2020 UWMP relied on the San Francisco Planning Department's (SF Planning) housing projections based on the Housing Element 2022 Update, which was still under development when the 2020 UWMP was adopted. One of the objectives of the Housing Element 2022 Update was to produce an average of 5,000 housing units per year with adjustments for certain large development plans. Since the SFPUC's adoption of the 2020 UWMP in June 2021, the Planning Commission certified the Housing Element 2022 Update Environmental Impact Report (Housing Element EIR) in November 2022. The Housing Element EIR, which supported the City's adoption of the Housing Element in January 2023, assumed slightly higher housing unit projections than those used in the 2020 UWMP, but was still in line with the objective to produce an average of 5,000 housing units per year. Nonetheless, as a result of the slightly higher housing unit projections associated with the Housing Element EIR, the SFPUC determined that its 2020 UWMP no longer accounted for all projected retail water demands.

The SFPUC will not be updating its UWMP until 2025. Therefore, during this interim period, the SFPUC has prepared the 2023 Interim Water Demand Projections herein to document the SFPUC's projected retail water supplies when compared to projected retail water demands associated with the adopted Housing Element 2022 Update. This document also adjusts the retail water supply projections to meet the updated retail water demands.

The information in this document, in concert with the background information provided in the 2020 UWMP that are not superseded by the 2023 Interim Water Demand Projections herein, can be used in the development of WSAs for pending water demand projects.

1.3 What this Document Does and Does Not Address

This document only updates the following items from the 2020 UWMP as they are directly related to the change in housing unit projections:

- Retail water demand projections, specifically demands of the in-City multi-family residential sector, through 2045
- Retail water supply and demand comparisons (i.e., surpluses and shortfalls) during normal, single dry, and multiply dry years through 2045

This document does not update the following items from the 2020 UWMP as they are not directly related to the change in housing unit projections:

- Population projections associated with the Housing Element 2022 Update
- Employment projections associated with the Housing Element 2022 Update
- Retail water demands for the single family residential and non-residential sectors
- Retail water loss
- Retail water savings associated with Conservation and Onsite Water Reuse programs
- Suburban retail water demands
- Wholesale water demands
- Status of water supply projects

2.0 Housing Unit Projections

SF Planning provided updated housing unit projections in alignment with the Housing Element EIR in a memorandum to the SFPUC dated August 18, 2023 (Appendix A). Per SF Planning's recommendation, it is assumed that the number of single-family detached houses will not increase from existing stock and that all future net housing growth will take the form of multi-family structures.

Table 1 compares the updated housing unit projections to those used in the 2020 UWMP in 5-year increments from 2025 to 2045. SFPUC used the updated housing unit projections as inputs to the same water demand forecasting model (i.e., econometric model) that was developed for the 2020 UWMP, described in the next section.

Table 1: Housing Unit Projections

	2025	2030	2035	2040	2045
Used in 2020 UWMP	425,118	450,923	476,728	502,533	528,338
2023 Update	432,667	458,333	483,600	509,000	534,000
Net Change	**7,549**	**7,410**	**6,872**	**6,467**	**5,662**

3.0 Retail Water Demands

As described in the 2020 UWMP, Section 3.2, Retail Service Area, retail customers include the residents, businesses, and industries located within City limits, referred to as the in-City retail service area. Retail service is also provided to a patchwork of customers located outside the City, such as the Town of Sunol, San Francisco International Airport, Lawrence Livermore National Laboratory, and Castlewood County Service Area. These areas are not contiguous and are collectively referred to as the suburban retail service area.

The SFPUC uses econometric models to project the demands for its in-City single family residential, multi-family residential, and commercial/industrial sectors. Other in-City non-residential demands (i.e., irrigation and municipal) and suburban retail demands are estimated based on historical consumption and supplement the demands projected by the econometric models. Water loss is forecasted separately. For

more information about how retail water demand projections were developed for the 2020 UWMP, refer to Section 4.1.2, Projected Retail Demands, of the 2020 UWMP.

The SFPUC, with the support of its consultant team that developed the econometric models used for the 2020 UWMP, re-ran the model specific to the multi-family residential sector using the updated housing unit projections described in the previous section. No other model inputs were changed from those that were used for the 2020 UWMP. The resulting model outputs are detailed in Appendix B and summarized in Table 2 below. Multi-family residential demands increased by about 0.5 to 0.6 mgd, or 1.5 to 2.5%, compared to those in the 2020 UWMP.

Table 2: Multi-Family Residential Water Demands (million gallons per day [mgd])

	2025	2030	2035	2040	2045
Used in 2020 UWMP	23.7	25.6	27.9	30.3	33.0
2023 Update	24.3	26.2	28.4	30.9	33.5
Difference	**0.6**	**0.6**	**0.6**	**0.5**	**0.5**
% Difference from 2020 UWMP	**2.5%**	**2.3%**	**2.0%**	**1.8%**	**1.5%**

Total retail water demand projections are shown in Table 3, which supersedes Table 4-1 of the 2020 UWMP. These projections comprise the updated multi-family residential demands from Table 2 and the unchanged demands for the remaining sectors. The demands of the remaining sectors are not updated as they are not directly related to the change in housing unit projections. Total retail demands increased by about 0.6 to 0.8% compared to those in the 2020 UWMP.

Table 3: Retail Water Demands (mgd)

Retail Sector or Use Type	Actual[a]	Projected[b]				
	2020	2025	2030	2035	2040	2045
In-City Retail						
Single-Family Residential	14.5	13.7	13.5	13.4	13.5	13.5
Multi-Family Residential	22.9	24.3	26.2	28.4	30.9	33.5
Non-residential	20.9	22.9	22.9	22.8	23.1	23.6
Water Loss[c]	7.2	6.0	6.0	6.0	6.0	6.0
Subtotal In-City Retail Demand	65.3	66.9	68.6	70.6	73.5	76.7
Suburban Retail						
Single-Family Residential[d]	0.1	0.1	0.1	0.1	0.1	0.1
Non-Residential	3.1	4.0	4.0	4.0	4.0	4.0
Groveland CSD[e]	0.3	0.3	0.3	0.3	0.3	0.3
Water Loss[c]	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal Suburban Retail Demand	3.5	4.4	4.4	4.4	4.4	4.4
Total Retail Demand	**68.8**	**71.3**	**73.0**	**75.0**	**77.9**	**81.1**
% Difference from 2020 UWMP	**N/A**	**0.8%**	**0.8%**	**0.8%**	**0.7%**	**0.6%**

a Actual consumption data are obtained from customer billing data.

b Single family residential and multi-family residential demand projections are from an econometric model developed for the SFPUC. Non-residential demands include commercial/industrial demands, which are also from an econometric model, as well as municipal and irrigation demands, which are assumed to remain constant at the previous five-year average level.

c Water losses include both apparent and real losses. Suburban retail water losses are considered to be negligible. Actual water loss in 2020 is based on SFPUC's July 2019 – June 2020 water loss audit.

d Suburban retail residential demands are for single family only as no multi-family residential buildings are served.

e Groveland Community Services District (CSD) is accounted for as a retail customer for the purpose of this table and subsequent retail supply and demand comparisons in the 2020 UWMP. Demand projections were provided by Groveland CSD based on its population projections and assumed per capita water use of 107 GPCD (projections are subject to change as part of its UWMP process). In the corresponding standardized tables in UWMP 2020 Appendix B, Groveland CSD is not reported as retail, but rather wholesale.

4.0 Water Supply and Demand Comparisons

This section compares the SFPUC's retail water supplies (unchanged from the 2020 UWMP) and demands (updated in Table 3) through 2045 during normal, single dry, and multiple dry years. The supply and demand comparisons are presented for two Regional Water System (RWS) supply scenarios: (1) with full implementation of the Bay-Delta Plan Amendment and (2) without implementation of the Bay-Delta Plan Amendment. For more information about these scenarios and how their corresponding supplies were estimated, refer to Section 8, Water Supply Reliability Assessment, of the 2020 UWMP[1].

4.1 With Bay-Delta Plan Amendment

The instream flow requirements of the Bay-Delta Plan Amendment would impact the RWS supplies in single dry years and multiple dry years. The comparison of retail demands and supplies under the Bay-Delta Plan Amendment is presented in Table 4, which supersedes Table 8-4 of the 2020 UWMP and demonstrates the following:

- **Normal Years:** During normal hydrologic years, the SFPUC will have adequate supplies to meet its projected retail water demands. This is unchanged from the 2020 UWMP.
- **Single Dry Year:** During single dry years, there would be an anticipated 30 to 40% shortage of RWS supplies. When the supplies available to retail customers (RWS plus local supplies) are compared to the projected retail demands, a retail supply shortfall of 15% to 26% (11 to 21 mgd) is expected in single dry year conditions. These shortfalls are less than 1%, or 1 mgd, higher than estimated in the 2020 UWMP.
- **Multiple Dry Years:** If a multiple dry year event occurs, there would be anticipated shortages in RWS supplies of 30 to 49%, depending on demand levels. When the supplies available to retail customers (RWS plus local supplies) are compared to the projected retail demands, there is an anticipated shortfall of almost 36%, or 29 mgd, by the fifth dry year at 2045 projected levels of demand. This shortfall is less than 1%, or 1 mgd, higher than estimated in the 2020 UWMP.

4.2 Without Bay-Delta Plan Amendment

Without implementation of the Bay-Delta Plan Amendment, existing and planned supplies would meet all projected RWS demands in all years except deep into a multi-year drought at 2045 projected levels of demand. The comparison of retail demands and supplies is presented in Table 5, which supersedes Table 8-6 of the 2020 UWMP and demonstrates the following:

- **Normal Years:** During normal hydrologic years, the SFPUC will have adequate supplies to meet its projected retail water demands. This is unchanged from the 2020 UWMP.
- **Single Dry Year:** During single dry years, there are no anticipated shortages of RWS supplies. This is unchanged from the 2020 UWMP.
- **Multiple Dry Years:** In the multiple dry year scenario, the SFPUC would only experience system-wide shortages in RWS supplies of 10% during years 4 and 5 of an extended drought at 2045

[1] Section 7.3.1, page 7-5, of the 2020 UWMP states, "Although the [State Water Resources Control Board] has stated it intends to implement the Bay-Delta Plan Amendment on the Tuolumne River by the year 2022, given the current level of uncertainty, it is assumed for the purposes of this draft UWMP that the Bay-Delta Plan Amendment will be fully implemented starting in 2023." To date, the Bay-Delta Plan Amendment has not been implemented and the SFPUC currently does not have an anticipated date for implementation.

levels of demand. In a 10% shortage, retail customers would reduce their demands by 5% as required by the Water Supply Agreement between SFPUC and its Wholesale Customers. As a result of this demand reduction, there is a projected surplus of 5.3%, or 4.1 mgd, which is 0.1 mgd greater than that estimated in the 2020 UWMP.

