IX. POTABLE WATER

A. Existing Potable Water System

1. Existing Potable Water Supply

Potable water is supplied to Alameda Point by EBMUD. EBMUD has supplied water to the Project Site since 1941. Historical records indicate that when the former NAS Alameda was in operation, the average daily demand of potable water consumed by the Project Site was approximately 2.8 million gallons per day (MGD).

EBMUD supplies potable water to the Project Site through the existing potable water distribution system within the Alameda street network east of Main Street. EBMUD owns and operates a 24-inch transmission water line that crosses the Oakland / Alameda Estuary near the Webster / Posey Tubes. This facility supplies water to the majority of the west end of the City of Alameda. EBMUD's distribution system, ranging in size from 6-inches to 16-inches in diameter, extends from this transmission main to Main Street. There is an existing 10-inch diameter pipeline within Main Street, north of RAMP, and 12-inch and 16-inch diameter pipelines within Main Street to the south between RAMP and Pacific Avenue. Alameda Point receives water via three large existing meters, two (2) 8-inch and one (1) 10-inch, which connect to these EBMUD pipelines in Main Street.

2. Existing Potable Water Distribution System

The existing potable water system within Alameda Point connects to the meters described above and distributes potable and fire water to all areas within the Project Site. This existing system was installed by the Navy and the majority of the system is over 60 years old. In 1986, the existing water system in the southeast portion of the Project Site was reconstructed and new pipelines were installed.

Historically, there were two distinct water systems at Alameda Point, a potable water system and a dedicated fire protection system. The dedicated fire protection system was designed as a high flow deluge system to provide very large fire flows for a short period of time, suitable to protect aircraft and aircraft related activities at the former NAS Alameda. This fire system included large pipelines, up to 24-inch diameter, and up to approximately 1.5 million gallons of on-site storage. The storage facilities included two elevated and two ground level tanks. The fire system also included an on-site pumping plant to boost available fire flows. There is no demand for this type of system since aircraft operations ceased at the Project Site. Additionally, this fire protection system was costly to maintain operable, the elevated tanks required seismic retrofitting and there was insufficient water circulation / turnover in this system resulting in water quality concerns. Therefore, this fire protection system has since been abandoned and fire protection has been converted to the existing potable water system.

The existing potable water system of pipelines ranges in size from 6-inch to 16-inch in diameter. The system is currently owned by the City of Alameda, as it does not meet the standards for EBMUD to accept it into their ownership and system. The existing system remains functional and is providing water service to the existing uses within the Project Site. However, this system is deteriorated, requires frequent maintenance and is not considered reliable. The existing water pipelines are commonly not located in existing or proposed street alignments and portions of the system are located underneath existing buildings. Additionally, the existing system is commonly shallow and does not have adequate cover resulting in pipeline breaks and leaks. EBMUD anticipates that there is a significant amount of potable water that is lost and wasted at the Project Site due to undocumented leakage.

The Project Site is within EBMUD's central pressure zone. A recent fire flow test was conducted on the EBMUD's existing system at the intersection of Stargell Ave and Main Street. This fire flow test indicated that the static pressure of the system is 71 psi and the residual pressure at 2,000 gpm is 66 psi.

Currently, EBMUD operates and maintains the existing water system on behalf of the City of Alameda through a Joint Powers Agreement (JPA). See Figure 45 depicting the existing on-site potable water system and meters that supply water to the Project Site.

