

**OCEAN BEACH COMMUNITY PLAN UPDATE
POTABLE WATER TECHNICAL REPORT**

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POTABLE WATER SERVICE PRESSURES

The majority of the Ocean Beach community is served by the Point Loma 260 Pressure Zone. Figure 1 shows the boundaries of the existing pressure zones in the Ocean Beach area. Finish grade elevations within the Ocean Beach community planning area range from 10 feet to 140 feet. This range of elevations results in a water system static pressure range of 52 psi minimum to 108 psi maximum. The maximum static pressure conforms to the City of San Diego Public Works Department static pressure guidelines which indicate a desirable maximum pressure of 120 psi. However, the minimum static pressure falls below the desirable pressure of 65 psi. Even though the minimum static pressure does not meet the guidelines, adequate domestic water service can be provided with this available pressure.

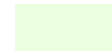
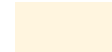

This low-pressure situation is often unavoidable along the upper elevations of a pressure zone boundary as several water service factors are considered in determining the boundary of a service pressure zone. These factors include maximum and minimum static pressures, the availability of a higher pressure zone to provide service, and the ability of maintaining water service redundancy when extending a higher pressure zone service into a lower zone area. Many times it is better to provide lower than desirable pressure but to do so with a more robust distribution system that is well looped and can provide superior water service redundancy.

A small portion of the Ocean Beach community planning area is served currently by the Catalina 462 Pressure Zone as shown in Figure 1. This area is bounded by Santa Cruz Avenue on the north, Ebers Street on the west, and Coronado Avenue on the south. The eastern boundary of the Catalina 462 Pressure Zone extends beyond the boundary of the Ocean Beach community planning area which follows Froude Street. Elevations in this area range from 110 feet to 190 feet. Thus, the static water pressures range from 118 psi to 152 psi. The high side of the static pressure exceeds the City's desirable pressure limit; however, due to the higher elevations and the need to provide adequate service pressures, the City is utilizing the adjacent pressure zone which results in the higher pressures. Because of the higher service pressures, it is evident that the City is restricting the use of the higher pressure zone to as small an area as possible.

