

ROSS VALLEY SANITARY DISTRICT

SEWER CONNECTION FEE STUDY



August 8, 2013



in association with

V. W. Housen & Associates

ROSS VALLEY SANITARY DISTRICT

2960 Kerner Blvd.
San Rafael, CA 94901

CONNECTION FEE STUDY

August 8, 2013

HF&H CONSULTANTS, LLC

201 North Civic Drive, Suite 230
Walnut Creek, CA 94596

in association with

V. W. HOUSEN & ASSOCIATES

185 Front Street, Suite 207
Danville, CA 94526

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HILTON FARNKOPF & HOBSON

HF&H CONSULTANTS, LLC

Managing Tomorrow's Resources Today

201 North Civic Drive, Suite 230
Walnut Creek, California 94596
Tel: (925) 977-6950
Fax: (925) 977-6955
hfh-consultants.com

Robert D. Hilton, CMC
John W. Farnkopf, PE
Laith B. Ezzet, CMC
Richard J. Simonson, CMC
Marva M. Sheehan, CPA

August 8, 2013

Mr. Greg Norby
General Manager
Ross Valley Sanitary District
2960 Kerner Blvd.
San Rafael, CA 94901

Subject: **Connection Fee Study - Final Report**

Dear Mr. Norby,

HF&H and V.W. Housen & Associates are pleased to submit this Connection Fee Study to the District. We appreciate this opportunity to assist the District with this study.

Very truly yours,

HF&H CONSULTANTS, LLC

A handwritten signature in cursive script, reading 'John W. Farnkopf', written over a horizontal line.

John W. Farnkopf, P.E.
Senior Vice President

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ACRONYMS

CIP	Capital Improvement Plan
CMSA	Central Marin Sanitation Agency
EDU	Equivalent Dwelling Unit; the average indoor water use for a detached single-family residential account
FY	Fiscal Year
GPD	Gallons per Day
HCF or CCF	Hundred Cubic Feet of metered water; 748 gallons; a cube of water 4.6 feet on edge
IAMP	Infrastructure Asset Management Plan
MGD	Million Gallons per Day
RCN	Reproduction Cost New
RCNLD	Reproduction Cost New Less Depreciation

SD 2 Sanitary District No. 2
SQP San Quentin Prison
VWHA V.W. Housen and Associates

ACKNOWLEDGEMENTS

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HF&H Consultants, LLC

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V. W. Housen & Associates

Vivian Housen, President

CONNECTION FEE STUDY

1. EXECUTIVE SUMMARY

Customers connecting to the District pay a one-time connection fee at the time of connection to reimburse rate payers for costs they incurred to provide capacity for growth. New customers also pay a separate connection fee that pays for capacity in the Central Marin Sanitation Agency's wastewater conveyance and treatment facilities. The District collects CMSA's connection fee on behalf of CMSA but has no part in setting CMSA's connection fee. This study is only concerned with deriving the District's connection fees and has no bearing on the amount of CMSA's connection fee.

FINDINGS AND RECOMMENDATIONS

- 1. Current connection fee.** The District's current connection fee was set by Ordinance 37 in 1991. The charge for all connections is \$500 for the first ten fixture units and \$50 per additional fixture unit. Commercial and industrial accounts pay an additional \$0.20 per square foot over 2,000 square feet of building size.
- 2. Proposed fee structure.** We recommend modifying the fee structure to one in which customers are billed on the basis of equivalent dwelling units (EDUs). This will standardize the connection fees with the sewer service charges, which are also based on EDUs. An EDU is defined as the average indoor water use, or sewer flow generation, of a single family residence (SFR). The average ratio of fixture units to SFR's for new development is 23, based the past five years of new connections. This ratio of fixture units per EDU provides the District a basis for determining incremental connection fees for partial EDUs, such as for remodeling or for capacity requirements that exceed how much capacity was previously paid for.
- 3. Proposed connection fees.** The results of the present analysis increase the current connection fee of \$500 to \$4,532 per EDU. This amount is based on the value of the District's existing facilities excluding depreciation and developer contributions. The minimum connection fee is for one EDU, with proportional increases for new connections that have fixture unit counts over the 23 unit count for one EDU. A subsequent update to the connection fee will be required to incorporate the increased system value of future facilities after the completion of the Infrastructure Asset Management Plan, which is expected in the fall of 2013.
- 4. Implementation.** We recommend that the District annually escalate the connection fee to reflect construction cost inflation using the *Engineering News Record* Construction Cost Index. In this way, the connection fee will keep pace with inflation. The fee should be recalculated every time the District updates its facilities master plan. Over the last ten years, the ENR Cost Index has increased

approximately 3% per year on average. The District should plan on updating the connection fee on a five-year basis, similar to rates, in order to incorporate changes in system value, EDU features, or other relevant factors in order to avoid having the fee become out of date relative to the objective basis.

In addition to the foregoing, other policy factors may need to be considered in implementing the connection fee update. For example, the increase could be phased in over a period of years to avoid “fee shock” to new customers.

2. INTRODUCTION

BACKGROUND

The District provides wastewater collection and conveyance services for approximately 15,000 residential and business accounts with a population of approximately 50,000 in the City of Larkspur and in the Towns of Ross, San Anselmo, Fairfax (collectively known as Ross Valley). Wastewater collected in the District's collection system is transported to the CMSA wastewater plant for treatment and disposal.

The District charges connection fees to new connections. In addition to charging a connection fee associated with the District's collection system, the District also collects a connection fee on behalf of CMSA. CMSA is responsible for determining its connection fees, which it refers to as "capacity charges".

Connection fees are a type of development impact fee that public agencies may impose as a condition of development under the authority of California Government Code Section 66000 *et seq.*, the Mitigation Fee Act. The purpose of connection fees is to ensure that development pays its fair share of the costs associated with providing system capacity. Connection fees are a one-time charge paid prior to the time that the connection is made. The Act requires that "those fees or charges shall not exceed the estimated reasonable cost of providing the service"¹. Because the Act does not prescribe a formula or procedure for determining "the estimated reasonable cost," it is the responsibility of the analyst to employ a method that yields a reasonable result.

The courts generally regard fees as being reasonable if they are not capricious, arbitrary, or discriminatory. Fees are capricious if there is no factual basis for the underlying data used to make the calculations. Fees are arbitrary if there is no logical rationale for choosing among alternatives. Fees are discriminatory if they disproportionately allocate costs to one class of service at the expense of another class. The purpose of this report is to document that the conditions have been met to establish that the District's sewer service connection fee is reasonable.