B. Proposed Potable Water System

1. Proposed Potable Water Demand & Supply

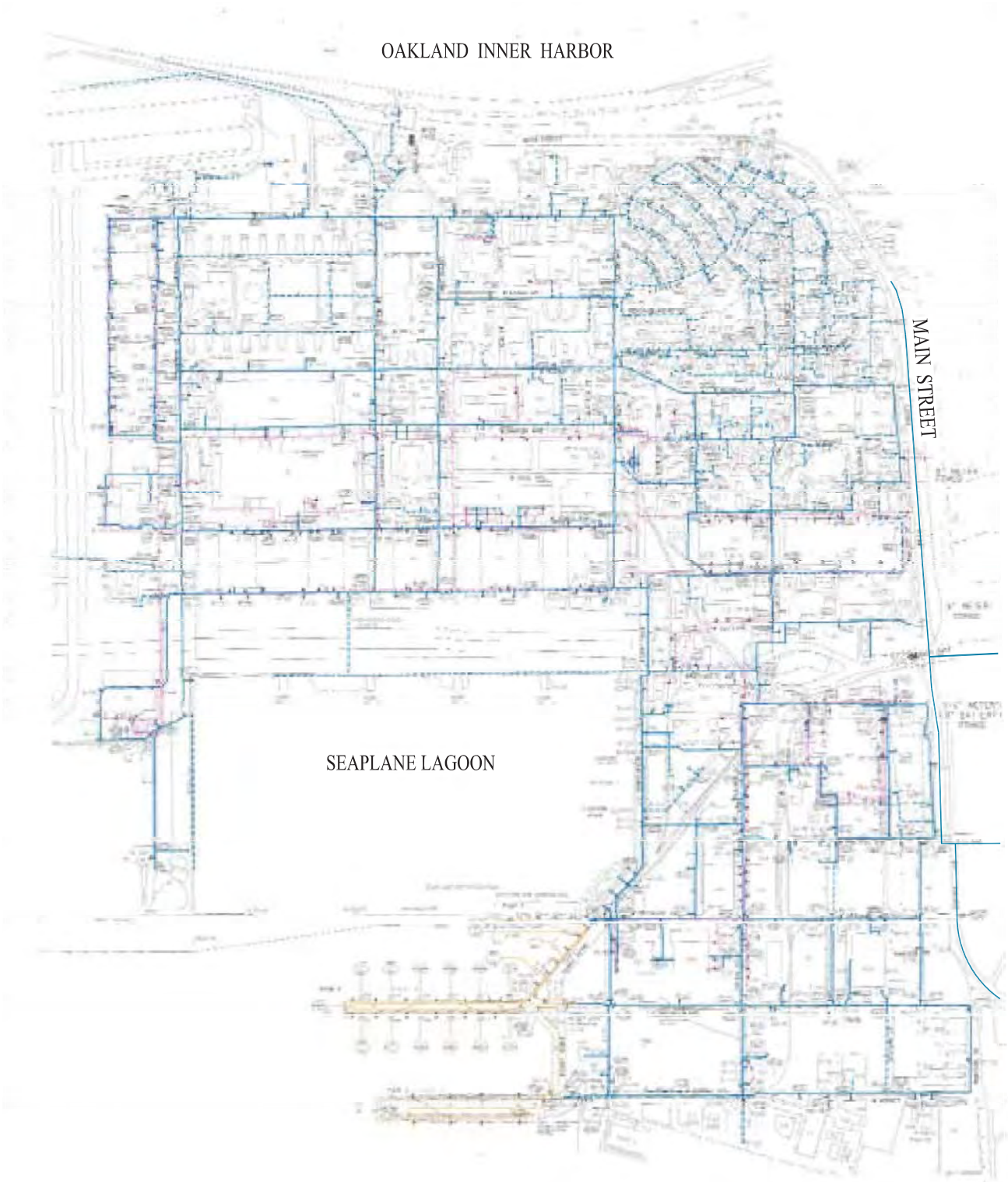
The total estimate average daily demand of potable water at full build-out of the redevelopment of Alameda Point is approximately 2.06 MGD. The potable water demand for the various proposed land uses and each Sub-District are outlined in Table 10 and Table 11. These potable water demand factors do not account for the implementation of water conserving fixtures throughout the proposed buildings. The estimated demand includes 0.95 MGD of irrigation demand at the Project Site. This maximum demand does not assume the use of recycled water for the irrigation demand or for other permitted uses, such as toilet flushing within commercial buildings. The potable water demand will be decreased accordingly with the delivery and use of recycled water at the Project Site. Additionally, this development will commit to a range of sustainable strategies that achieve reductions in water consumption, which will further reduce the estimated water demand.