LEGEND

 Ocean Beach Community Plan Boundary

Water Service Pressure Zone

-  260
-  390
-  462

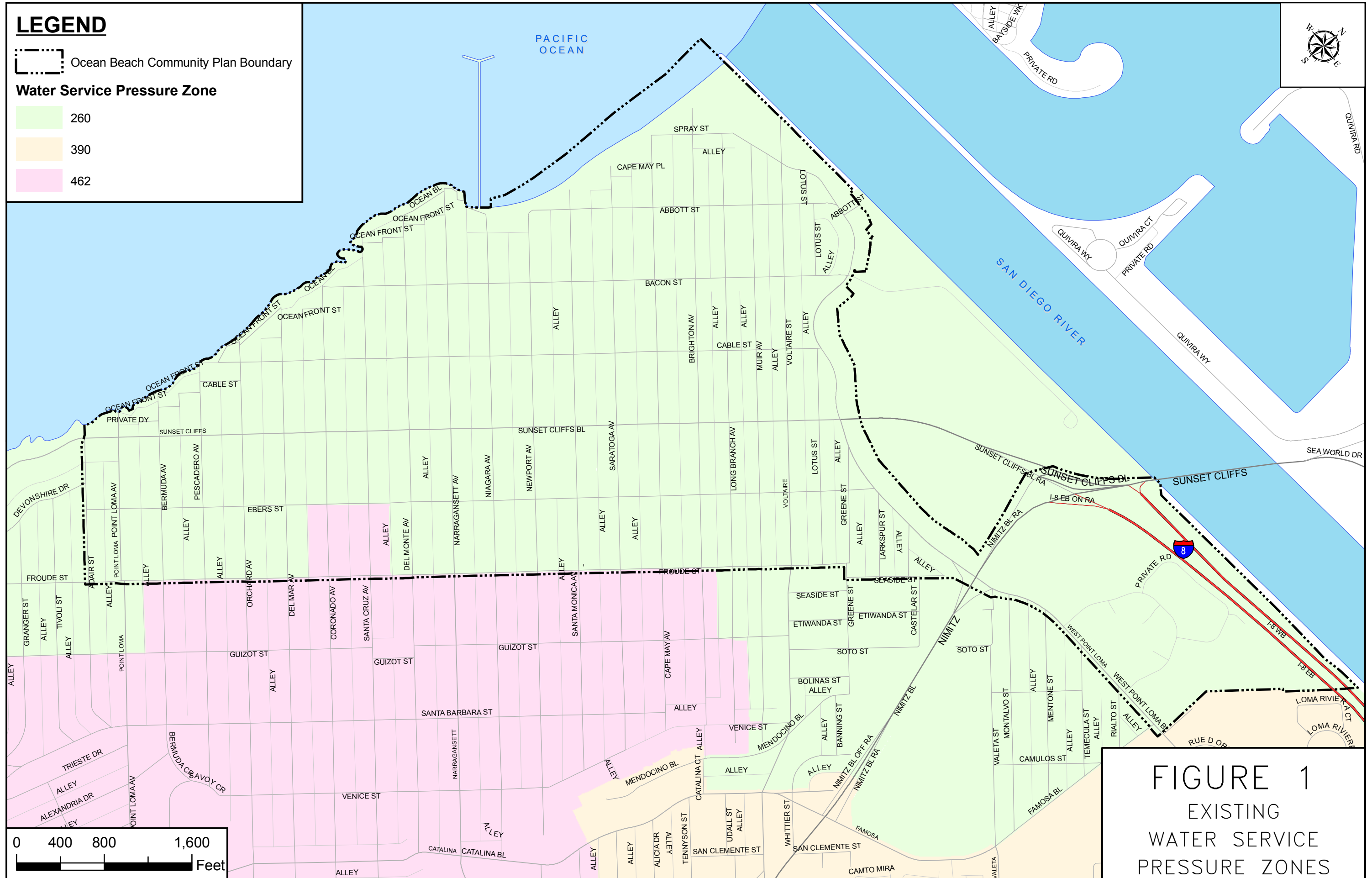


FIGURE 1
EXISTING
WATER SERVICE
PRESSURE ZONES

\\PACIFIC\dwg\592001\GIS\FIGURE-1.mxd

System operating pressures are expected to be lower than static pressure due to pressure loss as water moves through the distribution system. Under daily operating conditions, the working pressures are estimated to be approximately 6 psi lower than static pressure. This is based on City of San Diego Engineering and Program Management Water Modeling Department computer modeling of the Ocean Beach area. The computer modeling is based on existing demands.


POTABLE WATER SYSTEM REDUNDANCY

Potable water service to the Ocean Beach planning area is provided by the Point Loma 260 Pressure Zone. This pressure zone is supplied through a system of three pressure regulating stations. All three of these pressure regulating stations are located east of the Ocean Beach community planning area; however, they are critical in providing reliable water service to the Ocean Beach community.





The locations of the three pressure reducing stations are shown in Figure 2. Data for the pressure reducing stations is presented in Table 1 below.

TABLE 1 EXISTING PRESSURE REDUCING STATIONS		
Location	Supply Zone	Reducing Valve Size
West Point Loma Boulevard	University City 390	12"
Catalina Boulevard and Voltaire Street	University City 390	10"
Catalina Boulevard and Varona Street	Catalina 462	12" and 4"