Table 4: Retail Supply and Demand Comparison for Projected Normal & Dry Year Scenarios With Bay-Delta Plan Amendment (mgd)

		Normal Year	Single Dry Year[a]	Multiple Dry Years[b]				
				Year 1	Year 2	Year 3	Year 4	Year 5
2025	Total Retail Demand	71.3	71.3	71.3	71.3	71.3	71.3	71.3
	Baseline Retail Demand[c]	*71.3*	*71.3*	*71.3*	*71.3*	*71.3*	*71.3*	*71.3*
	5% Retail Demand Reduction[d]	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
	Total Retail Supply	70.7	59.5	59.5	51.5	51.5	51.5	51.5
	Retail Groundwater[e]	*1.4*	*1.4*	*1.4*	*1.4*	*1.4*	*1.4*	*1.4*
	Retail Recycled Water[f]	*2.1*	*2.1*	*2.1*	*2.1*	*2.1*	*2.1*	*2.1*
	RWS Supply Utilized by Retail[g]	*67.2*	*56.0*	*56.0*	*48.0*	*48.0*	*48.0*	*48.0*
	Difference (Supply Surplus or Shortfall)	0.0	-11.8	-11.8	-19.8	-19.8	-19.8	-19.8
	Difference as Percentage of Demand	0.0%	-16.5%	-16.5%	-27.8%	-27.8%	-27.8%	-27.8%
2030	Total Retail Demand	73.0	73.0	73.0	73.0	73.0	73.0	73.0
	Baseline Retail Demand[c]	*73.0*	*73.0*	*73.0*	*73.0*	*73.0*	*73.0*	*73.0*
	5% Retail Demand Reduction[d]	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
	Total Retail Supply	72.4	61.4	61.4	53.4	53.4	53.4	53.4
	Retail Groundwater[e]	*2.4*	*2.4*	*2.4*	*2.4*	*2.4*	*2.4*	*2.4*
	Retail Recycled Water[f]	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*
	RWS Supply Utilized by Retail[g]	*67.5*	*56.5*	*56.5*	*48.5*	*48.5*	*48.5*	*48.5*
	Difference (Supply Surplus or Shortfall)	0.0	-11.6	-11.6	-19.6	-19.6	-19.6	-19.6
	Difference as Percentage of Demand	0.0%	-15.9%	-15.9%	-26.8%	-26.8%	-26.8%	-26.8%
2035	Total Retail Demand	75.0	75.0	75.0	75.0	75.0	75.0	75.0
	Baseline Retail Demand[c]	*75.0*	*75.0*	*75.0*	*75.0*	*75.0*	*75.0*	*75.0*
	5% Retail Demand Reduction[d]	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
	Total Retail Supply	74.5	63.8	63.8	55.5	55.5	55.5	51.4
	Retail Groundwater[e]	*3.4*	*3.4*	*3.4*	*3.4*	*3.4*	*3.4*	*3.4*
	Retail Recycled Water[f]	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*
	RWS Supply Utilized by Retail[g]	*68.6*	*57.9*	*57.9*	*49.6*	*49.6*	*49.6*	*45.5*
	Difference (Supply Surplus or Shortfall)	0.0	-11.2	-11.2	-19.5	-19.5	-19.5	-23.6
	Difference as Percentage of Demand	0.0%	-14.9%	-14.9%	-26.0%	-26.0%	-26.0%	-31.5%

		Normal Year	Single Dry Year[a]	Multiple Dry Years[b]				
				Year 1	Year 2	Year 3	Year 4	Year 5
2040	Total Retail Demand	77.9	77.9	77.9	77.9	77.9	77.9	77.9
	Baseline Retail Demand[c]	*77.9*	*77.9*	*77.9*	*77.9*	*77.9*	*77.9*	*77.9*
	5% Retail Demand Reduction[d]	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
	Total Retail Supply	77.4	66.4	66.4	57.9	57.9	52.0	52.0
	Retail Groundwater[e]	*4.4*	*4.4*	*4.4*	*4.4*	*4.4*	*4.4*	*4.4*
	Retail Recycled Water[f]	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*
	RWS Supply Utilized by Retail[g]	*70.5*	*59.5*	*59.5*	*51.0*	*51.0*	*45.1*	*45.1*
	Difference (Supply Surplus or Shortfall)	0.0	-11.5	-11.5	-20.0	-20.0	-25.9	-25.9
	Difference as Percentage of Demand	0.0%	-14.8%	-14.8%	-25.7%	-25.7%	-33.2%	-33.2%
2045	Total Retail Demand	81.1	81.1	81.1	81.1	81.1	81.1	81.1
	Baseline Retail Demand[c]	*81.1*	*81.1*	*81.1*	*81.1*	*81.1*	*81.1*	*81.1*
	5% Retail Demand Reduction[d]	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
	Total Retail Supply	80.6	60.1	60.1	60.1	60.1	52.1	52.1
	Retail Groundwater[e]	*4.4*	*4.4*	*4.4*	*4.4*	*4.4*	*4.4*	*4.4*
	Retail Recycled Water[f]	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*
	RWS Supply Utilized by Retail[g]	*73.7*	*53.2*	*53.2*	*53.2*	*53.2*	*45.2*	*45.2*
	Difference (Supply Surplus or Shortfall)	0.0	-21.0	-21.0	-21.0	-21.0	-29.0	-29.0
	Difference as Percentage of Demand	0.0%	-25.9%	-25.9%	-25.9%	-25.9%	-35.8%	-35.8%

Normal, single dry, and multiple dry year conditions are on a water year basis.

a During a single dry year, system-wide shortages of 30 – 40% are in effect (see Table 8-3 of the 2020 UWMP). For this analysis, shortages greater than 20% are considered to have the same retail/wholesale allocation as the maximum Stage 4, 16-20% system-wide shortage in the Water Shortage Allocation Plan (WSAP).

b During multiple dry years, system-wide shortages of 30 – 55% are in effect (see Table 8-3 of the 2020 UWMP). For this analysis, shortages greater than 20% are considered to have the same retail/wholesale allocation as the maximum Stage 4, 16-20% system-wide shortage in the WSAP.

c Total retail demands correspond to those in Table 3 and reflect passive and active conservation, onsite water reuse savings, and water loss. Demands for Groveland Community Services District is included in the table above.

d As amended in 2018, the WSAP Tier One Allocation Plan requires retail customers to conserve a minimum of 5% during droughts. If, during a declared water shortage, retail demands on the Regional Water System (RWS) are lower than the retail allocation in a dry year, retail demands on the RWS will be reduced by 5%. An N/A on this row means that either this 5% rationing requirement doesn't apply (i.e. no declared water shortage), or retail customers are already rationing greater than 5%.

e Groundwater supplies are assumed to be equivalent to projected demands for the San Francisco Groundwater Supply Project (ramping up to 4 mgd by 2040) and Castlewood County Service Area (0.4 mgd). Groundwater availability would not be affected by dry year conditions.

f Recycled water supplies are assumed to be equivalent to projected demands related to the Westside Recycled Water Project (1.6 mgd by 2021 and 1.8 mgd by 2030), Harding Park and Fleming Golf Courses (0.23 mgd), and Sharp Park Golf Course (up to 0.1 mgd) and Treasure Island (0.2 mgd by 2025 and 0.4 mgd by 2030). Recycled water availability would not be affected by dry year conditions.

g Procedures for RWS allocations and the WSAP are described in Section 8.3 of the 2020 UWMP. Groundwater and recycled water are assumed to be used before RWS supplies to meet retail demand. However, in normal years, if groundwater and recycled water supplies are not available, up to 81 mgd of RWS supply could be used.

Table 5: Retail Supply and Demand Comparison for Projected Normal & Dry Year Scenarios Without Bay-Delta Plan Amendment (mgd)

		Normal Year	Single Dry Year[a]	Multiple Dry Years[b]				
				Year 1	Year 2	Year 3	Year 4	Year 5
2025	Total Retail Demand	71.3	71.3	71.3	71.3	71.3	71.3	71.3
	Baseline Retail Demand[c]	*71.3*	*71.3*	*71.3*	*71.3*	*71.3*	*71.3*	*71.3*
	5% Retail Demand Reduction[d]	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
	Total Retail Supply	71.3	71.3	71.3	71.3	71.3	71.3	71.3
	Retail Groundwater[e]	*1.4*	*1.4*	*1.4*	*1.4*	*1.4*	*1.4*	*1.4*
	Retail Recycled Water[f]	*2.1*	*2.1*	*2.1*	*2.1*	*2.1*	*2.1*	*2.1*
	RWS Supply Utilized by Retail[g]	*67.8*	*67.8*	*67.8*	*67.8*	*67.8*	*67.8*	*67.8*
	Difference (Supply Surplus or Shortfall)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Difference as Percentage of Demand	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2030	Total Retail Demand	73.0	73.0	73.0	73.0	73.0	73.0	73.0
	Baseline Retail Demand[c]	*73.0*	*73.0*	*73.0*	*73.0*	*73.0*	*73.0*	*73.0*
	5% Retail Demand Reduction[d]	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
	Total Retail Supply	73.0	73.0	73.0	73.0	73.0	73.0	73.0
	Retail Groundwater[e]	*2.4*	*2.4*	*2.4*	*2.4*	*2.4*	*2.4*	*2.4*
	Retail Recycled Water[f]	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*
	RWS Supply Utilized by Retail[g]	*68.1*	*68.1*	*68.1*	*68.1*	*68.1*	*68.1*	*68.1*
	Difference (Supply Surplus or Shortfall)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Difference as Percentage of Demand	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2035	Total Retail Demand	75.0	75.0	75.0	75.0	75.0	75.0	75.0
	Baseline Retail Demand[c]	*75.0*	*75.0*	*75.0*	*75.0*	*75.0*	*75.0*	*75.0*
	5% Retail Demand Reduction[d]	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
	Total Retail Supply	75.0	75.0	75.0	75.0	75.0	75.0	75.0
	Retail Groundwater[e]	*3.4*	*3.4*	*3.4*	*3.4*	*3.4*	*3.4*	*3.4*
	Retail Recycled Water[f]	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*
	RWS Supply Utilized by Retail[g]	*69.1*	*69.1*	*69.1*	*69.1*	*69.1*	*69.1*	*69.1*
	Difference (Supply Surplus or Shortfall)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Difference as Percentage of Demand	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

		Normal Year	Single Dry Year[a]	Multiple Dry Years[b]				
				Year 1	Year 2	Year 3	Year 4	Year 5
2040	Total Retail Demand	77.9	77.9	77.9	77.9	77.9	77.9	77.9
	Baseline Retail Demand[c]	*77.9*	*77.9*	*77.9*	*77.9*	*77.9*	*77.9*	*77.9*
	5% Retail Demand Reduction[d]	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
	Total Retail Supply	77.9	77.9	77.9	77.9	77.9	77.9	77.9
	Retail Groundwater[e]	*4.4*	*4.4*	*4.4*	*4.4*	*4.4*	*4.4*	*4.4*
	Retail Recycled Water[f]	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*
	RWS Supply Utilized by Retail[g]	*71.0*	*71.0*	*71.0*	*71.0*	*71.0*	*71.0*	*71.0*
	Difference (Supply Surplus or Shortfall)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Difference as Percentage of Demand	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2045	Total Retail Demand	81.1	81.1	81.1	81.1	81.1	77.0	77.0
	Baseline Retail Demand[c]	*81.1*	*81.1*	*81.1*	*81.1*	*81.1*	*81.1*	*81.1*
	5% Retail Demand Reduction[d]	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*-4.1*	*-4.1*
	Total Retail Supply	81.1	81.1	81.1	81.1	81.1	81.1	81.1
	Retail Groundwater[e]	*4.4*	*4.4*	*4.4*	*4.4*	*4.4*	*4.4*	*4.4*
	Retail Recycled Water[f]	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*
	RWS Supply Utilized by Retail[g]	*74.2*	*74.2*	*74.2*	*74.2*	*74.2*	*74.2*	*74.2*
	Difference (Supply Surplus or Shortfall)	0.0	0.0	0.0	0.0	0.0	4.1	4.1
	Difference as Percentage of Demand	0.0%	0.0%	0.0%	0.0%	0.0%	5.3%	5.3%

Normal, single dry, and multiple dry year conditions are on a water year basis.

a During all single dry years, no RWS system-wide shortages are in effect.

b During multiple dry years, no RWS system-wide shortages are in effect until years 4 and 5 at 2045 levels of demand. During those years, a 10% system-wide shortage is in effect.

c Total retail demands correspond to those in Table 3 and reflect passive and active conservation, onsite water reuse savings, and water loss. Demands for Groveland Community Services District is included in the table above.

d As amended in 2018, the Water Shortage Allocation Plan (WSAP) Tier One Allocation Plan requires retail customers to conserve a minimum of 5% during droughts. If, during a declared water shortage, retail demands on the Regional Water System (RWS) are lower than the retail allocation in a dry year, retail demands on the RWS will be reduced by 5%. An N/A on this row means that either this 5% rationing requirement doesn't apply (i.e. no declared water shortage), or retail customers are already rationing greater than 5%.

e Groundwater supplies are assumed to be equivalent to projected demands for the San Francisco Groundwater Supply Project (ramping up to 4 mgd by 2040) and Castlewood County Service Area (0.4 mgd). Groundwater availability would not be affected by dry year conditions.

f Recycled water supplies are assumed to be equivalent to projected demands related to the Westside Recycled Water Project (1.6 mgd by 2021 and 1.8 mgd by 2030), Harding Park and Fleming Golf Courses (0.23 mgd), and Sharp Park Golf Course (up to 0.1 mgd) and Treasure Island (0.2 mgd by 2025 and 0.4 mgd by 2030). Recycled water availability would not be affected by dry year conditions.

g Procedures for RWS allocations and the WSAP are described in Section 8.3 of the 2020 UWMP. Groundwater and recycled water are assumed to be used before RWS supplies to meet retail demand. However, in normal years, if groundwater and recycled water supplies are not available, up to 81 mgd of RWS supply could be used.