CONNECTION FEE HISTORY

Based on ordinances provided by the District, the history of connection fees is summarized in **Figure 2-1**, including the current fee, which was adopted in 1991. Prior to 1991, the fee was called a "permit fee" until 1991 when the name was changed to "connection fee." The structure of the fee has evolved from one that was charged per "unit" to one that is now charged on the basis of fixture units and, for commercial and

¹ California Government Code Section 66013(a).

industrial connections, also on the basis of square feet. By current standards, the \$500 connection fee is very low.

Figure 2-1. Connection Fee History

Ordinance 26 July 1, 1959 Permit Fee	\$25 per unit connected directly to sewer; \$15 per unit connected to laterals or stubs; \$10 per multi-family unit after first.
Ordinance 32 February 1, 1982 Permit Fee	\$200 per unit up to 20 fixture units; \$10 per additional fixture unit.
Ordinance 33 May 21, 1985 Permit Fee	\$300 per unit up to 10 fixture units; \$30 per additional fixture unit; \$0.10 per square foot over 2,000 square feet for commercial and industrial buildings.
Ordinance 37 November 5, 1991 Connection Fee	\$500 per unit up to 10 fixture units; \$50 per additional fixture unit; \$0.20 per square foot over 2,000 square feet for commercial and industrial buildings.

Source: RVSD ordinances.

No documentation exists for the derivation of the District's current connection fee.

APPROACH

Three steps are required to determine the reasonable costs that can be recovered from connection fees: (1) facilities that benefit growth must be identified, (2) the reasonable cost of those facilities must be derived, and (3) the capacity provided by those facilities must be determined. The approach used in this report to address each of those steps is described below.

Facilities That Benefit Growth

Connection fees are used to recover growth's fair share of the costs of existing facilities that were funded by rate payers and that provide capacity for growth. Connection fees can also be used to recover growth's fair share of the costs of future capital improvements that are identified in the facilities master plan. The combination of the existing and future facilities comprise the facilities that will be needed to serve existing and future customers within the foreseeable planning horizon.

The existing gravity mains, force mains, and pump stations were inventoried, but the future facilities have not been included at this time. Pending completion of the IAMP, which will identify the future capital improvements, the future facilities will be added to the existing facilities to determine the total value of the infrastructure that is planned for existing and future customers.

Reasonable Cost of Facilities

The determination of reasonable costs begins by determining the maximum value of the facilities followed by appropriate deductions. The maximum value is the amount that it would cost the District to construct its facilities today, which is referred to as “reproduction cost new” (RCN) by utility valuation specialists.

Although the RCN value is higher than the original cost of construction paid for by rate payers, RCN value can serve as a reasonable basis for the connection fee. Reasonable costs include the actual construction costs plus subsequent costs incurred in maintaining the capacity for future use by growth, when and if growth occurs. In return for advancing the construction and maintenance cost of capacity for growth, rate payers are also entitled to receive a return on their investment as a reward for risking an uncertain reimbursement. Calculating the value of capacity in today’s dollars escalates the original cost to reflect the subsequent cost of maintenance and a reasonable return.

After the RCN value is determined, deductions may be appropriate. The most common deduction is for depreciation. Depreciation is often included in the RCN value for purposes of calculating connection fees, however, it is excluded in the case of a transfer of ownership.² Clearly, a buyer would not expect to pay the RCN value for a used system. For purposes of calculating connection fees, however, the District is not selling its capacity; the District is recovering its costs. Depreciation serves as a proxy for the maintenance and appreciation in value that the rate payers are entitled to recover since the facility was constructed. If depreciation were completely deducted, the facilities could be undervalued, particularly in cases where facilities that are fully depreciated on the books are still in service.

To illustrate this point, consider the following example. Pipeline A and Pipeline B are identical in all respects except age. Pipeline A is 70 years old and Pipeline B is one year old. In this study, both pipelines have the same RCN value in 2013 dollars. Pipeline A’s 2013 RCN value is much greater than its original cost. The amount by which that value is greater is assumed to represent (1) the cost of 70 years of maintenance required to maintain the capacity for growth to connect to at growth’s convenience and (2) the opportunity cost rate payers are entitled to recover for having spent their rates on providing capacity for growth rather than for other purposes.

Both Pipeline A and B provide the same capacity for growth; there is no difference in connecting to either pipeline. If the capacity were being sold, a willing buyer would expect to pay less for Pipeline A because it is older. Indeed, assuming a 50-year service life, Pipeline A would be fully depreciated and of no value – even though it is still in service. However, the capacity is not being sold when setting a connection fee – the cost

² For estimating fair market value, the courts recognize RCNLD value, or “reproduction cost new less depreciation.”

is being reimbursed. To allow the reimbursement to occur, the value is based on the cost in today's dollars without deducting depreciation.

This example reflects conditions in which full maintenance expenses were, in fact, incurred and not deferred. It is typically the case that substantial maintenance was deferred. To account for this, it is reasonable to exclude some or all depreciation. The amount of depreciation that should be deducted is subject to judgment. Often, for lack of any other basis, all of the depreciation is deducted. For purposes of this study, the RCN value should be considered the maximum justifiable value and the RCNLD should be considered the lowest value that should be considered – putting aside any other appropriate adjustments, as mentioned in the next section of this study.

Capacity For Growth

Because the current study only includes existing facilities, the proposed connection fee is based on the current number of connections plus projected growth during the foreseeable future. This form of connection fee calculation is known as the “buy-in” approach. By paying the connection fee, new connections buy into the District at a level of capital participation equal to existing connections. After the IAMP is completed, the future facilities will be added to the existing facilities to determine the combined value, which will be divided by the total existing connections plus foreseeable growth to determine the connection fee.

3. CALCULATION METHODOLOGY

The calculation of the connection fee is dependent on not only the value of the reimbursement that is due rate payers for providing capacity for growth, but the value of the reimbursement that is due rate payers for providing capacity for growth. This section discusses the recommended fee structure and the derivation of the value, the capacity, and the resulting connection fee.

FEE STRUCTURE

The District's connection fee has historically been charged on the basis of fixture units and, for commercial and industrial customers, also on square footage of building size, as shown in Figure 2-1. In order to simplify and standardize the calculation of fees, it is recommended that the connection fee structure should be modified to charge per EDU. Single family and multi family connections would be charged one EDU per dwelling unit. Non-residential connections would be charged per EDU based on the estimated indoor water use divided by the number of gallons per EDU.