LEGEND

 Ocean Beach Community Plan Boundary

Water Main by Pressure Zone

-  260
-  307
-  390
-  462

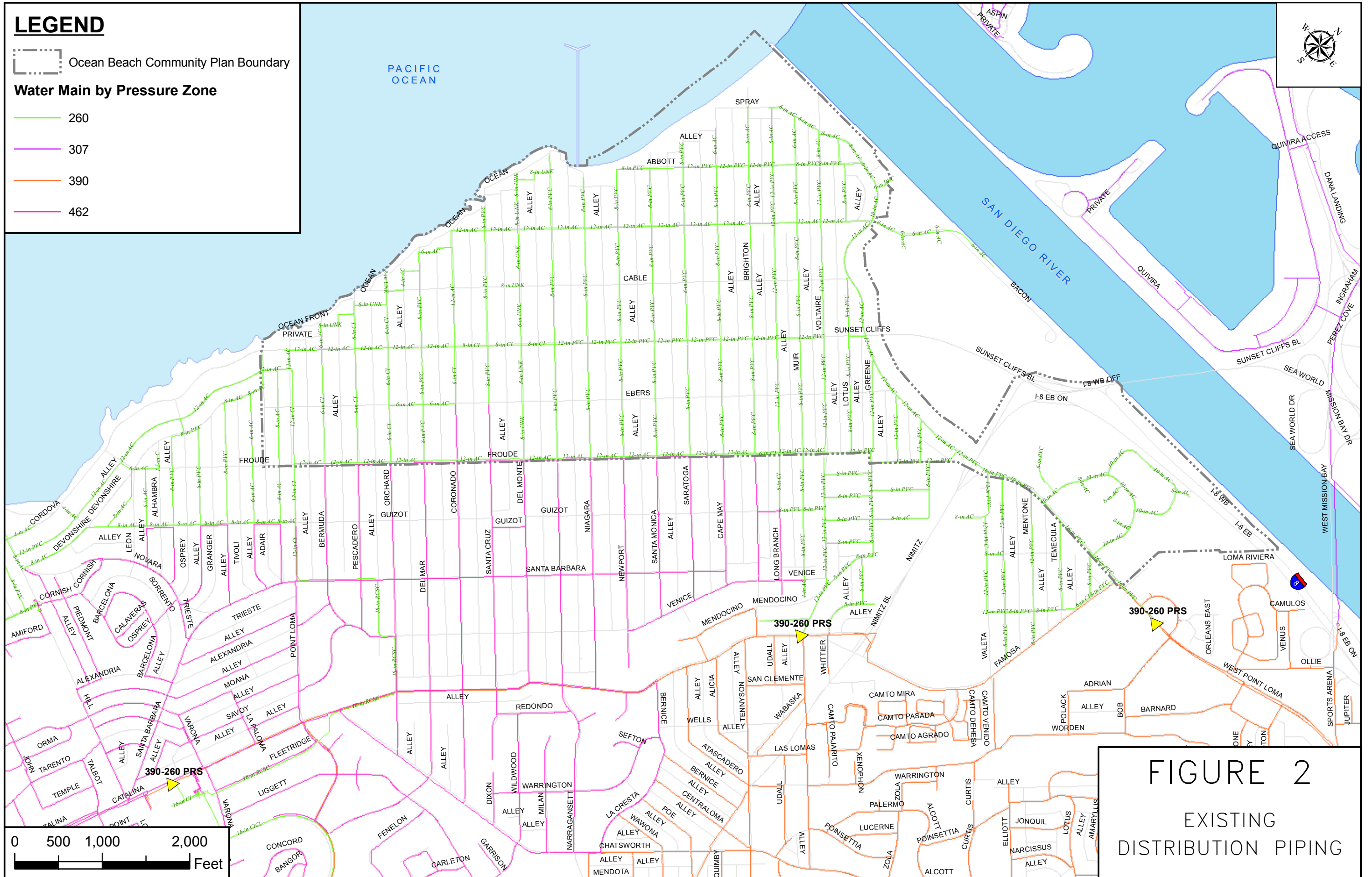


FIGURE 2
EXISTING
DISTRIBUTION PIPING

\\PACIFIC\dwg\592001\GIS\FI\FIGURE 2.mxd

The three pressure reducing stations which feed the Point Loma 260 Pressure Zone provide redundancy so that if ever one station was out of service, water delivery to the Point Loma 260 Pressure Zone would not be interrupted. Redundancy ensures that public health and safety are protected in that water quality and quantity are maintained to the public and fire fighting capability is always assured.

FIRE FLOW BASED ON ZONING

The City of San Diego Public Utilities Department water system guidelines address fire flow capability for the water distribution system. For water system planning purposes, expected fire flow requirements are based on land use. A brief summary of the fire flow demands for planning purposes is as follows.

