



### 3.0 Existing System

#### 3.1 General

The City of Rancho Palos Verdes is located in the western most portion of Los Angeles County. It is bounded on the north by Palos Verdes Estates, on the east by Rolling Hills Estates and the City of Lomita, on the south by the City of San Pedro and unincorporated county areas, and on the west by the Pacific Ocean.

**Figure 3-1 Rancho Palos Verdes Views**



The city boundaries contain approximately 13.6 square miles of area and 7.5 miles of coastline. The reported population in 2000 was 41,145 capita and this is estimated to have increased to 42,800 capita in 2009.<sup>2</sup> The population is not expected to increase dramatically and the few vacant areas remain for development and the developments that do occur will have limited impact on the overall population. The City is currently revising its General Plan and there is a strong community feeling that the semi-rural nature of the community should be preserved.

The climate of the City is Mediterranean with average annual rainfall of 13.17 inches. The majority of this rainfall occurs during January, February and March. The steep terrain of the City allows most of the rainfall to drain quickly with little observed surface flooding. The average temperature varies from 67° F in the winter to 80° F in the summer.

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<sup>2</sup> State of California, Department of Finance, *E-5 Population and Housing Estimates for Cities, Counties and the State, 2001-2009, with 2000 Benchmark*. Sacramento, California, May 2009



The topology of the City is considered one of its best assets rising from a rugged coastline on the south and west to elevations of over 1400 feet above sea level in the area around Marymount College. The areas of Abalone Cove and Portuguese Bend have had major landslide activities. In these areas a new collection system consisting of grinder pumps, low pressure sewer lines, lift stations, and gravity pipes has been installed. The steep terrain and rocky soils have created a sewer system with many interesting features. These would include a wide use of vertical curves and structural retards to prevent the pipelines from shifting down the hillsides.

### **3.2 Land Use**

The land use in the City is 98% residential. There are no known major industrial or commercial contributors to the collection system.