The District can charge fractions of EDUs when customers add fixture units due to remodeling or when non-residential customers' discharges exceed the capacity that was estimated for determining their prior connection fees. In order to charge accounts partial connection fees based on fixture units, the District will need to define the number of fixture units per EDU. The District has historically used 250 gpd per EDU. The source of this amount is not documented but has been used by other wastewater agencies in Marin County. This amount is also significantly higher than recent years' average indoor water use, as indicated by actual metered data from Marin Municipal Water District (MMWD). Based on updated indoor water use for average single family residences, the wastewater flow generation per EDU is estimated at 170 gpd. Using the average fixture unit count for new development of 23, this equates to a wastewater flow per fixture unit of 7.4 gpd per fixture unit. As part of future updates to the connection fee, the District should update these averages to reflect the most recent trends in average wastewater generation rates.

VALUE OF FACILITIES

The value of the District's facilities is based on an inventory compiled by V.W. Housen & Associates (VWHA) for the gravity and force mains and for the pump stations. The value of the District's facilities was determined in 2013 dollars based on current construction cost estimation data. HF&H added indirect costs based on experience with a variety of public agencies as summarized in **Figure 3-1**.⁴

⁴ *Indirect Cost Evaluation*, Figure 9. Prepared by HF&H for the Bay Area Water Supply and Conservation Agency based on actual construction costs and bids for water, wastewater, transportation, and building construction projects. 2005.

The value of the District’s existing facilities is summarized in **Figure 3-2**; the detailed analysis may be found in the appendix. The value does not include facilities or assets that are related to CMSA’s wastewater treatment and disposal facilities and that presumably are recovered in CMSA’s capacity charge. Depreciation is itemized as well as other deductions and adjustments to the RCN value.

Figure 3-1. Indirect Costs

Cost Item	Percent of Construction Cost
Program Management	1%
Project Management	4%
Pre-Design Planning	4%
Environmental Review	2%
Engineering Design	10%
Construction Management	10%
Fees	1%
Total	32%

Source: HF&H, cited in footnote 4.

Developer contributions related to in-tract facilities were deducted from the asset value for smaller mains in the collection system. This deduction conservatively assumes that in-tract facilities only benefit each tract with no surplus capacity for future growth. An estimate was required because the District does not have comprehensive records of the contributions made by developers.

Figure 3-2. Value of District Assets

Gravity Mains	\$ 158,333,870
Less: Developer Contributions	(32,056,712)
Total Gravity Mains	126,277,158
Force Mains	43,560,000
Less: Developer Contributions	(541,200)
Less: Adjustment for SD 2 and SQP Capacity	(3,199,752)
Total Force Mains	39,819,048
Pump Stations	67,344,489
Subtotal - RCN value	233,440,694
Depreciation	
Gravity Mains	(66,021,581)
Force Mains	(16,467,189)
Pump Stations	(47,125,324)
Total Depreciation	(129,614,094)
Total - RCNLD value	\$ 103,826,600

Source: Connection Fee Model, Appendix.

Deductions were also made for Sanitary District No. 2's (SD 2) and San Quentin Prison's (SQP) shares of the capacity in the District's transmission facilities used to convey their flows through the District to CMSA. Their use of the capacity renders it unavailable for growth.

We also note that the source of funding was not factored in because of the complexity that would be involved. In other words, the cost of facilities did not depend on whether the facilities were funded on a pay-as-you-go basis from cash or from bond proceeds. Bond-funded facilities could be accounted for differently by including the cost of financing (i.e., interest payments) as well as by excluding any outstanding principal. This would introduce unjustifiable complexity to the calculation because the historical amount of financing cost is not known and adding in the future cost of principal and interest as it is retired has minimal effect. As a practical matter, the full cost of bond-funded projects is included at the time of construction but no financing costs are included.

The result of these deductions and adjustments is a net RCN value of \$233.4 million and a net RCNLD value of \$103.8 million.

CAPACITY IN FACILITIES

Figure 3-3 shows the derivation of the projected capacity in EDUs for existing customers and growth through 2022 based data developed by the Association of Bay Area Governments (ABAG) for the Ross Valley service area communities.

Figure 3-3. District Capacity (EDUs)

Capacity In Facilities (EDUs)	
Capacity Currently Used (CMSA)	22,563
Project Growth Capacity 2014-2022 (ABAG)	
Fairfax	61
Larkspur	132
Ross	18
San Anselmo	106
Marin County Unincorporated	28
Total Capacity In Facilities	22,908

Source: CMSA 2006 Connection Fee Study and FY 2013-14 Operating Budget.
Source: June 3, 2013 ABAG Report – Final Regional Housing Need Allocations

CONNECTION FEE

The value of the facilities in Figure 3-2 serves as the basis for the connection fee. The connection fee is determined by dividing the value by the capacity shown in Figure 3-3. The resulting connection fees are shown in Figure 3-4. The maximum potential connection fee of \$10,190 per EDU is based on the RCN value net of developer contributions. At this amount, the cost of facilities plus estimated subsequent maintenance is fully recovered. The minimum connection fee of \$4,532 per EDU is based on RCNLD value, which deducts all of the depreciation. In effect, the minimum value recovers the cost of the facilities but does not recover estimated subsequent maintenance. In view of the fact that the District deferred maintenance, it is reasonable to deduct a portion of depreciation. Deducting all of the estimated depreciation yields a conservatively low connection fee that should be readily defensible.

Figure 3-4. Connection Fee Calculation

Maximum Connection Fee	
System Value (RCN)	\$ 266,038,607
Less: Developer Contributions	<u>(32,597,912)</u>
Net System Value (RCN)	\$ 233,440,694
Capacity (EDUs)	22,908
Connection Fee per EDU	\$ 10,190
Minimum Connection Fee	
Net System Value (RCN)	\$ 233,440,694
Less: Depreciation	<u>(129,614,094)</u>
Net System Value (RCNLD)	\$ 103,826,600
Capacity (EDUs)	22,908
Connection Fee per EDU	\$ 4,532

Source: Connection Fee Model, Appendix.

4. CONNECTION FEE COMPARISON

Figure 4-1 compares the District’s existing and proposed connection fees with other neighboring agencies. For purposes of comparison, the minimum connection fee in **Figure 3-4** is used. The proposed connection fee compares well with the connection fees for other neighboring collection systems. Note the proposed RVSD connection fee does not include the administrative, labor, and inspection staff time fee.