Appendix A – San Francisco Planning Memorandum

San Francisco Planning

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August 18, 2023

Paula Kehoe
Director of Water Resources, SFPUC
525 Golden Gate Street, 10th Floor
San Francisco, CA 94102

Re: Projections of growth for San Francisco through 2050

Dear Paula:

On October 27, 2020, the Planning Department provided SFPUC household and job growth projections to inform the citywide water demand projections in the 2020 update of the SFPUC's Urban Water Management Plan (UWMP). The SFPUC adopted the 2020 UWMP in June 2021. Since that time, the Planning Commission certified the Housing Element 2022 Update Environmental Impact Report (Housing Element EIR or EIR) in November 2022. The EIR, which supported the City's adoption of the Housing Element in January 2023, assumed slightly higher household projections than those used in the UWMP. As you requested, this memo provides the EIR's household projections[1] to inform a minor update to SFPUC's water demand projections.

Citywide Growth Projections

Table 1 shows the Planning Department's housing projections for the years 2020-2050. We recognize that the 2020 UWMP water planning horizon extends only to 2045.

Table 1: Development Projections

	2020	2025	2030	2035	2040	2045	2050
Housing Units	407,000	432,667	458,333	483,600	509,000	534,000	559,000

The Housing Element update is required to be adopted every eight years by state law and was approved by the Board of Supervisors in January 2023 and certified by the state Department of Housing and Community Development on February 1, 2023. One of the primary goals of the Housing Element 2022 Update is to improve housing affordability by increasing the rate of housing production compared with the past several decades. The projections are based on the Housing Element objective of producing an average of approximately 5,000

[1] The Housing Element EIR assumed slightly less job growth than that assumed in the Planning Department's October 27, 2020 memo used to inform the 2020 UWMP water demand projections (i.e., EIR assumed 869,000 jobs in 2045 whereas October 2020 memo assumed 894,255 jobs). Given that the 2020 UWMP water demand projections used more conservative (i.e., slightly higher) job growth assumptions, there is no need to update the water demand projections to account for the Housing Element EIR job growth assumptions.

housing units per year, with adjustments for certain large development plans. These projections were analyzed in the Housing Element EIR. (The projections can be found in Appendix C of the EIR.) The Housing Element EIR considered two projection years – 2035 and 2050. For the purposes of generating the 5-year incremental projections required by the SFPUC through 2045, the Planning Department assumes a constant, straight-line average pace of housing production for the periods of 2020-2035 and 2035-2050.

Regarding the typology of projected new housing stock, our memo provided to SFPUC dated October 27, 2020, to inform preparation of the 2020 UWMP, contained analysis supporting a Planning Department recommendation that the SFPUC assume for the purposes of modelling citywide projected housing development in San Francisco that **the number of single-family detached houses will not increase from existing stock and that all future net housing growth will take the form of multi-family structures.** This recommendation is unchanged.

Sincerely,

Joshua Switzky
Acting Director of Citywide Planning

cc:
Fan Lau, SFPUC
Lisa Gibson, Planning
Wade Wietgrefe, Planning
Debra Dwyer, Planning
Julie Moore, Planning
Scott Edmondson, Planning
Peter Miljanich, City Attorney
Andrea Ruiz-Esquide, City Attorney

Appendix B – Woodard & Curran Memorandum

TECHNICAL MEMORANDUM

TO: Paula Kehoe, Director of Water Resources, San Francisco Public Utilities Commission

Fan Lau, Water Resources Division, San Francisco Public Utilities Commission

PREPARED BY: Chris Hewes, Woodard & Curran

REVIEWED BY: Katie Cole, Woodard & Curran

DATE: August 25, 2023

RE: SFPUC Demand Forecast Model Re-Run with Updated Housing Unit Forecast

In 2020, the San Francisco Public Utilities Commission (SFPUC) engaged The Brattle Group to develop an econometric-based water demand forecast model (Model) to generate retail water demands for the SFPUC's 2020 Urban Water Management Plan (UWMP). A key input to the Model was household development forecasts provided by the San Francisco Planning Department (October 27, 2020 memo from Joshua Switzky, Land Use & Community Planning Program Manager). At the time, these forecasts were in draft form, developed during preparation of the city's General Plan Housing Element (Housing Element 2022 Update). Since June 2021 when the 2020 UWMP was published, the Planning Commission certified the Housing Element 2022 Update Environmental Impact Report (EIR) in November 2022. The EIR, which supported the City's adoption of the Housing Element in January 2023, assumed slightly higher household forecasts than those used in the UWMP.

Woodard & Curran worked with the Model developers to re-run it with the updated housing development forecasts provided by the San Francisco Planning Department (see Section 1 – Updated Model Inputs). The resulting Model outputs (water demands) were combined with other values external to the Model that together provide full retail water demand for SFPUC (see Section 2 – Updated Results).

1. UPDATED MODEL INPUTS

See **Table 1** for the updated housing development forecast provided by the San Francisco Planning Department (August 18, 2023 memo from Joshua Switzky, Acting Director of Citywide Planning). Per SFPUC's guidance in the previous Model effort, and re-confirmed by the San Francisco Planning Department for the current Model effort, it was assumed that there will not be an increase in the number of single-family detached houses from the existing stock. Therefore, the water demand forecast for the single-family sector is the same as the prior outputs. All future housing growth is expected to occur in the multi-family residential sector. No other inputs to the Model were changed (e.g., employment forecast, econometric variables, etc.).

Table 1: Housing Development Forecast

Housing Units	2020	2025	2030	2035	2040	2045
For 2020 UWMP	399,313	425,118	450,923	476,728	502,533	528,338
For 2023 Update	407,000	432,667	458,333	483,600	509,000	534,000

2. UPDATED RESULTS

See **Table 2** for the updated outputs directly from the Model. **Table 3** shows the updated multi-family residential sector forecast details. Tables 2 and 3 contain rows that specify the water savings associated with the Onsite Water Reuse Program. These savings were estimated for the 2020 UWMP but are not updated for this memo as (1) they are estimated separately from the Model and (2) the types of new multi-family residential projects and their participation in the Onsite Water Reuse Program are currently unknown.

See **Table 4** for a comparison of the previous and updated multi-family residential sector forecasts.

See **Table 5** for the updated retail demand forecast, which incorporates additional information that is external to the Model, as it was presented in the 2020 UWMP (e.g., municipal and irrigation demands in the "non-residential" sector, as well as Suburban Retail demands).

Table 2: Model Outputs (mgd)

		FY2019-20	FY2024-25	FY2029-30	FY2034-35	FY2039-40	FY2044-45
Single Family Residential							
Unadjusted Baseline Demand		14.32	13.83	13.63	13.60	13.63	13.65
Conservation:	*Active*	0.00	-0.15	-0.18	-0.17	-0.13	-0.11
Total		14.32	13.68	13.45	13.43	13.49	13.54
Multifamily Residential							
Unadjusted Baseline Demand		23.09	24.63	26.74	29.21	31.85	34.46
Conservation:	*Active*	0.00	-0.15	-0.20	-0.18	-0.11	-0.06
	Non-Potable / Onsite Reuse	-0.07	-0.21	-0.35	-0.63	-0.91	-0.91
Other Accounts:	*Fire*	0.01	0.01	0.01	0.01	0.01	0.01
Total		23.03	24.28	26.19	28.41	30.85	33.51
Commercial and Industrial							
Unadjusted Baseline Demand		17.81	17.25	17.33	17.49	17.93	18.38
Conservation:	*Active*	0.00	-0.28	-0.30	-0.30	-0.28	-0.23
	Non-Potable / Onsite Reuse	-0.03	-0.09	-0.15	-0.27	-0.39	-0.39
Other Accounts:	*Docks / Ships*	0.02	0.02	0.02	0.02	0.02	0.02
	Builders / Contractors	0.18	0.18	0.18	0.18	0.18	0.18
	Fire	0.04	0.04	0.04	0.04	0.04	0.04
Total		18.02	17.12	17.11	17.16	17.51	18.00
Grand Total		55.38	55.08	56.76	59.00	61.85	65.05

Notes:

FY2019-20: This column is a forecast that assumes no COVID-19 pandemic and average weather conditions. Actual demand for FY2019-20 is shown in Table 5 of this memo.
Unadjusted Baseline Demand: This is the raw output of the statistical forecast model.
Conservation Adjustments: These estimates are the output of the SFPUC Conservation model and have not been updated in this memo.
Multifamily Residential Fire Accounts: These values were supplied by SFPUC and have not been updated in this memo.
Commercial and Industrial: These forecasts are unchanged from the previous forecasts.
Grand Total: This row does not include water losses, suburban accounts, irrigation accounts, or municipal accounts. The volumes from these additional sector types are included in Table 5 of this memo and are unchanged from the previous forecasts.

Table 3: Multi-Family Demand Forecast Details

	FY2019-20	FY2024-25	FY2029-30	FY2034-35	FY2039-40	FY2044-45
Number of Units	282,814	308,481	334,147	359,414	384,814	409,814
Residents per Unit	2.30	2.30	2.30	2.30	2.30	2.30
Avg. Consumption per Capita (gal / day)						
Unadjusted Baseline Demand	35.50	34.71	34.79	35.34	35.99	36.56
Conservation: *Active*	0.00	-0.21	-0.27	-0.23	-0.12	-0.06
Non-Potable / Onsite Reuse	-0.11	-0.30	-0.47	-0.78	-1.05	-0.98
Demand per Capita	35.39	34.20	34.05	34.33	34.82	35.52
Avg. Consumption per Unit (gal / day)						
Unadjusted Baseline Demand	81.66	79.84	80.01	81.27	82.78	84.09
Conservation: *Active*	0.00	-0.49	-0.63	-0.52	-0.29	-0.14
Non-Potable / Onsite Reuse	-0.25	-0.70	-1.07	-1.79	-2.41	-2.25
Demand per Unit	81.40	78.65	78.31	78.97	80.09	81.70
Total Consumption (MGD)						
Unadjusted Baseline Demand	23.09	24.63	26.74	29.21	31.85	34.46
Conservation: *Active*	0.00	-0.15	-0.20	-0.18	-0.11	-0.06
Non-Potable / Onsite Reuse	-0.07	-0.21	-0.35	-0.63	-0.91	-0.91
Total Demand	23.02	24.27	26.18	28.40	30.84	33.50

Notes:

FY2019-20: This column is a forecast that assumes no COVID-19 pandemic and average weather conditions. Actual demand for FY2019-20 is shown in Table 5 of this memo.
Unadjusted Baseline Demand: This is the raw output of the statistical forecast model.
Conservation Adjustments: These estimates are the output of the SFPUC Conservation model and have not been updated in this memo.