**Figure 3-2 Rugged Coastline**





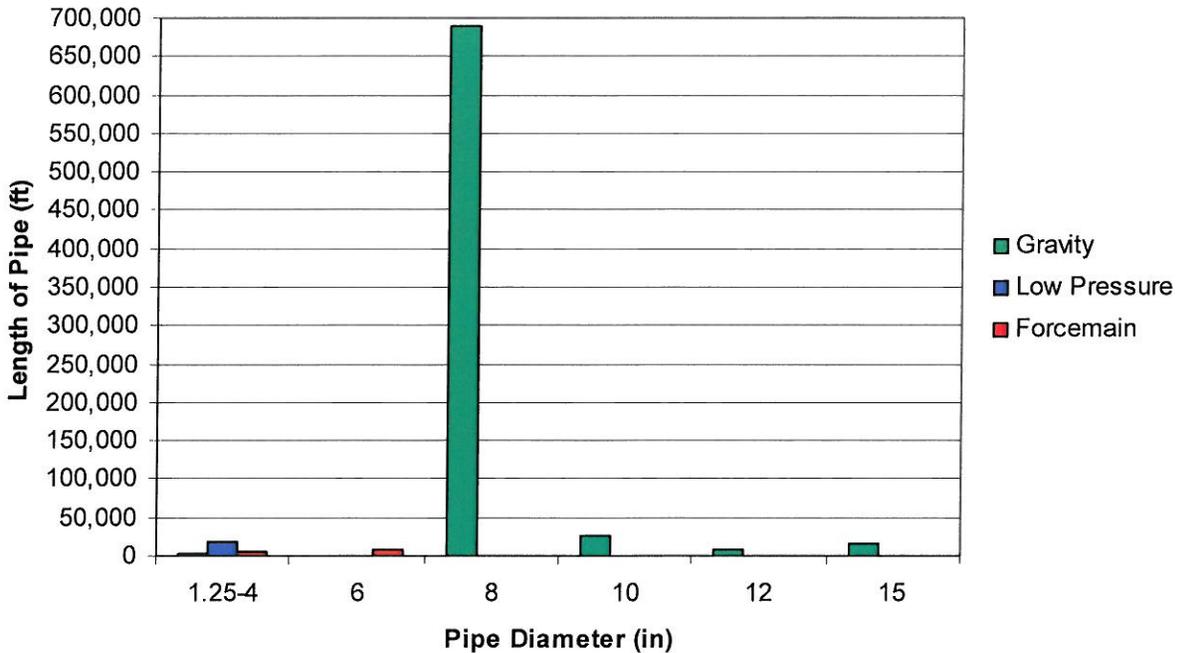
### 3.3 Collection System Description

Located within the City of Rancho Palos Verdes is approximately 790,000 linear feet of wastewater conveyance pipelines, 17 primary lift stations, 44 grinder pumps, and approximately 3,707 manholes. The gravity pipe ranges in size from 8 inches in diameter to 15 inches in diameter. The low pressure sewer pipelines in the Abalone Cove area range from 1.25 inches to 4 inches in diameter.

**Table 3-1 Summary of City Conveyance Pipelines, Entire System**

Pipe Diameter (inches)	Total Length of Gravity Pipe (feet)	Total Length of Low Pressure Pipe (feet)	Total Length of Forcemain (feet)
1.25-4	1,872	18,549	3,943
6	465	0	6,609
8	690,309	1,065	590
10	25,155	0	0
12	8,837	0	0
15	16,169	0	0

**Length of Pipe by Pipe Diameter**





The collection system is further characterized by considering the age and materials used in its construction. The following tables show the distribution of these characteristics.

**Table 3-2 Pipe Age Distribution**

Decade Constructed	Length of Gravity Pipe (feet)	Percent Cumulative	Length of Forcemain (feet)	Percent Cumulative
1950-1959	145,449	19.54%	0	0.00%
1960-1969	400,868	73.38%	1,550	5.27%
1970-1979	119,735	89.47%	855	8.18%
1980-1989	29,059	93.37%	481	9.81%
1990-1999	23,616	96.54%	20,426	79.28%
2000-2009	16,478	98.76%	2,221	86.83%
Unknown	9,265	100.00%	3,872	100.00%
<b>Total</b>	<b>744,470</b>		<b>29,405</b>	

**Table 3-3 Pipe Material Distribution**

Material	Length of Gravity Pipe (feet)	Percent Cumulative	Length of Forcemain (feet)	Percent Cumulative
Vitrified Clay Pipe	700,270	94.06%	5,135	17.46%
Plastic (all types)	41,422	99.63%	18,931	81.84%
Ductile Iron Pipe	110	99.64%	4,817	98.22%
Cast Iron Pipe	521	99.71%	522	100.00%
LVCP	1,823	99.96%		
Steel	324	100.00%		
<b>Total</b>	<b>744,470</b>		<b>29,405</b>	

The dominant material used in the system is Vitrified Clay Pipe (VCP) at just over 94%. Prior to the 1970s it was common practice to install VCP pipe sections without gaskets. The prevailing theory was that the additional groundwater that flowed into the pipe was beneficial in cleaning and flushing the pipe. This practice results in easy entry into the pipes of roots from surrounding trees and hedges. Note that over 80% of the system was installed before gasketed joints became common.

The majority of the system (over 73%) is now more than 40 years old and made of VCP. The average service life for VCP pipe is generally accepted as 50 years. This leaves the remaining design service life for most of the system at less than 10 years. As a result there will most likely be an increasing trend in pipe structural failures with time.



### 3.4 Abalone Cove

The area known as Abalone Cove is of special consideration due to the presence of 44 grinder pumps in the area, with 41 of them serving one residence and 3 duplex grinder pumps serving two or more residences. The three duplex grinder pumps are located on Abalone Cove Shoreline Park, off of West Pomegranate Drive, and off of Vanderlip Road. The system was installed in 2001 to replace septic systems in landslide areas. There are 130 manholes, 1 diversion structure, approximately 19,000 linear feet of gravity pipeline, 19,615 linear feet of low pressure pipe, and 2,505 linear feet of forcemain. A summary of the length of pipe and their associated diameters is provided in Table 3-4.

**Table 3-4 Summary of City Conveyance Pipelines, Abalone Cove**

Pipe Diameter (inches)	Total Length of Gravity Pipe (feet)	Total Length of Low Pressure Pipe (feet)	Total Length of Forcemain (feet)
1.25-4	0	19,615	1,840
6	0	0	665
8	19,000	0	0
10	0	0	0
12	0	0	0
15	0	0	0



Figure 3-3 Wastewater Collection System