Because some of the agencies’ fees include both collection and treatment facilities, CMSA’s treatment connection fee has been added to the District’s collection system connection fee to show the full cost per connection.

Figure 4-1. Comparison of Connection Fees

Agency	Collection	Treatment	Total
CMSA Treatment			
Ross Valley Sanitary District			
Current	\$500	\$5,261	\$5,761
Proposed	\$4,532	\$5,261	\$9,793
San Rafael Sanitation District	\$3,083	\$5,261	\$8,343
Sanitary District No. 2	\$2,103	\$5,261	\$7,364
SASM Treatment			
City of Mill Valley	\$5,000	\$0	\$5,000
Richardson Bay Sanitary District	\$8,786	\$0	\$8,786
Tamalpais Valley Community SD	\$4,504	\$0	\$4,504
Combined Collection & Treatment			
Las Gallinas Valley Sanitary Distri			\$6,200
Novato Sanitary District			\$8,950

Source: RVSD survey.

There are various factors that may lead to differences in connection fees such as when the connection fee was updated last and whether the connection fee includes existing facilities, future facilities, or both. Agencies also have the discretion to set their connection fees lower than the calculated amount as a means of balancing the recovery of growth-related costs from connection fees and rates.

APPENDIX A. CONNECTION FEE MODEL

**Ross Valley Sanitary District
Connection Fee Update**

	Replacement Cost New	Pct. Of Developer Contributions	Developer Contributions	Value Net of Contributions	Depreciation	Value Net of Depreciation
District Assets						
Gravity Mains						
3"	\$19,483	100%	(\$19,483)	\$0	\$0	\$0
4"	\$2,813,910	100%	(\$2,813,910)	\$0	\$0	\$0
5"	\$119,889	100%	(\$119,889)	\$0	\$0	\$0
6"	\$85,210,107	25%	(\$21,302,527)	\$63,907,580	\$34,680,917	\$29,226,663
8"	\$24,293,019	25%	(\$6,073,255)	\$18,219,764	\$7,176,022	\$11,043,742
10"	\$6,910,596	25%	(\$1,727,649)	\$5,182,947	\$2,392,195	\$2,790,752
12"	\$5,931,872	0%	\$0	\$5,931,872	\$2,504,016	\$3,427,856
Above 12"	\$33,034,995	0%	\$0	\$33,034,995	\$19,268,431	\$13,766,564
Total Gravity Mains	\$158,333,870		(\$32,056,712)	\$126,277,158	\$66,021,581	\$60,255,577
Force mains						
3"	\$0	0%	\$0	\$0	\$0	\$0
4"	\$39,600	0%	\$0	\$39,600	\$39,600	\$0
5"	\$0	0%	\$0	\$0	\$0	\$0
6"	\$1,082,400	25%	(\$270,600)	\$811,800	\$426,709	\$385,091
8"	\$910,800	25%	(\$227,700)	\$683,100	\$373,626	\$309,474
10"	\$171,600	25%	(\$42,900)	\$128,700	\$52,706	\$75,994
12"	\$0	0%	\$0	\$0	\$0	\$0
Above 12"	\$41,355,600	0%	\$0	\$41,355,600	\$17,494,400	\$23,861,200
Subtotal - Force Mains	\$43,560,000		(\$541,200)	\$43,018,800	\$18,387,041	\$24,631,759
SD 2 and SQP adjustment	(\$3,199,752)			(\$3,199,752)	(\$1,919,851)	(\$1,279,901)
Total Force Mains	\$40,360,248		(\$541,200)	\$39,819,048	\$16,467,189	\$23,351,859
Pump Stations						
Subtotal	\$67,344,489	0%	\$0	\$67,344,489	\$47,125,324	\$20,219,165
Subtotal	\$266,038,607		(\$32,597,912)	\$233,440,694	\$129,614,094	\$103,826,600
Other Assets						
Fleet	\$0	0%	\$0	\$0	\$0	\$0
Buildings	\$0	0%	\$0	\$0	\$0	\$0
Land	\$0	0%	\$0	\$0	\$0	\$0
Cash Reserves	\$0	0%	\$0	\$0	\$0	\$0
Total Other Assets	\$0		\$0	\$0	\$0	\$0
Grand Total	\$266,038,607		(\$32,597,912)	\$233,440,694	\$129,614,094	\$103,826,600
System Capacity ^{1,2}						
Capacity Used (EDUs)				22,563		22,563
Remaining Capacity (EDUs)				345		345
Total Capacity (EDUs)				22,908		22,908
Connection Fee per EDU				\$10,190		\$4,532

Current Capacity Charge - District	\$500
Current Capacity Charge - CMSA	\$5,261
	<u>\$5,761</u>

¹ Source: Central Marin Sanitation Agency Adopted FY13-14 Operating and Capital Budget

² Source: ABAG study table of future housing units growth by county and by community