Table 4: Multi-Family Residential Water Demand Forecast (mgd)

Multi-Family Residential	Actual[a]	Projected[b]				
	2020	2025	2030	2035	2040	2045
From 2020 UWMP	22.9	23.7	25.6	27.9	30.3	33.0
From 2023 Update (from Table 3)	22.9	24.3	26.2	28.4	30.9	33.5
Difference	0.0	0.6	0.6	0.6	0.5	0.5

a Actual consumption data are obtained from customer billing data.

b Multi-family residential demand projections are from an econometric model developed for the SFPUC.

Table 5: Retail Water Demand Forecast (mgd)

Retail Sector or Use Type	Actual[a]	Projected[b]				
	2020	2025	2030	2035	2040	2045
In-City Retail						
Single-Family Residential	14.5	13.7	13.5	13.4	13.5	13.5
Multi-Family Residential	22.9	24.3	26.2	28.4	30.9	33.5
Non-residential	20.9	22.9	22.9	22.8	23.1	23.6
Water Loss[c]	7.2	6.0	6.0	6.0	6.0	6.0
Subtotal In-City Retail Demand	65.3	66.9	68.6	70.6	73.5	76.7
Suburban Retail						
Single-Family Residential[d]	0.1	0.1	0.1	0.1	0.1	0.1
Non-Residential	3.1	4.0	4.0	4.0	4.0	4.0
Groveland CSD[e]	0.3	0.3	0.3	0.3	0.3	0.3
Water Loss[c]	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal Suburban Retail Demand	3.5	4.4	4.4	4.4	4.4	4.4
Total Retail Demand	**68.8**	**71.3**	**73.0**	**75.0**	**77.9**	**81.1**

a Actual consumption data are obtained from customer billing data.

b Single family residential and multi-family residential demand projections are from an econometric model developed for the SFPUC. Non-residential demands include commercial/industrial demands, which are also from an econometric model, as well as municipal and irrigation demands, which are assumed to remain constant at the previous five-year average level.

c Water losses include both apparent and real losses. Suburban retail water losses are considered to be negligible. Actual water loss in 2020 is based on SFPUC's July 2019 – June 2020 water loss audit.

d Suburban retail residential demands are for single family only as no multi-family residential buildings are served.

e Groveland Community Services District (CSD) is accounted for as a retail customer for the purpose of this table and subsequent retail supply and demand comparisons in the 2020 UWMP. Demand projections were provided by Groveland CSD based on its population projections and assumed per capita water use of 107 GPCD (projections are subject to change as part of its UWMP process). In the corresponding standardized tables in UWMP 2020 Appendix B, Groveland CSD is not reported as retail, but rather wholesale.

Attachment B –

SFMTA Potrero Yard Modernization Project Demand Memo

San Francisco Planning

49 South Van Ness Avenue, Suite 1400
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October 27, 2023

To: Fan Lau, P.E. – San Francisco Utilities Commission
From: Florentina Craciun, AICP – Environmental Planning

Re: SFMTA Potrero Yard Modernization Project – Revised Water Supply Assessment Request
Planning Department File No. 2019-021884ENV

The purpose of this memorandum is to request that the San Francisco Public Utilities Commission (SFPUC) prepare a Revised Water Supply Assessment (WSA) for the proposed Potrero Yard Modernization project, in compliance with CEQA Guidelines Section 15155 and Sections 10910 through 10915 of the California Water Code.

A prior Project Water Demand Memo and WSA analysis was prepared for the project and was reviewed and approved by the SFPUC Commission on October 27, 2020. This WSA request provides updated information based on current requirements for a modified Potrero Yard Modernization project.

The Draft EIR for the Potrero Yard Modernization Project was published in June 2021 and circulated for public review through August 2021. In October 2022, the City and County of San Francisco (City) awarded a contract to a private development consortium to enter into negotiations to refine the conceptual plans, obtain project approvals, construct the approved project, and manage the mixed-use component. The Refined Project would accommodate the expansion of the SFMTA's transit vehicle fleet in a new replacement structure that would include space for bus parking and circulation (up to 213 buses); SFMTA maintenance, operation, and administrative uses; and joint development uses (see Table 1). The new 1,235,866 gross-square-foot (GSF) structure would occupy the 4.4-acre (192,000 square feet) site and rise to heights ranging from 70 to 150 feet. The new structure would contain a four-level, approximately 70-foot-tall replacement transit facility plus a mix of commercial, residential, and childcare uses in the remainder of the Refined Project as part of a joint development program between the City and the private development consortium. The joint development program would include a ground-floor commercial use (2,931 GSF) and residential entry lobbies, with residential uses along Bryant Street on the second through sixth floors adjacent to the replacement transit facility. Most of the residential development would be atop the replacement transit facility on the 7th to 13th floors.

The project sponsor provided project information intended to meet the requirements outlined in the SFPUC guidance memo dated January 13, 2022. A summary of the project description, average daily water demands, and supporting tables prepared by the project sponsor's consultant (based on the SFPUC Non-Potable Water Calculator(s) Version 9.1), are attached. Should you have questions or need additional information from the Planning Department or the project sponsor, please contact me at 628.652.7510 or Florentina.craciun@sfgov.org.

Sincerely,

Florentina Craciun, AICP

Subject:	**SFMTA Potrero Yard Modernization Project (Case No. 2019-021884ENV)** **Water Demand Technical Memo -- Refined Project**
Prepared By:	Beth Goldstein, PE
Reviewed By:	Florentina Craciun, San Francisco Planning Department, Environmental Planning
Date:	October 27, 2023
HCE Reference:	190002

1 Introduction

Under sections 10910 through 10915 of the California Water Code, urban water suppliers like the SFPUC must prepare water supply assessments for certain large "water demand" projects, as defined in CEQA Guidelines section 15155. Water supply assessments rely on information contained in the water supplier's urban water management plan and on the estimated water demand of both the proposed project and projected growth within the relevant portion of the water supplier's service area. Because more than 500 residential units would be developed, the Potrero Yard Modernization Project continues to meet the definition of a water demand project under CEQA Guidelines section 15155 (a)(1)(g) and requires a water supply assessment (CEQA Guidelines section 15155 (b)).

This technical memorandum (TM) provides the necessary information for the preparation of an updated Water Supply Assessment (WSA) by the SFPUC for the Potrero Yard Modernization Project. This revised water demand estimate was developed according to the guidance provided by the San Francisco Public Utilities Commission as outlined in their memo to project proponents dated January 13, 2022.[1]

A previous version of this TM was published on September 16, 2020, as Attachment B to the SFPUC's original WSA (September 25, 2020).[2] The previous WSA calculator was prepared using the projected demand for the original concept of the Potrero Yard Modernization Project because it represents the most conservative buildout for the project site from a water demand perspective. Additionally, the original WSA was developed using the 2015 Urban Water Management Plan (UWMP) for the City and County of San Francisco which has been updated.

[1] SFPUC, "Project Demand Memo for Preparation of WSA", January 13, 2022.

[2] The SFPUC approved the WSA for the Draft EIR Project by Resolution No. 20-0216 on October 27, 2020.

2 Refined Project

The Draft EIR for the Potrero Yard Modernization Project was published in June 2021 and circulated for public review through August 2021. In October 2022, the City and County of San Francisco (City) awarded a contract to a private development consortium to enter into negotiations to refine the conceptual plans, obtain project approvals, construct the approved project, and manage the mixed-use component. During the procurement period, which ended in October 2022, the San Francisco Municipal Transportation Agency (SFMTA), the San Francisco Department of Public Works (public works), and the private development consortium (project sponsor team or project sponsor) developed a refined version of the proposed project (herein referred to as the "Refined Project"). The original concept is referred to as the "Draft EIR Project". The following analyses presents the water demand estimate for both the Draft EIR Project and the Refined Project.

The project sponsor team proposes to redevelop the 4.4-acre site and replace the Potrero Yard Trolley Coach Facility at 2500 Mariposa Street (Potrero Yard). The Refined Project would accommodate the expansion of the SFMTA's transit vehicle fleet in a new replacement structure that would include space for bus parking and circulation (up to 213 buses); SFMTA maintenance, operation, and administrative uses; and joint development uses (see **Table 1**). The new 1,235,876 gross-square-foot (GSF) structure would occupy the 4.4-acre (192,000 square feet) site and rise to heights ranging from 70 to 150 feet. The new structure would contain a four-level, approximately 70-foot-tall replacement transit facility plus a mix of commercial, residential, and childcare uses in the remainder of the Refined Project as part of a joint development program between the City and the private development consortium. The joint development program would include a ground-floor commercial use (2,931 GSF) and residential entry lobbies, with residential uses along Bryant Street on the second through sixth floors adjacent to the replacement transit facility. Most of the residential development would be atop the replacement transit facility on the 7th to 13th floors.

The new transit levels in the replacement transit facility would be designed to include space for circulation (ramps, drive aisles, and vertical circulation), parking for 213 buses, 18 maintenance bays and maintenance support areas, operations, an SFMTA operator training center, storage (parts and battery-electric infrastructure), administrative uses/common areas (e.g., offices, conference rooms, break rooms), and joint development uses. A total of 310 vehicle spaces would be provided: 53 spaces for the 40-foot-long buses, 160 spaces for the articulated 60-foot-long buses, and 161 parking spaces for large and standard non-revenue vehicles. The Refined Project is not proposing any off-street accessory vehicular parking for the entirety of the Project, including the proposed joint development. See **Table 2** for approximate floor areas for the replacement transit facility under both the Draft EIR Project and the Refined Project. Ramps would provide one-way internal driveways within the replacement transit facility so that buses can access the work bays, bus wash bays (one per level), and parking spaces on the three new transit levels.

In addition to the 192,000 square foot (SF) building footprint, there will be an additional 34,390 SF of at grade development consisting of sidewalk and landscaping. See Figure 1. Refined Project -- Site Plan, and Figure 2. Refined Project -- Roof Plan on pp. 5 and 6, respectively.