Table 10 - Potable Water Flow Generation Factors

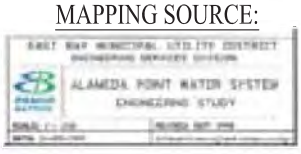
Land Use	Flow Factor
Residential	280 GPD / Unit or 165 GPD / Unit
Commercial	0.084 GPD / SF or 0.15 GPD / SF
Hotel	100 GPD / Room
Park	3,040 GPD / Net Acre
Marina	22 GDP / Slip

Table 11 - Estimated Potable Water Demand (Buildout)

Land Use	Units	Square Footage	Acres	Estimated Flow (MGD)
Residential	1,425			0.38
Commercial		5,500,000		0.51
Hotel	300			0.03
Park			311	0.94
Marina	530			0.01
VA Development Area			75	0.19
			Total Potable Water Flow:	**2.06**



MAPPING SOURCE:



ALAMEDA POINT
MASTER INFRASTRUCTURE PLAN
CITY OF ALAMEDA ALAMEDA COUNTY CALIFORNIA
DATE: OCTOBER, 2013 SCALE: 1" = 1,000'±
Carlson, Barbee, & Gibson, Inc.

FIGURE 45
EXISTING WATER SYSTEM

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EBMUD recently (August 2013) completed a water supply assessment (WSA) for the proposed project, including the transit oriented mixed use alternative. The WSA indicates that EBMUD has a long history of supplying water to the Project Site. The WSA concludes that EBMUD has adequate supply for the proposed project and alternative. Similarly, EBMUD's 2010 Urban Water Management Plan has included the water demand projections associated with the redevelopment of the site, maintaining adequate supply allocation to the Project Site.

2. Proposed Potable Water Distribution System

The proposed water distribution system will be owned and operated by EBMUD. The system shall be designed and constructed consistent with EBMUD's Standard Specifications for Pipelines 20-inches and smaller. The pipeline material for pipelines that are smaller than 12-inches in diameter will be polyvinyl chloride (PVC). Pipelines that are 12-inches in diameter and larger will be mortar-lined and plastic coated steel. Flexible connections or other flexible designs will be implemented at locations where differential settlement is anticipated.

The potable water distribution system will also provide fire water supply for the Project Site. The potable water system will be designed to provide the maximum daily demand plus a fire flow. Conservatively, the assumed fire flow design criteria is 3,000 gpm for 2 hours at a residual pressure of 20 psi from any three adjacent or reasonably nearby fire hydrants flowing at the same time.

The proposed water distribution system provides the maximum daily demand plus fire flow without storage facilities or booster pumps required.

Appropriate backflow prevention facilities will be required for all fire service connections and any connections (permanent or temporary) to the existing on-site distribution system.

a. Development Areas

A new potable water distribution system will be installed within the Development Areas at Alameda Point. The proposed distribution pipelines will connect to the existing EBMUD water facilities in Main Street. The existing water system will be replaced with the existing system in phases consistent with the development build-out. The proposed distribution system will range in size from 8-inch to 16-inch in diameter. The proposed water distribution facilities will be installed within all backbone streets providing reliable potable and fire water to all development parcels within the Development Areas. See Figure 46 depicting the proposed potable water system.

b. Reuse Areas

The Reuse Areas within Alameda Point initially will continue to utilize the existing potable water distribution system through an enhanced maintenance program. This program will incrementally replace the existing system. These incremental improvements will be coordinated through the City of Alameda and EBMUD to ensure the improvements are implemented orderly and addressing priority areas. The exterior pipeline loop within W. Redline Street, Monarch Street, W. Tower Avenue and Pan Am Street shall be prioritized. This improved loop will provide a more reliable system with adequate water pressure for fire protection within the Reuse Areas. Additionally, each development project within the Reuse Areas will replace the potable and fire water lateral serving that site.