Ross Valley Sanitary District Gravity Pipe Inventory and Preliminary Replacement Costs / Timelines											
Assumptions			1.25	32%		2013					
Material/Diameter	Length	Unit Cost \$ per idf	Installed Unit Cost (\$)	Indirect Costs	Total Project Cost	Average Age (Years)	Projected Replacement Year	Useful Life	% Depreciated	Depreciated Cost	Remaining Value
Asbestos Cement Pipe											
						42	2041	70			
6	16221	12	\$ 1,459,890	\$ 467,165	\$ 1,927,055				60%	\$ 1,156,233	\$ 770,822
8	3842	12	\$ 461,040	\$ 147,533	\$ 608,573				60%	\$ 365,144	\$ 243,429
10	902	12	\$ 135,300	\$ 43,296	\$ 178,596				60%	\$ 107,158	\$ 71,438
15	1136	12	\$ 255,600	\$ 81,792	\$ 337,392				60%	\$ 202,435	\$ 134,957
Cast Iron Pipe											
						50	2023	60			
4	12656	12	\$ 759,370	\$ 242,998	\$ 1,002,368				83%	\$ 835,307	\$ 167,061
5	127	12	\$ 9,525	\$ 3,048	\$ 12,573				83%	\$ 10,478	\$ 2,096
6	15625	12	\$ 1,406,250	\$ 450,000	\$ 1,856,250				83%	\$ 1,546,875	\$ 309,375
8	1687	12	\$ 202,440	\$ 64,781	\$ 267,221				83%	\$ 222,684	\$ 44,537
10	140	12	\$ 21,000	\$ 6,720	\$ 27,720				83%	\$ 23,100	\$ 4,620
12	88	12	\$ 15,840	\$ 5,069	\$ 20,909				83%	\$ 17,424	\$ 3,485
Cured in Place Pipe											
						6	2057	50			
6	1355	12	\$ 121,950	\$ 39,024	\$ 160,974				12%	\$ 19,317	\$ 141,657
Ductile Iron Pipe											
						63	2020	70			
4	121	12	\$ 7,260	\$ 2,323	\$ 9,583				90%	\$ 8,625	\$ 958
6	1084	12	\$ 97,560	\$ 31,219	\$ 128,779				90%	\$ 115,901	\$ 12,878
8	453	12	\$ 54,360	\$ 17,395	\$ 71,755				90%	\$ 64,580	\$ 7,176
12	642	12	\$ 115,560	\$ 36,979	\$ 152,539				90%	\$ 137,285	\$ 15,254
16	197	12	\$ 47,280	\$ 15,130	\$ 62,410				90%	\$ 56,169	\$ 6,241
Iron Spun Pipe											
						63	2020	70			
4	651	12	\$ 39,060	\$ 12,499	\$ 51,559				90%	\$ 46,403	\$ 5,156
6	1379	12	\$ 124,110	\$ 39,715	\$ 163,825				90%	\$ 147,443	\$ 16,383
Polyethylene											
						6	2082	75			
6	5580	12	\$ 502,201	\$ 160,704	\$ 662,906				8%	\$ 53,032	\$ 609,873
8	17855	12	\$ 2,142,579	\$ 685,625	\$ 2,828,204				8%	\$ 226,256	\$ 2,601,948
10	1255	12	\$ 188,250	\$ 60,240	\$ 248,490				8%	\$ 19,879	\$ 228,611
12	3044	12	\$ 547,920	\$ 175,334	\$ 723,254				8%	\$ 57,860	\$ 665,394
16	751	12	\$ 180,240	\$ 57,677	\$ 237,917				8%	\$ 19,033	\$ 218,883
PVC											
						16	2072	75			
4	261	12	\$ 15,660	\$ 5,011	\$ 20,671				21%	\$ 4,410	\$ 16,261
6	36479	12	\$ 3,283,120	\$ 1,050,598	\$ 4,333,718				21%	\$ 924,526	\$ 3,409,191
8	50152	12	\$ 6,018,240	\$ 1,925,837	\$ 7,944,077				21%	\$ 1,694,736	\$ 6,249,340
10	8242	12	\$ 1,236,300	\$ 395,616	\$ 1,631,916				21%	\$ 348,142	\$ 1,283,774
12	6781	12	\$ 1,220,542	\$ 390,574	\$ 1,611,116				21%	\$ 343,705	\$ 1,267,411
14	700	12	\$ 147,000	\$ 47,040	\$ 194,040				21%	\$ 41,395	\$ 152,645
15	3593	12	\$ 808,425	\$ 258,696	\$ 1,067,121				21%	\$ 227,652	\$ 839,469
16	985	12	\$ 236,400	\$ 75,648	\$ 312,048				21%	\$ 66,570	\$ 245,478
18	3848	12	\$ 1,038,960	\$ 332,467	\$ 1,371,427				21%	\$ 292,571	\$ 1,078,856
20	169	12	\$ 50,700	\$ 16,224	\$ 66,924				21%	\$ 14,277	\$ 52,647
Reinforced Concrete											
						37	2026	50			
4	325	12	\$ 19,500	\$ 6,240	\$ 25,740				74%	\$ 19,048	\$ 6,692
6	548	12	\$ 49,320	\$ 15,782	\$ 65,102				74%	\$ 48,176	\$ 16,927
8	326	12	\$ 39,120	\$ 12,518	\$ 51,638				74%	\$ 38,212	\$ 13,426
12	1038	12	\$ 186,840	\$ 59,789	\$ 246,629				74%	\$ 182,505	\$ 64,123
18	39	12	\$ 10,530	\$ 3,370	\$ 13,900				74%	\$ 10,286	\$ 3,614
21	123	12	\$ 38,745	\$ 12,398	\$ 51,143				74%	\$ 37,846	\$ 13,297
24	1309	12	\$ 471,270	\$ 150,806	\$ 622,076				74%	\$ 460,336	\$ 161,740
27	1228	12	\$ 497,340	\$ 159,149	\$ 656,489				74%	\$ 485,802	\$ 170,687
30	742	12	\$ 333,900	\$ 106,848	\$ 440,748				74%	\$ 326,154	\$ 114,594
33	173	12	\$ 85,635	\$ 27,403	\$ 113,038				74%	\$ 83,648	\$ 29,390
36	5552	12	\$ 2,998,080	\$ 959,386	\$ 3,957,466				74%	\$ 2,928,525	\$ 1,028,941
39	2845	12	\$ 1,664,325	\$ 532,584	\$ 2,196,909				74%	\$ 1,625,713	\$ 571,196
RPM??											
						38	2025	50			
18	756	12	\$ 204,120	\$ 65,318	\$ 269,438				76%	\$ 204,773	\$ 64,665
24	490	12	\$ 176,400	\$ 56,448	\$ 232,848				76%	\$ 176,964	\$ 55,884
Steel											
						20	2068	75			
6	147	12	\$ 13,230	\$ 4,234	\$ 17,464				27%	\$ 4,657	\$ 12,807
18	142	12	\$ 38,340	\$ 12,269	\$ 50,609				27%	\$ 13,496	\$ 37,113
21	148	12	\$ 46,620	\$ 14,918	\$ 61,538				27%	\$ 16,410	\$ 45,128
30	19	12	\$ 8,550	\$ 2,736	\$ 11,286				27%	\$ 3,010	\$ 8,276
Techite											
						25	2018	30			
18	1241	12	\$ 335,070	\$ 107,222	\$ 442,292				83%	\$ 368,577	\$ 73,715
21	1893	12	\$ 596,295	\$ 190,814	\$ 787,109				83%	\$ 655,925	\$ 131,185
24	727	12	\$ 261,720	\$ 83,750	\$ 345,470				83%	\$ 287,892	\$ 57,578
TTE?											
						50	2023	60			
10	207	12	\$ 31,050	\$ 9,936	\$ 40,986				83%	\$ 34,155	\$ 6,831
Unknown											
						50	2023	60			
6	74	12	\$ 6,660	\$ 2,131	\$ 8,791				83%	\$ 7,326	\$ 1,465
30	202	12	\$ 90,900	\$ 29,088	\$ 119,988				83%	\$ 99,990	\$ 19,998