Table 1. Basic Project Information

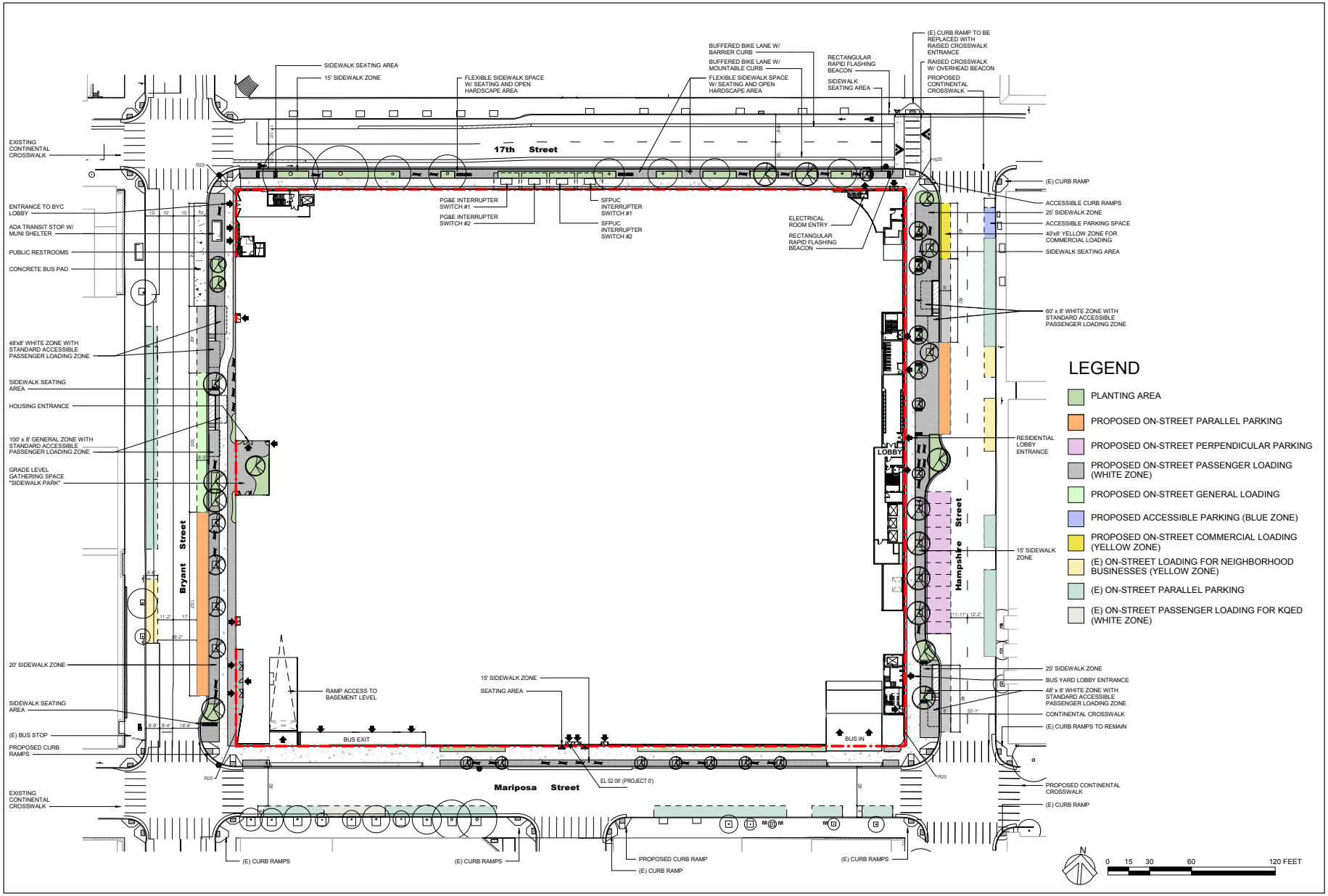
	Draft EIR Project	Refined Project
Project Address	2500 Mariposa Street	2500 Mariposa Street
Project Block/Lot(s)	Block 3971/Lot 001	Block 3971/Lot 001
Planning Department Case Number	2019-021884ENV	2019-021884ENV
ENV Case Manager	Laura Lynch / David Young	Jennifer McKellar / Florentina Craciun
Zoning District	Public [P]	Public [P]
Height/Bulk	65-X	65-X
Estimated Construction Duration	2023-2026	2024-2028 (with replacement transit facility operation expected in October 2027)
Current Land Use(s)	SFMTA Bus Storage and Maintenance (PDR) SFMTA Offices	SFMTA Bus Storage and Maintenance (PDR) SFMTA Offices
Proposed Land Use(s)	SFMTA Bus Storage and Maintenance (PDR) SFMTA Offices Residential Retail	SFMTA Bus Storage and Maintenance (PDR) SFMTA Offices Residential Retail Childcare
Building Footprint (sf)	192,000	192,000
Site Size (acres)	4.4	4.4
Project Size (constructed GSF)	1,300,000	1,235,876
Days of Operation / Annually	365	365
Notes: The areas used are constructed gross floor area (GSF) as required by the SFPUC Water Calculator. These areas do not include the deductions allowed under the San Francisco Planning Code for gross floor area.		

Table 2. Proposed Project Constructed Gross Areas by Land Use (GSF)

	Draft EIR Project	Refined Project	Net Change
Bus Service and Storage	186,000	130,115	-55,885
Administration and Common Areas	52,000	70,455	18,455
Residential	544,000 (575 units)	531,912 (513 units)	-12,088 (-62 units)
Childcare	0	2,336	2,336
Commercial	33,000	2,931	-30,069
Ramps and Drives	485,000	498,127	13,127
TOTAL	**1,300,000**	**1,235,876**	**-64,124**
Note: GSF= gross square feet.			

3 Existing Water Demand

Based on records supplied by SFMTA for the months of January and February 2020, the existing potable water demand is 3,500 gallons per day (gpd). Of this, the existing 109,000 GSF of bus service/storage can be estimated to use 1,200 gpd. The remaining 2,300 gpd is assumed to be bus washdown use. There are no non-potable water systems at the existing site.



Source: SFMTA and IBI GROUP, 2023

FIGURE 1: REFINED PROJECT - PROPOSED SITE PLAN

Source: SFMTA and IBI GROUP, 2023

FIGURE 2: REFINED PROJECT - PROPOSED ROOF PLAN

4 Proposed Water Demand (Refined Project)

One study for the Refined Project was conducted using the SFPUC Single Site Water Calculator (Version 9.1). A complete accounting of all proposed water uses, with water volumes listed in units of gallons per year based on output calculated by the SFPUC Water Calculator, is attached (see **Attachment 1**).

The default calculator assumptions and inputs were used as follows:

- "General Office" applied to administrative offices and common space
- "Retail" applied to general ground floor commercial
- "Service (e.g., financial, auto)" applied to bus service (maintenance + storage)
- "Educational, daycare" applied to daycare

Non-default inputs include:

- "Residential" assumes 2.36 persons per unit, not default of 2.01 (see note on **Table 3**)
- HVAC demands estimates were provided by the project sponsor team via separate emails dated September 20, 2023, October 2, 2023, and October 5, 2023 with a cover memo dated October 23, 2023 (**Attachment 2**).
- Bus washdown was calculated by scaling the existing demand from 158 to 213 buses per day and is assumed to be non-potable. Bus washdown includes exterior washing as well as pre-maintenance chassis washing.
- No additional demand, beyond HVAC, was assumed for driveways and ramps. Non-revenue vehicles will be washed offsite and are not included in the estimated demand.

The potable and non-potable demand estimates generated by the SFPUC Water Calculator for the Draft EIR Project and Refined Project (calculator version 6 and 9.1, respectively) are presented in **Table 3**.

Table 3. Draft EIR and Refined Project Water Demands[1]

	Draft EIR Estimated Potable Water Demand (gpy)	Draft EIR Estimated Non-Potable Water Demand (gpy)	Refined Project Estimated Potable Water Demand (gpy)	Refined Project Estimated Non-Potable Water Demand (gpy)	Draft EIR Estimated Potable Water Demand (gpd)	Draft EIR Estimated Non-Potable Water Demand (gpd)	Refined Project Estimated Potable Water Demand (gpd)	Refined Project Estimated Non-Potable Water Demand (gpd)
Commercial water demand	135,056	1,016,659	372,481	780,506	370	2,785	1,020	2,138
Residential water demand[2]	17,325,751	2,564,840	10,132,549	4,821,993	47,468	7,027	33,223	7,748
Landscape irrigation demand	0	28,655	0	328,766	-	79	-	901
HVAC/Cooling demand	0	5,548,000	0	2,740,000	-	15,200	-	7,507
Bus/Chassis wash down demand	0	1,131,500	0	1,131,500	-	3,100	-	3,100
Sub-Total	**17,460,807**	**10,289,654**	**10,505,030**	**9,802,765**	**47,838**	**28,191**	**34,243**	**21,394**
TOTAL		27,750,461 gpy		20,307,795 gpy		76,029 gpd		55,638 gpd

Notes:

1. The Draft EIR Project demand estimates were developed using the SFPUC Single Site Non-Potable Water calculator version 6, while the Refined Project demand estimates were developed using version 9.1.

2. For the Refined Project demand analysis, a persons per household value of 2.36 was used instead of the default value of 2.01 in the SFPUC Water calculator (which was used in the draft EIR analysis). The SFPUC Water calculator's default is based on the 2011 Retail Demand Model Update, while the 2.36 persons per household value is based on the latest U.S. Census data and consistent with the population analyzed in the current environmental impact report.

5 Phased Construction Option/Scenarios for Refined Project

The SFMTA estimates that construction of the Refined Project would take four years to complete, with construction beginning in fall of 2024 and building occupancy by the end of 2028. If the Refined Project were to be constructed in phases the replacement transit facility under both phased construction option/scenarios would be constructed and in operation by October 2027. The construction and operation/occupancy timeline for the Refined Project would be functionally the same as phased construction option scenario 1 with the replacement transit facility in operation by October 2027 and all housing occupied by Fall 2028. The primary difference would be the that the Bryant Street housing (103 units) could be occupied as early as Fall 2026. The second scenario of the phased construction option would push the 103 units of Bryant Street housing out from occupancy in either Fall 2026 or Fall 2028 to occupancy in Fall 2029 and would push the 410 units of Family and Workforce housing out from occupancy in Fall 2028 to occupancy in Fall 2032.

The following summary table (**Table 4**) presents water volumes reported in units of million gallons per day (mgd), including potential potable water savings, for the Draft EIR Project and both phased construction option/scenarios of the Refined Project. Note that neither scenario would vary demands based on water year type.

Table 4. Phased Water Demand (in mgd) for Draft EIR and Refined Project

Demand (mgd)	2025	2030	2035	2040	2045
Draft EIR Project					
Potable Demand	0	0.0479	0.0479	0.0479	0.0479
Non-potable Demand	0	0.0282	0.0282	0.0282	0.0282
Total Demand	***0***	***0.0762***	***0.0762***	***0.0762***	***0.0762***
Potential Potable Water Demand Savings as Percentage of Total Demand[1]	***0***	***37%***	***37%***	***37%***	***37%***
Refined Project (Phasing Option 1)					
Potable Demand	0	0.0288	0.0288	0.0288	0.0288
Non-potable Demand	0	0.0269	0.0269	0.0269	0.0269
Total Demand	***0***	**0.0556**	**0.0556**	**0.0556**	**0.0556**
Potential Potable Water Demand Savings as Percentage of Total Demand NOTE 1	***0***	***48%***	***48%***	***48%***	***48%***
Refined Project (Phasing Option 2)					
Potable Demand	0	0.0066	0.0288	0.0288	0.0288
Non-potable Demand	0	0.0097	0.0269	0.0269	0.0269
Total Demand	***0***	**0.0163**	**0.0556**	**0.0556**	**0.0556**
Potential Potable Water Demand Savings as Percentage of Total Demand NOTE 1	***0***	***60%***	***48%***	***48%***	***48%***

Note:
1. These numbers represent the potential potable water savings, assuming adequate non-potable water supply. Current calculations demonstrate that this is not the case, and these percentages are lower (see Attachment 1). However, these number will continue to be refined as project design progresses and pursues compliance with the Non-Potable Water Ordinance as discussed in Section 6.

6 Compliance with CCSF Ordinances

As this Refined Project is subject to the requirements of the San Francisco Green Building Code requirements for water use reduction, Stormwater Management Requirements (SMRs) and the Non-potable Ordinance (NPO), as well as the Water Efficient Irrigation, Residential Water Conservation and Commercial Water Conservation Ordinances, there is a clear direction to reduce water consumption by pursuing a non-potable water reuse strategy that prioritizes the collection of rainwater to meet the SMRs and supplemental use of graywater to meet the NPO. Use of blackwater captured and treated on-site is not part of the Refined Project's water re-use strategy. The cooling system proposed will produce a minimal amount of condensate which will not be collected for reuse onsite. Further, based on site characteristics, foundation drainage is not expected to be an element of the non-potable water reuse strategy.