- Single family residential 2,000 gpm
- Duplexes 2,500 gpm
- Multi-family (condos, apts) 3,000 gpm
- Commercial 4,000 gpm
- Industrial 6,000 gpm

For the Ocean Beach community planning area, the applicable fire flow demands are those for single family residential, multi-family residential, and commercial. Fire flow demands are analyzed at critical locations to ensure that the required flow can be delivered by the water distribution system while maintaining a minimum residual pressure of 20 psi in the piping system.

To confirm the adequacy of the water distribution system for the Ocean Beach community planning area, the City of San Diego Engineering and Program Management Water Modeling Department prepared several computer model runs for fire flows at critical areas of Ocean Beach. The results of this modeling indicate that residual pressures in the vicinity of the fire flow are approximately 20 psi below the expected residual pressure under average day conditions. In no areas of the community are residual pressures below the minimum requirement of 20 psi.

POTABLE WATER SUPPLY

Water supply for the Ocean Beach community is addressed as part of the City of San Diego's comprehensive city-wide approach. Water supply planning is an on-going effort by the City of San Diego Long-Range Planning and Water Resources Division. This division of the City's Public Utilities Department has the responsibility to forecast expected water demand throughout the City and ensure that adequate sources of water are available to meet the demand.

Water demand projections are affected primarily by two factors: land use changes and population growth. Land use changes may increase water demand when higher density development is proposed where a lower density land use existed, or water demand may decrease if land use intensity is lowered. For the Ocean Beach community plan, there are no land use changes being proposed. Therefore, there is no change expected to the estimated build-out water demand for the Ocean Beach community planning area.

The second factor in projecting future water demand is population growth. This component of the water demand projections is addressed by using future population projections developed by SANDAG. The use of the SANDAG projections provides a measure of uniformity and stability in the growth estimates because the database used by SANDAG is much greater than the City of San Diego. In addition, all the local agencies subscribe to and rely on the SANDAG data for their future growth forecasting in many different fields of interest and for numerous purposes.

To address the State of California requirement as well as to fulfill the local need to project future water supply needs, the City of San Diego, as well as all other water purveyors, prepares an urban water management plan once every five years. This document addresses historical and projected water use within the City's service area, it discusses efforts for developing local water sources and for continuing water conservation practices among its customers, it summarizes water supply sources, and ensures that sufficient water supply will be available to meet projected demands for a 20-year study period.

The latest City of San Diego Urban Water Management Plan is dated 2010. This document concludes that sufficient water supply is available to meet the projected water demands through the year 2035. Since there are no land use changes planned for the Ocean Beach community planning area, and since the expected population growth in Ocean Beach is taken into account by the SANDAG projections which are used as the basis for water demand projections, the 2010 Urban Water Management Plan indicates that sufficient water is available for the City of San Diego; therefore, sufficient water supply is available for the Ocean Beach community planning area through the year 2035.

CAST IRON MAIN REPLACEMENT PROGRAM

The currently funded City of San Diego water system capital improvement program began in 1998. One of its goals was to fund the replacement of all cast iron water mains within the City's water system. Since 1998, the City has endeavored to replace about 10 miles of cast iron distribution piping throughout the City's water system every year. Ocean Beach is one of the older neighborhoods within the City; therefore, it would be expected that much of the original water system distribution piping was constructed with cast iron pipe.

In fact, some of the original cast iron distribution piping was replaced in the 1980s and 1990s. Replacement piping is customarily polyvinyl chloride pipe (PVC). Recently there have been several capital improvement projects that have targeted the remaining cast iron pipes in Ocean Beach for replacement. Specifically, the following capital improvement projects have addressed cast iron main replacement in the Ocean Beach community planning area over the last three years:

- Famosa Accelerated Sewer and Water Main Replacement Project (May 2009 – Dec. 2010)
- Water Main Replacement Group 717 (Dec. 2009 – Oct. 2010)
- Water Main Replacement Group 718A (Dec. 2009 – Oct. 2010)
- Sewer and Water Main Replacement Group 544 (Dec. 2009 – Mar. 2011)

Together these recent construction projects have replaced approximately 7,900 linear feet of cast iron distribution pipe. Cast iron pipe in sizes 6", 8", and 10" have been replaced with 12" PVC pipe. A 1,000-foot section of 12" cast iron pipe in West Point Loma Boulevard was replaced with 16" PVC piping. Larger diameter pipe is being used to replace the existing cast iron mains in order that the distribution piping is better able to provide the flows and pressures needed for the current land use zoning in this area.