Ross Valley Sanitary District Gravity Pipe Inventory and Preliminary Replacement Costs / Timelines											
Assumptions			1.25	32%			2013				
Material/Diameter	Length	Unit Cost \$ per idf	Installed Unit Cost (\$)	Indirect Costs	Total Project Cost	Average Age (Years)	Projected Replacement Year	Useful Life	% Depreciated	Depreciated Cost	Remaining Value
Vitrified Clay						50	2053	90			
3	328	12	\$ 14,760	\$ 4,723	\$ 19,483				56%	\$ 10,824	\$ 8,659
4	21515	12	\$ 1,290,900	\$ 413,088	\$ 1,703,988				56%	\$ 946,660	\$ 757,328
5	1084	12	\$ 81,300	\$ 26,016	\$ 107,316				56%	\$ 59,620	\$ 47,696
6	636969	12	\$ 57,327,180	\$ 18,344,698	\$ 75,671,878				56%	\$ 42,039,932	\$ 33,631,946
8	79050	12	\$ 9,486,023	\$ 3,035,527	\$ 12,521,551				56%	\$ 6,956,417	\$ 5,565,134
10	24156	12	\$ 3,623,400	\$ 1,159,488	\$ 4,782,888				56%	\$ 2,657,160	\$ 2,125,728
12	13373	12	\$ 2,407,140	\$ 770,285	\$ 3,177,425				56%	\$ 1,765,236	\$ 1,412,189
14	5014	12	\$ 1,052,940	\$ 336,941	\$ 1,389,881				56%	\$ 772,156	\$ 617,725
15	375	12	\$ 84,375	\$ 27,000	\$ 111,375				56%	\$ 61,875	\$ 49,500
16	27	12	\$ 6,480	\$ 2,074	\$ 8,554				56%	\$ 4,752	\$ 3,802
18	8820	12	\$ 2,381,476	\$ 762,072	\$ 3,143,549				56%	\$ 1,746,416	\$ 1,397,133
21	6414	12	\$ 2,020,410	\$ 646,531	\$ 2,666,941				56%	\$ 1,481,634	\$ 1,185,307
24	1001	12	\$ 360,360	\$ 115,315	\$ 475,675				56%	\$ 264,264	\$ 211,411
30	10676	12	\$ 4,804,200	\$ 1,537,344	\$ 6,341,544				56%	\$ 3,523,080	\$ 2,818,464
33	209	12	\$ 103,455	\$ 33,106	\$ 136,561				56%	\$ 75,867	\$ 60,694
36	4014	12	\$ 2,167,560	\$ 693,619	\$ 2,861,179				56%	\$ 1,589,544	\$ 1,271,635
39	1870	12	\$ 1,093,950	\$ 350,064	\$ 1,444,014				56%	\$ 802,230	\$ 641,784
42	522	12	\$ 328,860	\$ 105,235	\$ 434,095				56%	\$ 241,164	\$ 192,931
VIC??						50	2023	60			
6	1796	12	\$ 161,640	\$ 51,725	\$ 213,365				83%	\$ 177,804	\$ 35,561
			\$ 119,949,901	\$ 38,383,968	\$ 158,333,870					\$ 82,712,666	\$ 75,621,204

Assumptions

- \$12 per inch-diameter-foot for pipe installation only
- Factor of 2 to allow for shoring, mob/demob, air valves, appurtenances
- 30 percent construction contingency
- 25 percent soft costs (engineering, admin, CM, permitting)
- For the two tunneled installations (FM-1 and FM-33), unit cost was increased to \$16/idf
- For installations where an HDPE liner is anticipated, unit cost was reduced to \$10/idf