Rainwater and graywater will be collected and treated on site to meet the non-potable demands for toilet and urinal flushing, cold water clothes washing, cooling tower make-up water and outdoor irrigation. The bus washdown water will be collected and treated onsite to be reused as bus washdown

water[3]. The reuse approach of rainwater and graywater is projected to offset 40% of the annual volume of potable water otherwise required for the Refined Project and meets 83% of the required non-potable demands on an annual basis, with offsite non-potable supply required to meet peak HVAC demand in June through October. A discussion of how the Refined Project will meet each requirement is presented in the following subsections and are based on a preliminary water demand data (see **Attachment 2**) that is expected to be refined as the mechanical, electrical, and plumbing (MEP) system design evolves to ensure the most efficient water and energy use profile.

6.1 Non-potable Ordinance

The Refined Project meets the criteria for and must comply with the City's Non-potable Ordinance (San Francisco Health Code, Article 12C), which requires that new developments with greater than 100,000 square feet of gross floor area to implement an onsite water reuse system to meet non-potable demands. In general, the NPO requires that qualifying projects utilize where practicable rainwater (defined as runoff from building roofs and other above-ground surfaces, distinct from stormwater which in this context refers to runoff from at- or below-grade surfaces), graywater (wastewater from showers, bathroom sinks, and laundry), blackwater (wastewater containing bodily or other biological wastes, as from toilets, dishwashers, kitchen sinks, and utility sinks), or foundation drainage (nuisance subsurface water collected to maintain a building's structural integrity or to dewater below grade floors that would typically be discharged into the sewer system) and use these alternate water sources to meet the non-potable demands for toilet/urinal flushing, irrigation, clothes washing, and drain trap priming.

To the maximum extent practicable, the Refined Project will address the NPO by using rainwater and graywater captured and treated onsite to meet 83% of the toilet and urinal flushing, cold water clothes washing, HVAC and outdoor irrigation demands. While there is estimated make-up water needed June through October, the NPO Make-up water volume is zero because the total NPO Supply is greater than the NPO Demand.

6.2 Recycled Water Ordinance

The Refined Project is not subject to the Recycled Water Ordinance (San Francisco Public Works Code, Article 22) as it is outside the designated water use areas.

6.3 Water Efficient Irrigation Ordinance

The Refined Project meets the criteria for and must comply with the Water Efficient Irrigation Ordinance, which applies to projects with new or modified landscaping equal to or greater than 500 square feet. The Refined Project will include more than 500 square feet of new landscaping and would comply with rules adopted by the SFPUC for Tier 2 project landscaping. The Refined Project would install water efficient landscaping using primarily drought-tolerant planting, recycled water systems to provide non-potable water for irrigation, and a centrally controlled weather-based or other smart irrigation system. An application and a certificate of completion will be required.

[3] The recycled wash down water was included in the calculator as a an "Other Indoor Supply" (tab 4, section F) with an assumed return rate of 80%.

6.4 Residential and Commercial Water Conservation Ordinances

The Refined Project is subject to the residential water conservation ordinance (San Francisco Housing Code, Ch. 12A). High-efficiency fixtures and appliances will be installed in compliance with current California plumbing standards.

The Refined Project is not subject to the commercial water conservation ordinance (San Francisco Building Code, Ch. 13A) as that is applicable only to alterations of existing commercial buildings.

The Refined Project is subject to the San Francisco Green Building Code (Sections 4.103.2.2 and 5.103.1.2) which states that all new buildings must comply with current California water fixture and fitting efficiency requirements. The Refined Project, as a new large commercial and high-rise residential project, will verify that it meets maximum fixture flow rates in accordance with the California Plumbing Code.

ATTACHMENT 1

Project Summary Sheet

SFPUC, “SFMTA Potrero Yard NP Single Site Calculatorv9.1.xlsx”, October 27, 2023

NON-POTABLE WATER CALCULATOR

Project Summary Sheet Potrero Yard Modernization Project

Project Contact: Kerstin Magary
(415) 646-2847
Kerstin.Magary@sfmta.com

Total Gross Square Footage: 1,235,876

Estimated Building Permit Issuance Date: 10/1/2024

1. Demand and Supply Summary

Demand Met by Non-Potable Supply (gallons/year):	**8,181,623**
Total Annual Water Demand (gallons/year):	**20,307,900**

40% of total

	6-Month Compliance Periods	
	January - June	**July - December**
Potable Make-Up Allocation (gallons/period):	**296,046**	**297,086**

2. Building Information Summary

Project / Building Name:	**Potrero Yard Modernization Project**
Project Address:	2500 Mariposa Street
Assessor's Block & Lot No. / APN:	3971001
Date of Completion:	2028

Building Type:	Mixres
Total Building Size (GSF):	1,235,876
Total Lot Size (ft^2):	192,000
Number of Residential Units:	513
Impervious Surface Above Grade (ft^2):	165,718
Impervious Surface Below Grade (ft^2):	31,121
Irrigated Landscaped Area (ft^2):	29,551

3. Summary of Non-Potable Demands and Supplies for the Project

Non-Potable Supply Estimates

Onsite Alternate Water Sources	Annual Supply (gpy)	
Graywater:	8,063,358	
Blackwater:	0	*(includes GW)*
Condensate:	0	
Rainwater/Stormwater:	423,841	
Other Supplies:	905,200	
TOTAL:	**9,392,399**	

Non-Potable Demand Estimates

Project Non-Potable Uses	Annual Demand (gpy)
Toilets/Urinals:	3,608,711
Drain Trap Priming:	0
Irrigation:	328,766
Clothes Washing:	1,993,845
HVAC/Cooling:	2,740,000
Other Demands:	1,131,500
TOTAL:	**9,802,822**

ATTACHMENT 2

Project Sponsor Team's HVAC Water Demand Memo and
Responses to Water Demand Information Requests

Introba

1111 Broadway
Suite 1450
Oakland, CA 94607

www.introba.com

Memo – HVAC Water Demand

To: **Yancey Clayton, Arcadis**
Chris Jauregi, Plenary
Peter A. Mye, SWCA

Date: 10/23/2023

From: **Eric Solrain, Introba**

Ref: SFMTA Potrero – HVAC Water Demand

Remarks:

The estimated monthly demand of water usage for HVAC cooling tower systems on the Potrero Yard Project is as follows:

HVAC Monthly Demand (gal/mo)											
January	February	March	April	May	June	July	August	September	October	November	December
0	0	0	50,000	100,000	180,000	230,000	550,000	880,000	550,000	150,000	50,000

At the current level of design, which is at Schematic stage, the cooling tower water use is estimated from the peak equipment sizing (peak cooling load for the total project) and utilizing recent, typical load profiles for a building of this type in San Francisco. Those typical load profiles are from detailed models in more developed stage of design, also meeting stringent energy goals (such as LEED). Consequently, cooling is limited, and only occurs for short durations mostly in the Summer and early Fall months, typically June through October.

Central to the water use profile, the "energy loop" that forms the "backbone" of the mechanical design (sometimes called a condenser water loop) allows the various water-source heat pumps in the residences and office spaces to absorb and reject heat simultaneously to the loop. Heating needs in the residences can offset cooling needs in the offices; or differing heating and cooling from east to west apartments during morning and afternoon; etc. Only when the total net system demand is in cooling dominant mode does the cooling tower need to operate. Further, the well-designed envelope, operable windows, and air-side economizing in the offices all greatly reduce the active cooling needs, especially in the Winter, early Spring and late Fall (November to May).

Lastly, the current estimated cooling tower water use values are "worst case" and will be refined as the design progresses. Of particular note, we are planning to utilize the required fire water storage tanks as

"dual use fire water thermal storage" per NFPA-22. This relatively large volume of thermal storage will reduce heating and cooling peak loads by 25-50%, and extend the "simultaneity" of heating and cooling demands across an entire day. So morning heating will cool down the tank; and afternoon cooling will heat it back up to be used the following morning. This will have a direct reduction in cooling tower water use over the year as well as at peak. Further, given the energy savings potential of the thermal storage, along with cost reductions in downsizing primary heating and cooling generating equipment, we plan on exploring eliminating the cooling tower entirely and utilizing the remaining air-source heat pumps for both heating and cooling. Normally this is a cost and energy penalty compared to utilizing a cooling tower, but made possible by the thermal storage, energy loop, envelope design, etc.

Peter Alexander Mye

From: Magary, Kerstin <Kerstin.Magary@sfmta.com>
Sent: Monday, September 11, 2023 2:59 PM
To: Peter Alexander Mye; Dwyer, Debra (CPC); McKellar, Jennifer (CPC); Chris Jauregui
Cc: Rewers, Jonathan; Gallegos, Jason; Bignardi, Paul; Kempf, Tim (DPW); O'Brien, Sean (DPW)
Subject: Potrero Project: Washing Operations / Program for Non-Revenue Vehicles (NRVs) and Paratransit Vehicles
Attachments: SFMTA Potrero_RTC CoordMtg 24 FINAL Agenda_09-11-23.230911.pdf; RE: Washing Operations / Program for Non-Revenue Vehicles (NRVs); Re: Paratransit Fleet - Washing Operations Program at Existing Facilities; 2023-09-07_SFMTA PY WSA Update Schedule Snip_ SFPUC Water Memo.230911.png

Follow Up Flag: Follow up
Flag Status: Flagged

Peter, Debra, Jennifer, and Chris:

As a follow up to the EIR meeting this morning and schedule issues, and RTCs, please see below and attached re: **washing of Non-Revenue and Paratransit vehicles at SFMTA for the Potrero Project:**

- Ch 8 (Pending) Change – Water Supply Assessment Update RFIs 1 and 2 o See Action Items

1, **Non Revenue Vehicles (NRVs)** are currently washed off site, vs. in SFMTA's facilities, per attached from Gino Potter, who manages maintenance of NRVs for SFMTA:

There is currently a city-wide term contract for the washing and detailing of non-revenue vehicles.
The vehicle users and/or operators have a choice of 4 different vendors located throughout the city.

2. **Paratransit vehicles** are currently washed, per attached from Virginia, Planner III, Accessible Services:

We use a third party contractor to wash the buses on the lot at Tunnel and recycle the water. We pay per bus, not per gallon and I can check with them but do not have any gallons per day information. The fleet is washed once a week through this contract – not daily. They provide the water on their truck, so our water meter doesn't register this use.

However, because the **Paratransit vehicles are owned by the SFMTA**, they could use the same contract and vendors as other SFMTA Non Revenue Vehicles:

There is currently a city-wide term contract for the washing and detailing of non-revenue vehicles.
The vehicle users and/or operators have a choice of 4 different vendors located throughout the city.

Please let us know if the SFPUC's attached Water Supply Assessment (WSA) Memo schedule can be shortened to make the EIR goal of being at the Planning Commission on 12/7/23.

Thank you.

Kerstin Magary
Section Director, CSO Facilities and Real Property Management

Deputy Program Manager, BUILDING PROGRESS
Kerstin.Magary@sfmta.com

Office 1-415-646-2847
Mobile 1-415-608-3004

San Francisco Municipal Transportation Agency
1 South Van Ness Avenue, 8th floor, #8191
San Francisco, CA 94103

SFMTA.com

ATTACHMENT 2

From: O"Brien, Sean (DPW)
To: Peter Alexander Mye
Cc: McKellar, Jennifer (CPC); Dwyer, Debra (CPC); Beth Goldstein; Kempf, Tim (DPW); Chris Jauregui; Magary, Kerstin (MTA)
Subject: Re: SFMTA Potrero Yard Water Supply Assessment Update - Request for Information 2 (8/29/23)
Date: Wednesday, September 20, 2023 5:04:13 PM
Attachments: image001.png
image.png

Hi Peter,

See below for responses to RFI 2 for the WSA Update.