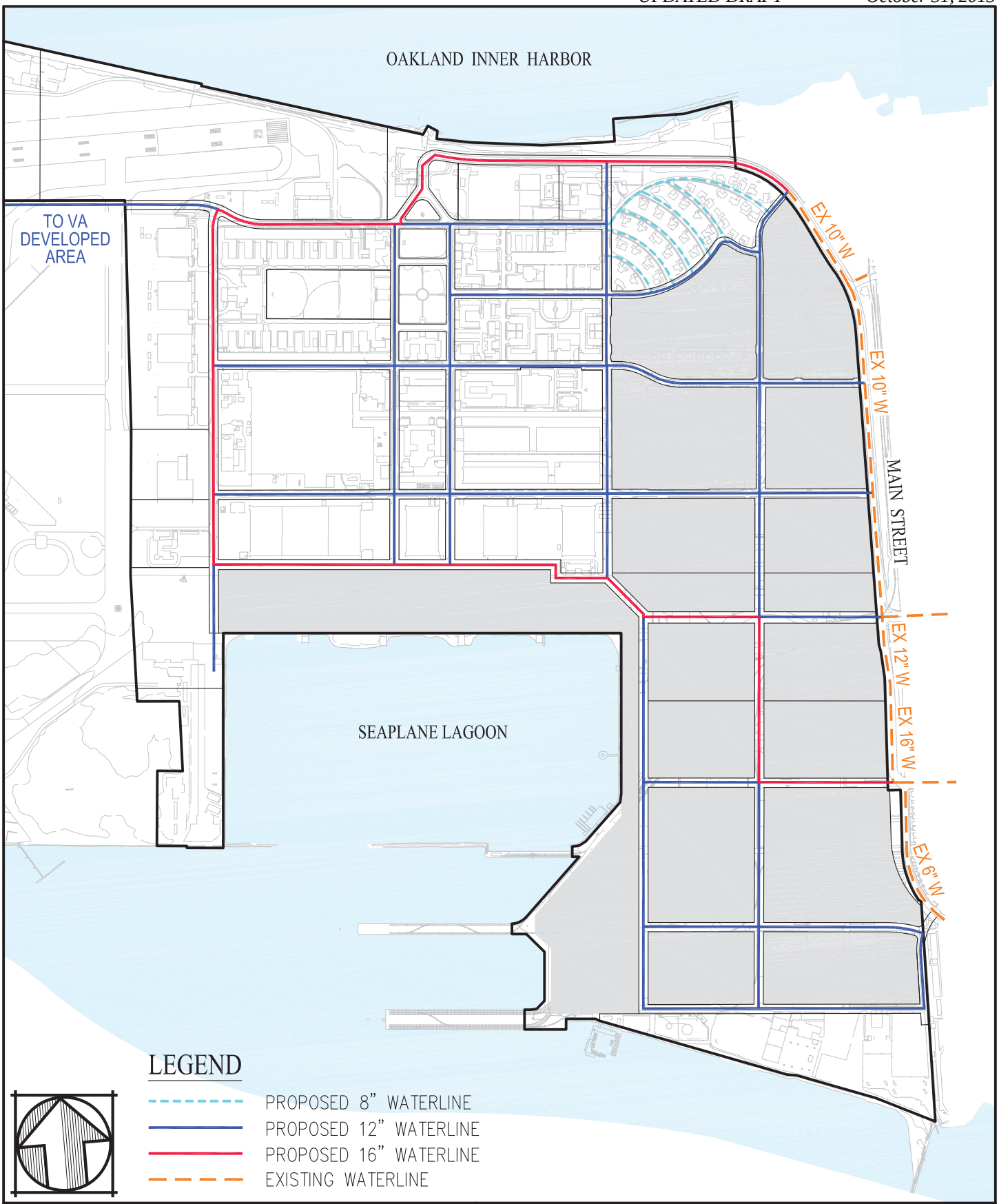

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FIGURE 46
PROPOSED ULTIMATE WATER SYSTEM

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Ultimately, the potable water distribution system within the Reuse Areas will be replaced. The proposed distribution system will be similar to the system proposed within the Development Areas, including new pipelines and appurtenances. The replacement of the potable water system within the Reuse Areas will be completed over time as described in the Phasing and Implementation Section XIII.

C. Value Engineering Opportunities

A value engineering opportunity for the potable water system is to adjust the fire flow design criteria. The governing design parameter establishing the required pipeline sizes within the Project Site is the fire flows. The fire flow criteria assumed by the MIP is high in comparison to surrounding cities. Once more specific development details are available, such as sizes of proposed structures within defined areas of the site, this design parameter could be refined and reduced. The final fire flow design shall be confirmed with the City of Alameda Fire Department and be consistent with the current version of the California Fire Code. The current code allows for 50% reductions in the required fire flow when buildings are sprinklered, which is intended for the buildings at Alameda Point. Assuming reduced flow rates of 1,500 GPM typical residential construction and 2,500 GPM for commercial buildings, this would reduce the backbone infrastructure costs by approximately $4.2 million.