At present, it is estimated that 59 percent of the water distribution piping within the Ocean Beach community planning area is constructed of PVC. Another 34 percent of the piping is asbestos cement. Only 7 percent of the existing piping is cast iron.

The City of San Diego Engineering and Capital Projects Department is in design for a project to replace 22,005 linear feet of cast iron main in the south end of the Ocean Beach community planning area. This project is estimated to go to construction around September 2012; estimated completion of construction is November 2013. Once this project is completed, all the cast iron mains in the Ocean Beach community planning area will have been replaced with PVC piping.

ASBESTOS CEMENT PIPE REPLACEMENT PROGRAM

Once the City of San Diego water system capital improvement program completes the replacement of all cast iron distribution mains in the City, the next effort will be to replace all the asbestos cement distribution piping. The current projection is that the asbestos cement piping replacement will begin in 2017.

Asbestos cement pipe replacement is not being done because there is any inherent health hazard associated with the use of asbestos cement pipe for water distribution. In fact, this type of pipe is corrosion resistant, functions well under pressure, has good strength characteristics to withstand earth and traffic loads when buried, has smooth interior surfaces which minimize pressure loss due to friction, and was relatively inexpensive to install. This type of pipe was used almost exclusively for 6" through 14" distribution piping for many years until PVC pipe gained acceptability and made use of its cost advantage relative to asbestos cement pipe.

The main reason to replace asbestos cement pipe is to avoid the potential asbestos fiber exposure when performing maintenance work on the piping. Asbestos fibers are not released from the pipe under routine operation. Only when the pipe is broken or cut is there a possibility that fibers will be released. For this reason, as well as the age of the pipes, the City will be embarking on a program to replace asbestos cement pipe in their distribution system.

SERVICE PRESSURE ZONE MODIFICATIONS

As part of the cast iron main replacement program, the City evaluates existing water system service problems and makes every effort to address solutions in concert with the cast iron main replacement construction. In the case of the Ocean Beach area, there is a portion of this area that is serviced by the Catalina 462 Pressure Zone because the larger pressure zone, the Point Loma 260 Pressure Zone, cannot provide sufficient pressure. This area is bounded by Santa Cruz Avenue on the north, Ebers Street on the west, and Coronado Avenue on the south. The result of using the Catalina 462 Pressure Zone is that service pressures are increased beyond the City's preferred guidelines.

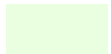
Therefore, the upcoming cast iron replacement project includes a component of work that will modify the size of the higher pressure service area as well as reduce the service pressures within this new service area. The new service area will remain located between Ebers Street and Froude Street but is proposed to extend from Del Monte Avenue on the north to Orchard Avenue on the south. This will more than double the service area that will receive higher pressures than can be provided by the Point Loma 260 Pressure Zone. Figure 3 shows the existing and proposed new service area graphically.

The means of accomplishing this modification will be to create a new 330 Pressure Zone. This will supply greater pressure than the Point Loma 260 Pressure Zone but will not supply as great a pressure as the current Catalina 462 Pressure Zone. Thus, the water system pressures in this new service area will fit within the City's pressure guidelines of minimum 65 psi and maximum 120 psi.