1. Refined Project
    a. Provide a HVAC Demand Memo for Refined Project (see attached SFMTA PY WSA Update RFI-1).
        Due to the energy loop design, the water use required for cooling is reduced substantially from the DEIR Project. Rather than starting at 15,200 Gallons Per Day (GPD) as noted in the Draft EIR memo, half that value at **7,600 GPD** would be accurate for a non-integrated system with no thermal storage. This value does not include bus washing operations within the bus yard.

        We note peak cooling load of 1,300 tons listed in the draft EIR memo. With 100% of that load going to the cooling tower, the peak flow rates are reasonable. However, the average flow rate, at 24% of peak, uses a 24-hour operating day to calculate the GPD, whereas the peak GPD uses a 12-hour operating day. So, instead of the annual average GPD being 24% of peak, it's closer to 50% of peak. The 12 hours used in the peak calculation is more reasonable, as the offices are not 24/7 and the typical cooling profile for San Francisco - even on the peak day - is not 24 hours. (And the annual average cooling hours per day are even less.)
    a. The original WSA did not account for non-revenue vehicles (NRVs).
        i. What is the SFMTA's current NRV (Large/Standard) wash program at locations where NRVs are currently stored and maintained?
            Currently, there is a City-wide term contract for the washing and detailing of non-revenue vehicles. The vehicle users and/or operators have a choice of four different vendors located throughout the City. NRVs are not washed at the facilities at which they are assigned/stored.
        i. Based on the assumption that NRVs will be washed on site provide the existing washdown use in gallons per day for each vehicle type. Similar data was provided by the SFMTA for the original Water Demand Memo prepared by HCE. HCE used that bus washdown data and scaled up based on increase in # of buses (from 158 to 213); however, the water demand for NRVs were not accounted for as a new on-site demand generator so we want to ensure that we capture the full story.
            NRVs will not be washed on-site at the new Potrero Bus Facility.
2. "Variant to Alternative D" or the "Refined Project Variant"
    a. What is the SFMTA's current paratransit vehicle and van wash program at locations where these vehicle types are currently stored and maintained?
        i. For paratransit vehicles (150) and vans (10) provide the existing washdown use in gallons per day for each vehicle type. This will be a new water demand generator.
            The paratransit fleet will continue to be washed off-site through a vendor.
    a. Confirm that the number of on-site SFMTA employees will increase by 50 FTE.
        Confirmed.

TABLE 1.A - PARATRANSIT - STAFF SUMMARY

	Scenario 1A New Facility
Function	Staff
Maintenance	23
Operations	27
TOTAL	50

Thank you,

Sean O'Brien
Project Manager

Bureau of Project Management | San Francisco Public Works | City and County of San Francisco
49 South Van Ness Avenue, Suite 1000 | San Francisco, CA 94103 | (415) 602-4652
sfpublicworks.org | twitter.com/sfpublicworks | instagram.com/sfpublicworks

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From: Chris Jauregui <Chris.Jauregui@plenaryamericas.com>
Sent: Friday, September 8, 2023 01:34 PM
To: Peter Alexander Mye <pmye@swca.com>; O'Brien, Sean (DPW) <sean.obrien@sfdpw.org>; Magary, Kerstin (MTA) <Kerstin.Magary@sfmta.com>
Cc: McKellar, Jennifer (CPC) <jennifer.mckellar@sfgov.org>; Dwyer, Debra (CPC) <debra.dwyer@sfgov.org>; Beth Goldstein <bgoldstein@hydroce.com>; Kempf, Tim (DPW) <tim.kempf@sfdpw.org>
Subject: RE: SFMTA Potrero Yard Water Supply Assessment Update - Request for Information 2 (8/29/23)

Sean – I'm following up internally on the average daily water use required for BYC and HCC. I'll come back to you.

Chris Jauregui
+1 (310) 775-1583

From: Peter Alexander Mye <pmye@swca.com>
Sent: Wednesday, August 30, 2023 1:19 PM
To: O'Brien, Sean (DPW) <sean.obrien@sfdpw.org>; Magary, Kerstin (MTA) <Kerstin.Magary@sfmta.com>; Chris Jauregui <Chris.Jauregui@plenaryamericas.com>
Cc: McKellar, Jennifer (CPC) <jennifer.mckellar@sfgov.org>; Dwyer, Debra (CPC) <debra.dwyer@sfgov.org>; Beth Goldstein <bgoldstein@hydroce.com>; Kempf, Tim (DPW) <tim.kempf@sfdpw.org>
Subject: RE: SFMTA Potrero Yard Water Supply Assessment Update - Request for Information 2 (8/29/23)

Hi Sean,
Thanks for the response and for moving this forward. You are correct on Item 1bii. I do not have a record in the file indicating that NRVs were itemized as part of the original Data Request for Draft EIR Project back in 2019/2020. Since the WSA has to be updated this is the opportunity to correct the oversight. Your response for Item 2ai is noted as is your response under Item 2b which aligns with the information provided in the August 18 Description and Table of the Paratransit Option.
Yours,

Peter A. Mye
Lead Environmental Planner - Senior Project Manager
Pronouns: He/Him/His/Mr.

SWCA Environmental Consultants
95 Third Street, Floor 2
San Francisco, CA 94103
Direct 415.523.5516

From: O'Brien, Sean (DPW) <sean.obrien@sfdpw.org>
Sent: Wednesday, August 30, 2023 11:59 AM
To: Peter Alexander Mye <Pmye@swca.com>; Magary, Kerstin (MTA) <Kerstin.Magary@sfmta.com>; Chris Jauregui <chris.jauregui@plenarygroup.com>
Cc: McKellar, Jennifer (CPC) <jennifer.mckellar@sfgov.org>; Dwyer, Debra (CPC) <debra.dwyer@sfgov.org>; Beth Goldstein <bgoldstein@hydroce.com>; Kempf, Tim (DPW) <Tim.Kempf@sfdpw.org>
Subject: Re: SFMTA Potrero Yard Water Supply Assessment Update - Request for Information 2 (8/29/23)

Peter, Kerstin, Chris:

Added some comments and questions for each of you below.

> 1. Refined Project
>   a. Provide a HVAC Demand Memo for Refined Project (see attached SFMTA PY WSA Update RFI-1).
>   @Chris Jauregui: SWCA's consultant, HCE, needs a similar HVAC Demand Memo noting the estimated likely average daily water use (gpd) for the Refined Project. The previous memo was prepared by Arup for the DEIR Project / Reference Design Concept.
>   a. The original WSA did not account for non-revenue vehicles (NRVs).

i. What is the SFMTA's current NRV (Large/Standard) wash program at locations where NRVs are currently stored and maintained?

@Magary, Kerstin (MTA): how are NRVs currently washed? On-site at the facility they are located or off-site? Will they be washed on-site at new facility?

i. Based on the assumption that NRVs will be washed on site provide the existing washdown use in gallons per day for each vehicle type. Similar data was provided by the SFMTA for the original Water Demand Memo prepared by HCE. HCE used that bus washdown data and scaled up based on increase in # of buses (from 158 to 213); however, the water demand for NRVs were not accounted for as a new on-site demand generator so we want to ensure that we capture the full story.

@Peter Alexander Mye: it looks like HCE assumed that the 2,300 gpd value for bus washdown was only for washing buses. If SFMTA confirms that NRVs are currently washed on-site, the formula/calculation for the proposed water demand will need to be adjusted to accommodate NRV counts (2,300 gpd / 158 [(E) # of buses at Potrero] x 213 [future # of buses at Potrero] x 365 d/y = ~1,131,500 gpy).

2. "Variant to Alternative D" or the "Refined Project Variant"
   a. What is the SFMTA's current paratransit vehicle and van wash program at locations where these vehicle types are currently stored and maintained?
      i. For paratransit vehicles (150) and vans (10) provide the existing washdown use in gallons per day for each vehicle type. This will be a new water demand generator.

@Magary, Kerstin (MTA): do we have an estimate of the existing water demand (in gallons per day) from the facilities where ~160 paratransit vehicles are currently located?

@Peter Alexander Mye: note reclaimed or non-potable water would be used for washing paratransit vehicles.

   a. Confirm that the number of on-site SFMTA employees will increase by 50 FTE.

@Magary, Kerstin (MTA): this is the number included in HDR's Space Needs Program for Paratransit. Please confirm.

TABLE 1.A - PARATRANSIT - STAFF SUMMARY

	Scenario 1A New Facility
Function	Staff
Maintenance	23
Operations	27
TOTAL	50

Sean O'Brien
Project Manager

Bureau of Project Management | San Francisco Public Works | City and County of San Francisco
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sfpublicworks.org | twitter.com/sfpublicworks | instagram.com/sfpublicworks

Check out our portfolio! www.sfpublicworks.org/bdcportfolio

From: Peter Alexander Mye <Pmye@swca.com>
Sent: Tuesday, August 29, 2023 11:29 AM

ATTACHMENT 2

To: Magary, Kerstin (MTA) <Kerstin.Magary@sfmta.com>; Kempf, Tim (DPW) <tim.kempf@sfdpw.org>; O'Brien, Sean (DPW) <sean.obrien@sfdpw.org>; Chris Jauregui <chris.jauregui@plenarygroup.com>
Cc: McKellar, Jennifer (CPC) <jennifer.mckellar@sfgov.org>; Dwyer, Debra (CPC) <debra.dwyer@sfgov.org>; Beth Goldstein <bgoldstein@hydroce.com>
Subject: SFMTA Potrero Yard Water Supply Assessment Update - Request for Information 2 (8/29/23)

Hello All,
Please acknowledge receipt of SFMTA PY WSA Update RFI-1 dated 8/23/23 (see attached) and provide a timeline for return. If there are questions or concerns do not hesitate to reach out. I will work with the SFMTA to obtain a Notice to Proceed for Hydroconsult Engineers, Inc. (HCE) to update the original Water Demand Memo they prepared in September 2020. SFMTA PY WSA Update RFI-1 and RFI-2 (below) are intended to minimize delays to the EIR Certification Schedule. And please note that additional RFIs may follow when HCE is on board and authorized to proceed

This SFMTA PY WSA Update RFI 2 requests transit vehicle wash down data for the Refined Project and the Variant to Alternative D in order to complete the San Francisco Public Utilities Commission Calculator Tool. HCE will need the SFMTA/PW/PNC responses as soon as possible to be able to determine which "Project" would generate the greatest water demand. Per SFPUC direction, only one scenario will be accommodated. Please provide the following to facilitate the screening process:

1. Refined Project
    a. Provide a HVAC Demand Memo for Refined Project (see attached SFMTA PY WSA Update RFI-1).
    b. The original WSA did not account for non-revenue vehicles (NRVs).
        i. What is the SFMTA's current NRV (Large/Standard) wash program at locations where NRVs are currently stored and maintained?
        ii. Based on the assumption that NRVs will be washed on site provide the existing washdown use in gallons per day for each vehicle type. Similar data was provided by the SFMTA for the original Water Demand Memo prepared by HCE. HCE used that bus washdown data and scaled up based on increase in # of buses (from 158 to 213); however, the water demand for NRVs were not accounted for as a new on-site demand generator so we want to ensure that we capture the full story.
2. "Variant to Alternative D" or the "Refined Project Variant"
    a. What is the SFMTA's current paratransit vehicle and van wash program at locations where these vehicle types are currently stored and maintained?
        i. For paratransit vehicles (150) and vans (10) provide the existing washdown use in gallons per day for each vehicle type. This will be a new water demand generator.
    a. Confirm that the number of on-site SFMTA employees will increase by 50 FTE.