Estimated Forcemain Replacement Costs and Preliminary Timeline																	
Assumptions		32%										2013					
Asset	Name	Diameter (in)	Length (ft) ^{Note 12}		Install Date (from GIS)	Service Life	Remaining Life	Pipe Installation (\$ per idf)	Pipe Installed (\$/ft) ^{Note 1}	Estimated Costs in 2013 \$			Estimated Replacement Year	Average Age (Years)	% Depreciated	Depreciated Cost	Remaining Value
			From GIS	From As-Built						Baseline Cost	Indirect Costs (Eng'g, Admin, CM)	Total Project Cost					
FM-1	Ross Valley FM to SQ Junction	54	4128	4115	1983	50	20	12	\$ 1,300	\$ 5,350,000	\$ 1,712,000	\$ 7,062,000	2033	30	60%	\$ 4,237,200	\$ 2,824,800
	Ross Valley FM - SQ Junction to CMSA (tunnel)	54	2550	n/a	1983	50	20	16	\$ 1,800	\$ 4,590,000	\$ 1,468,800	\$ 6,058,800	2033	30	60%	\$ 3,635,280	\$ 2,423,520
FM-2	Greenbrae-Kentfield Relief FM	42	4254	4219	1987	50	24	12	\$ 1,100	\$ 4,650,000	\$ 1,488,000	\$ 6,138,000	2037	26	52%	\$ 3,191,760	\$ 2,946,240
	Greenbrae-Kentfield Relief FM Final Segment	54	12	36" Valve	1983	50	20	12	\$ 1,300	\$ 20,000	\$ 6,400	\$ 26,400	2033	30	60%	\$ 15,840	\$ 10,560
FM-10	Landing B	10	189	n/a	1983	75	45	12	\$ 300	\$ 60,000	\$ 19,200	\$ 79,200	2058	30	40%	\$ 31,680	\$ 47,520
FM-11	San Quentin FM	18	3085	n/a	1984	75	46	12	\$ 500	\$ 1,550,000	\$ 496,000	\$ 2,046,000	2059	29	39%	\$ 791,120	\$ 1,254,880
FM-12	Bon Air FM ^{Note 3}	8	74	n/a	1984	75	46	12	\$ 200	\$ 20,000	\$ 6,400	\$ 26,400	2059	29	39%	\$ 10,208	\$ 16,192
FM-13	Greenbrae FM @ PS ^{Note 4}	24	49	n/a	1983	75	45	12	\$ 600	\$ 30,000	\$ 9,600	\$ 39,600	2058	30	40%	\$ 15,840	\$ 23,760
	Greenbrae FM to HWY 101 ^{Notes 4 and 5}	30	3814	2802	1959	50	0	12	\$ 800	\$ 2,250,000	\$ 720,000	\$ 2,970,000	2013	50	100%	\$ 2,970,000	\$ -
FM-14	Larkspur FM ^{Note 6}	20	3282	n/a	1989	75	51	12	\$ 500	\$ 1,650,000	\$ 528,000	\$ 2,178,000	2064	24	32%	\$ 696,960	\$ 1,481,040
FM-15	Kentfield FM ^{Note 7}	36	115	n/a	2011	75	73	12	\$ 900	\$ 110,000	\$ 35,200	\$ 145,200	2086	2	3%	\$ 3,872	\$ 141,328
		36	3522	3546	2011	75	73	12	\$ 900	\$ 3,200,000	\$ 1,024,000	\$ 4,224,000	2086	2	3%	\$ 112,640	\$ 4,111,360
		36	3496	3450	2011	75	73	10	\$ 800	\$ 2,760,000	\$ 883,200	\$ 3,643,200	2086	2	3%	\$ 97,152	\$ 3,546,048
		32	1789	2290	2011	75	73	10	\$ 700	\$ 1,610,000	\$ 515,200	\$ 2,125,200	2086	2	3%	\$ 56,672	\$ 2,068,528
		42	2138	2087	2010	75	72	12	\$ 1,100	\$ 2,300,000	\$ 736,000	\$ 3,036,000	2085	3	4%	\$ 121,440	\$ 2,914,560
		42	83	49	2010	75	72	12	\$ 1,100	\$ 60,000	\$ 19,200	\$ 79,200	2085	3	4%	\$ 3,168	\$ 76,032
		24	48	n/a	2011	75	73	12	\$ 600	\$ 30,000	\$ 9,600	\$ 39,600	2086	2	3%	\$ 1,056	\$ 38,544
		36	1452	n/a	1972	30	0	10	\$ 800	\$ 1,170,000	\$ 374,400	\$ 1,544,400	2013	30	100%	\$ 1,544,400	\$ -
FM-20	Landing A	8	1088	n/a	1978	75	40	12	\$ 200	\$ 220,000	\$ 70,400	\$ 290,400	2053	35	47%	\$ 135,520	\$ 154,880
FM-21	Highway 101 ^{Note 8}	4	279	n/a	1957	50	0	12	\$ 100	\$ 30,000	\$ 9,600	\$ 39,600	2013	50	100%	\$ 39,600	\$ -
FM-22	Cape Marin	6	56	n/a	1987	75	49	12	\$ 200	\$ 20,000	\$ 6,400	\$ 26,400	2062	26	35%	\$ 9,152	\$ 17,248
FM-23	Capurro	6	386	n/a	1989	75	51	12	\$ 200	\$ 80,000	\$ 25,600	\$ 105,600	2064	24	32%	\$ 33,792	\$ 71,808
FM-24	630 S. Eliseo ^{Note 9}	10	31	n/a	1989	75	51	12	\$ 300	\$ 10,000	\$ 3,200	\$ 13,200	2064	24	32%	\$ 4,224	\$ 8,976
		10	17	n/a	1964	75	26	12	\$ 300	\$ 10,000	\$ 3,200	\$ 13,200	2039	49	65%	\$ 8,624	\$ 4,576
FM-24a	Alternative FM (PS24)	10	28	n/a	1961	75	23	12	\$ 300	\$ 10,000	\$ 3,200	\$ 13,200	2036	52	69%	\$ 9,152	\$ 4,048
		8	745	n/a	1961	75	23	12	\$ 200	\$ 150,000	\$ 48,000	\$ 198,000	2036	52	69%	\$ 137,280	\$ 60,720
FM-25	1350 S. Eliseo	10	125	n/a	1991	70	48	12	\$ 300	\$ 40,000	\$ 12,800	\$ 52,800	2061	22	31%	\$ 16,594	\$ 36,206
		8	487	n/a	1961	70	18	12	\$ 200	\$ 100,000	\$ 32,000	\$ 132,000	2031	52	74%	\$ 98,057	\$ 33,943
		8	868	n/a	1985	70	42	12	\$ 200	\$ 180,000	\$ 57,600	\$ 237,600	2055	28	40%	\$ 95,040	\$ 142,560
FM-30	Heather Gardens	6	643	n/a	1980	70	37	12	\$ 200	\$ 130,000	\$ 41,600	\$ 171,600	2050	33	47%	\$ 80,897	\$ 90,703
FM-31	1 Via LaBrisa	6	783	n/a	1968	70	25	12	\$ 200	\$ 160,000	\$ 51,200	\$ 211,200	2038	45	64%	\$ 135,771	\$ 75,429
FM-32	1 Corte del Bayo ^{Note 10}	6	67	n/a	1968	75	30	12	\$ 200	\$ 20,000	\$ 6,400	\$ 26,400	2043	45	60%	\$ 15,840	\$ 10,560
FM-33	415 Riviera Circle (Creek Crossing) ^{Note 11}	6	664	n/a	1966	30	0	16	\$ 200	\$ 140,000	\$ 44,800	\$ 184,800	2013	30	100%	\$ 184,800	\$ -
		6	897	n/a	1987	75	49	12	\$ 200	\$ 180,000	\$ 57,600	\$ 237,600	2062	26	35%	\$ 82,368	\$ 155,232
FM-34	359 Riviera Circle	6	389	n/a	2001	75	63	12	\$ 200	\$ 80,000	\$ 25,600	\$ 105,600	2076	12	16%	\$ 16,896	\$ 88,704
FM-35	2 Corte del Coronado	8	5	n/a	1966	70	23	12	\$ 200	\$ 10,000	\$ 3,200	\$ 13,200	2036	47	67%	\$ 8,863	\$ 4,337
FM-36	178 Riviera Circle	6	5	n/a	1963	70	20	12	\$ 200	\$ 10,000	\$ 3,200	\$ 13,200	2033	50	71%	\$ 9,429	\$ 3,771
FM-37	Larkspur Plaza	8	5	n/a	1962	50	0	12	\$ 200	\$ 10,000	\$ 3,200	\$ 13,200	2013	50	100%	\$ 13,200	\$ -
										\$ 33,000,000	\$ 10,560,000	\$ 43,560,000					
																\$ 18,671,387	\$ 24,888,613