LEGEND

 Ocean Beach Community Plan Boundary

Water Service Pressure Zone

 Existing 260

 Existing 462

 Proposed 330

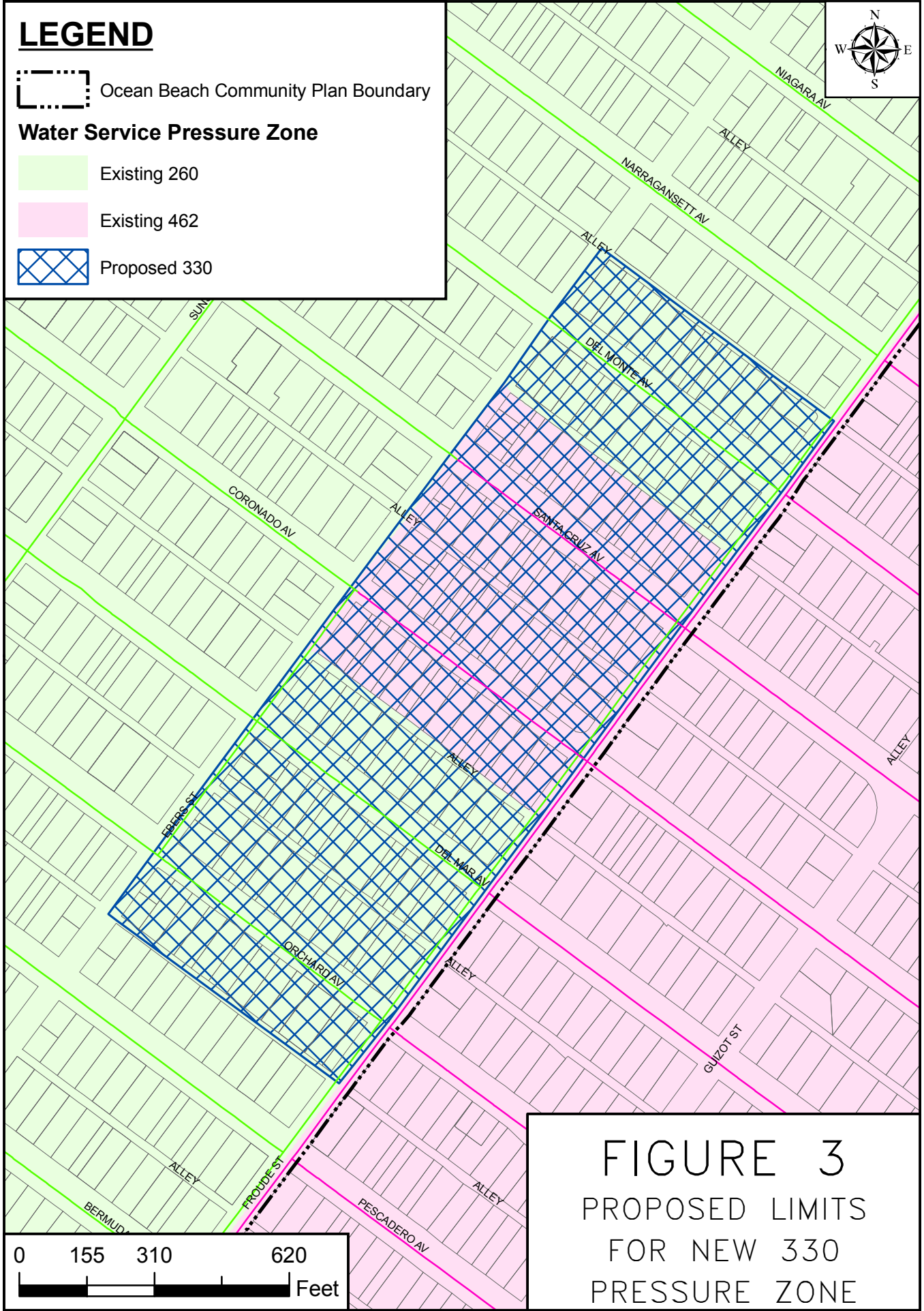


FIGURE 3
PROPOSED LIMITS
FOR NEW 330
PRESSURE ZONE

CONCLUSION

The water distribution system serving the Ocean Beach community planning area is in good condition to provide adequate service pressures and reliable service for the future. Since there are no land use changes being proposed for the Ocean Beach community planning area, future water supply is estimated based on SANDAG projections and planned for by the City's long-range water supply planning department. The next several years will see the replacement of the remaining cast iron distribution piping; then, within a 10 to 20 year time frame, it is expected that the existing asbestos cement piping will be replaced. These improvements along with the service pressure zone modifications will result in a reliable water distribution system for the Ocean Beach community planning area.