Thanks in advance for your responses.

Peter A. Mye
Lead Environmental Planner - Senior Project Manager
Pronouns: He/Him/His/Mr.

SWCA Environmental Consultants
95 Third Street, Floor 2
San Francisco, CA 94103
Direct 415.523.5516

From:	Chris Jauregui
To:	Peter Alexander Mye; McKellar, Jennifer (CPC); Dwyer, Debra (CPC); Magary, Kerstin; O"Brien, Sean (DPW); Kempf, Tim (DPW); Beth Goldstein
Cc:	Craciun, Florentina (CPC)
Subject:	RE: Potrero Yard - WSA Update RFI Responses (Hold #1)
Date:	Monday, October 2, 2023 11:19:37 PM
Attachments:	image001.png

Hi Peter,

In response to several questions/comments around the WSA RFI, please see below a consolidated list of responses:

1. **Seasonal Variation in GPD.** There will be seasonal variation in cooling tower water use. The peak is anticipated to be 29,300 GPD per the Draft EIR (Arup) memo. The maximum average daily value we suggest is 7,600 GPD. The winter months will likely have zero cooling tower water usage (except during unusual and extreme weather).
2. **Graywater Tank Capacity.** 17,000 gallons
3. **Rainwater storage Tank Capacity.** 17,000 gallons
4. **Water Reclamation Tanks Capacity.** (2) 1,500 gallons
5. **Non-Potable Water.** Paratransit Washing Bay and Chassis Wash in bus yard use non-potable water.

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    a. Podium
        i. Hardscape = 56,785 SF
        ii. Landscape = 26,282 SF
    b. Ground (includes sidewalk)
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I'll send updated drawings tomorrow.

Thanks,
Chris

Chris Jauregui
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Cc: Beth Goldstein; Kempf, Tim (DPW); Magary, Kerstin; McKellar, Jennifer (CPC); Dwyer, Debra (CPC)
Subject: RE: adt'l info needed

Follow Up Flag: Follow up
Flag Status: Flagged

Peter,

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   Yes. As discussed, chassis wash bay at ground level and a chassis wash bay for the paratransit.

3. HVAC makeup demand—not sure how to interpret comments below, can we get a gallons per month, by month from Arup?

   Still tracking this down.

ATTACHMENT 2

HVAC Monthly Demand (gal/mo)								
January	February	March	April	May	June	July	August	Sep

4. Describe landscaping—native? Lawn? Drip irrigation?

   Native planting w/ drip irrigation

5. Need to understand what the source is for "water reclamation tanks" (I'm assuming source for "rainwater" storage is roof runoff, and source for "greywater" storage is from commercial/residential grey water fixtures) Also need to understand was the use is for each type of tank (irrigation demand? HVAC demand?)

   Water reclaim tanks capture water from the bus wash, filter and recirculate back to the bus wash.

   The gray water waste drainage piping from lavatories, bathtubs, showers and clothes washing machines will be collected throughout the building from residential, commercial and SFMTA spaces and conveyed to a 17,000 gallon graywater storage tank, the content of the tank will be processed and stored in a day tank for immediate distribution throughout the building as recycled water, recycled water will be used for fixture flushing and bus washing.

   The storm drainage piping from the roofs will be collected throughout the building and conveyed to a 17,000 gallon

   storm water harvesting storage tank, the content of the tank will be processed and stored in a day tank for immediate distribution through the building as irrigation water and bus washing.

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Sent: Tuesday, October 3, 2023 9:08 AM
To: Chris Jauregui <Chris.Jauregui@plenaryamericas.com>; McKellar, Jennifer (CPC) <jennifer.mckellar@sfgov.org>; Dwyer, Debra (CPC) <debra.dwyer@sfgov.org>; Magary, Kerstin <Kerstin.Magary@sfmta.com>; O'Brien, Sean (DPW) <sean.obrien@sfdpw.org>; Kempf, Tim (DPW) <Tim.Kempf@sfdpw.org>; Beth Goldstein <bgoldstein@hydroce.com>
Cc: Craciun, Florentina (CPC) <florentina.craciun@sfgov.org>
Subject: RE: Potrero Yard - WSA Update RFI Responses (Hold #1)

Thanks Chris. I will add the responses to the administrative record and coordinate with Beth at HCE.

Peter A. Mye
Lead Environmental Planner - Senior Project Manager
Pronouns: He/Him/His/Mr.

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From: Chris Jauregui <Chris.Jauregui@plenaryamericas.com>
Sent: Monday, October 2, 2023 11:19 PM
To: Peter Alexander Mye <Pmye@swca.com>; McKellar, Jennifer (CPC) <jennifer.mckellar@sfgov.org>; Dwyer, Debra (CPC) <debra.dwyer@sfgov.org>; Magary, Kerstin <Kerstin.Magary@sfmta.com>; O'Brien, Sean (DPW) <sean.obrien@sfdpw.org>; Kempf, Tim (DPW) <Tim.Kempf@sfdpw.org>; Beth Goldstein <bgoldstein@hydroce.com>

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Subject: RE: adt'l info needed
Attachments: PYMP_Paratransit_Overall_Plans.pdf

Follow Up Flag: Follow up
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I meant to include the updated paratransit plans noting chassis wash instead of wash bay.

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Cc: Craciun, Florentina (CPC) <florentina.craciun@sfgov.org>
Subject: RE: Potrero Yard - WSA Update RFI Responses (Hold #1)

Thanks Chris. I will add the responses to the administrative record and coordinate with Beth at HCE.

Peter A. Mye
Lead Environmental Planner - Senior Project Manager
Pronouns: He/Him/His/Mr.

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I'll send updated drawings tomorrow.

Thanks,
Chris

Chris Jauregui
+1 (310) 775-1583

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ATTACHMENT 2

From: Chris Jauregui
To: Peter Alexander Mye; O'Brien, Sean (DPW)
Cc: Beth Goldstein; Kempf, Tim (DPW); Magary, Kerstin; McKellar, Jennifer (CPC); Dwyer, Debra (CPC)
Subject: RE: adt'l info needed
Date: Thursday, October 5, 2023 4:05:26 PM
Attachments: image001.png

Hi Peter,

Re: question 3 below, we estimate a worst-case scenario monthly breakdown as follows:

HVAC Monthly Demand (gal/mo)											
January	February	March	April	May	June	July	August	September	October	November	December
0	0	0	50,000	100,000	180,000	230,000	550,000	880,000	550,000	150,000	50,000

Thanks,
Chris

Chris Jauregui
+1 (310) 775-1583

From: Peter Alexander Mye <Pmye@swca.com>
Sent: Thursday, October 5, 2023 12:44 PM
To: Chris Jauregui <Chris.Jauregui@plenaryamericas.com>; O'Brien, Sean (DPW) <sean.obrien@sfdpw.org>
Cc: Beth Goldstein <bgoldstein@hydroce.com>; Kempf, Tim (DPW) <Tim.Kempf@sfdpw.org>; Magary, Kerstin <Kerstin.Magary@sfmta.com>; McKellar, Jennifer (CPC) <jennifer.mckellar@sfgov.org>; Dwyer, Debra (CPC) <debra.dwyer@sfgov.org>
Subject: RE: adt'l info needed

Thanks.

Peter A. Mye
Lead Environmental Planner - Senior Project Manager
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From: Chris Jauregui <Chris.Jauregui@plenaryamericas.com>
Sent: Thursday, October 5, 2023 11:37 AM
To: Peter Alexander Mye <Pmye@swca.com>; O'Brien, Sean (DPW) <sean.obrien@sfdpw.org>
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Subject: RE: adt'l info needed

I meant to include the updated paratransit plans noting chassis wash instead of wash bay.

Chris Jauregui
+1 (310) 775-1583

From: Chris Jauregui
Sent: Thursday, October 5, 2023 11:36 AM
To: 'Peter Alexander Mye' <Pmye@swca.com>; 'O'Brien, Sean (DPW)' <sean.obrien@sfdpw.org>
Cc: 'Beth Goldstein' <bgoldstein@hydroce.com>; 'Kempf, Tim (DPW)' <Tim.Kempf@sfdpw.org>; 'Magary, Kerstin' <Kerstin.Magary@sfmta.com>; 'McKellar, Jennifer (CPC)' <jennifer.mckellar@sfgov.org>; 'Dwyer, Debra (CPC)' <debra.dwyer@sfgov.org>
Subject: RE: adt'l info needed

Peter,

See responses below. Still working on responses for the table in question 2.

Thanks,
Chris

Chris Jauregui
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From: Chris Jauregui
Sent: Thursday, October 5, 2023 10:54 AM
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Subject: RE: adt'l info needed

Peter – confirming receipt and PNC is working to get you responses before noon.

Chris Jauregui
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From: Peter Alexander Mye <Pmye@swca.com>
Sent: Thursday, October 5, 2023 10:09 AM
To: Chris Jauregui <Chris.Jauregui@plenaryamericas.com>; O'Brien, Sean (DPW) <sean.obrien@sfdpw.org>
Cc: Beth Goldstein <bgoldstein@hydroce.com>; Kempf, Tim (DPW) <Tim.Kempf@sfdpw.org>; Magary, Kerstin <Kerstin.Magary@sfmta.com>; McKellar, Jennifer (CPC) <jennifer.mckellar@sfgov.org>; Dwyer, Debra (CPC) <debra.dwyer@sfgov.org>
Subject: RE: adt'l info needed
Importance: High

Chris and Sean,
Please confirm receipt of the WSA Update RFI follow-up below and that responses will be provide by noon today. Thanks.

Peter A. Mye
Lead Environmental Planner - Senior Project Manager
Pronouns: He/Him/His/Mr.

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From: Peter Alexander Mye
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Subject: FW: adt'l info needed

Chris,
See below follow-up to your 10/2/23 email and the Refined Project water demand details. @Chris Jauregui and relevant design staff from PNC team such as ARCADIS IBI Group must respond by noon tomorrow. Without a complete response by noon tomorrow the 10/6/23 submission date for the Draft Water Demand Technical Memo will slip.
Yours,
Peter A. Mye
Lead Environmental Planner - Senior Project Manager
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From: Beth Goldstein <bgoldstein@hydroce.com>
Sent: Wednesday, October 4, 2023 5:39 PM
To: Peter Alexander Mye <Pmye@swca.com>
Subject: adt'l info needed

1. Hardscape/Landscape areas provided below do not add up to total project footprint (192,000 SF)

   192,000 SF is just for the podium.

   a. Podium (192,000 SF)
      i. Hardscape = 56,785 SF
      ii. Landscape = 26,282 SF
      iii. Roof = 108,933 SF
   b. Ground, includes sidewalk (34,390 SF)
      i. Hardscape = 31,121 SF
      ii. Landscape = 3,269 SF

2. Are there chassis wash bays at current site? If so, I'll include those with general bus wash down…

   Yes. As discussed, chassis wash bay at ground level and a chassis wash bay for the paratransit.

3. HVAC makeup demand—not sure how to interpret comments below, can we get a gallons per month, by month from Arup?

   Still tracking this down.

HVAC Monthly Demand (gal/mo)											
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4. Describe landscaping—native? Lawn? Drip irrigation?

   Native planting w/ drip irrigation

5. Need to understand what the source is for "water reclamation tanks" (I'm assuming source for "rainwater" storage is roof runoff, and source for "greywater" storage is from commercial/residential grey water fixtures) Also need to understand was the use is for each type of tank (irrigation demand? HVAC demand?)

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