- Notes:
- Unit cost multiplied by 2X to allow for shoring, mob/demob, ARVs and other appurtenances
 - Contingency allows for unknowns encountered during design and construction associated with buried facilities
 - GIS data did not include diameter for FM-12. Diameter taken from SSRMP
 - FM-13 is shown on as-builts as 30" RCCP. Original construction cost: \$61,000.
 - Approximately 1400 lf of FM-13 was relocated under HWY101 in 1968 - labeled as RCP
 - District plans to abandon PS14-to-PS13 Bypass (FM-14.11-J_FM-14.21-V_PS13)
 - All but one techite pipe section through Bon Air shopping center was replaced in 2010 & 2011. District plans to slipline remaining pipe for use as a dry weather bypass pipeline.
 - SSRMP lists material for FM21 as DI
 - Entire FM may have been replaced in 1989 - District to confirm.
 - SSRMP lists material for FM-32 as ACP
 - GIS does not include material data for FM-33. Information is from SSRMP. SSRMP lists PVC pipe as installed in 1987.
 - Length shown in bold is used to calculate cost

Estimated Pump Station Replacement Costs and Preliminary Timeline																					
Assumptions					50%	75%	32%				2013										
Asset	Name	Max of PWWF/Firm Capacity from SHECAP (mgd)	Year Installed	Projected Timeframe for Upgrades	Estimated Cost in 2013 \$										Projected Year for Upgrade (mid range)	Average Age (Years)	Remaining Life	Service Life	% Depreciated	Depreciated Cost	Remaining Value
					Construction Cost (Range)		Construction Cost (mid of range)	Indirect Costs	Total Project Cost (mid of range)												
					From																
PS-10	Landing B	2.42	2007	2030 to 2040	\$ 1,212,121	\$ 1,818,182	\$ 1,515,152	\$ 484,848	\$ 2,000,000	2035	6	22	28	21%	\$ 428,571	\$ 1,571,429					
PS-11	San Quentin	2.88	1985	2013 to 2020	\$ 1,440,000	\$ 2,160,000	\$ 1,800,000	\$ 576,000	\$ 2,376,000	2017	28	4	32	89%	\$ 2,112,000	\$ 264,000					
PS-12	Bon Air	1.86	1986	2013 to 2020	\$ 930,000	\$ 1,395,000	\$ 1,162,500	\$ 372,000	\$ 1,534,500	2017	27	4	31	89%	\$ 1,358,410	\$ 176,090					
PS-13	Greenbrae	9.96	1959	2013 to 2020	\$ 4,980,000	\$ 7,470,000	\$ 6,225,000	\$ 1,992,000	\$ 8,217,000	2017	54	4	58	94%	\$ 7,716,835	\$ 500,165					
PS-14	Larkspur Main	8.56	1984	2030 to 2040	\$ 4,280,000	\$ 6,420,000	\$ 5,350,000	\$ 1,712,000	\$ 7,062,000	2035	29	22	51	57%	\$ 4,015,647	\$ 3,046,353					
PS-15	Kentfield	48.60	1972	2030 to 2040	\$ 24,297,521	\$ 36,446,281	\$ 30,371,901	\$ 9,719,008	\$ 40,090,909	2035	41	22	63	65%	\$ 26,090,909	\$ 14,000,000					
PS-24	630 S. Eliseo	1.52	1961	2013 to 2020	\$ 760,000	\$ 1,140,000	\$ 950,000	\$ 304,000	\$ 1,254,000	2017	52	4	56	94%	\$ 1,174,919	\$ 79,081					
PS-25	1350 S. Eliseo	1.41	1961	2013 to 2020	\$ 705,000	\$ 1,057,500	\$ 881,250	\$ 282,000	\$ 1,163,250	2017	52	4	56	94%	\$ 1,089,892	\$ 73,358					
PS-20	Landing A	0.36	1978	2013 to 2020	\$ 180,000	\$ 432,000	\$ 306,000	\$ 97,920	\$ 403,920	2017	35	4	39	91%	\$ 367,200	\$ 36,720					
PS-21	Highway 101	0.22	1957	2030 to 2040	\$ 110,000	\$ 264,000	\$ 187,000	\$ 59,840	\$ 246,840	2035	56	22	78	72%	\$ 177,218	\$ 69,622					
PS-22	Cape Marin	0.22	1987	2025 to 2035	\$ 110,000	\$ 264,000	\$ 187,000	\$ 59,840	\$ 246,840	2030	26	17	43	60%	\$ 149,252	\$ 97,588					
PS-23	Capurro	0.22	1989	2015 to 2025	\$ 110,000	\$ 264,000	\$ 187,000	\$ 59,840	\$ 246,840	2020	24	7	31	77%	\$ 191,102	\$ 55,738					
PS-30	Heather Gardens	0.22	1980	2013 to 2020	\$ 250,000	\$ 264,000	\$ 257,000	\$ 82,240	\$ 339,240	2017	33	4	37	90%	\$ 306,710	\$ 32,530					
PS-31	1 Via LaBrisa	Unknown	1968	2013 to 2020	\$ 250,000	\$ 264,000	\$ 257,000	\$ 82,240	\$ 339,240	2017	45	4	49	93%	\$ 314,759	\$ 24,481					
PS-32	1 Corte del Bayo	Unknown	1968	2013 to 2020	\$ 250,000	\$ 264,000	\$ 257,000	\$ 82,240	\$ 339,240	2017	45	4	49	93%	\$ 314,759	\$ 24,481					
PS-33	415 Riviera Circle	0.22	1966	2025 to 2035	\$ 250,000	\$ 264,000	\$ 257,000	\$ 82,240	\$ 339,240	2030	47	17	64	73%	\$ 249,129	\$ 90,111					
PS-34	359 Riviera Circle	0.22	1966	2013 to 2020	\$ 250,000	\$ 264,000	\$ 257,000	\$ 82,240	\$ 339,240	2017	47	4	51	93%	\$ 315,728	\$ 23,512					
PS-35	2 Corte del Coronado	0.22	1966	2013 to 2020	\$ 250,000	\$ 264,000	\$ 257,000	\$ 82,240	\$ 339,240	2017	47	4	51	93%	\$ 315,728	\$ 23,512					
PS-36	178 Riviera Circle	0.22	1963	2013 to 2020	\$ 250,000	\$ 264,000	\$ 257,000	\$ 82,240	\$ 339,240	2017	50	4	54	93%	\$ 317,047	\$ 22,193					
PS-37	Larkspur Plaza	0.09	1962	2013 to 2020	\$ 85,500	\$ 108,000	\$ 96,750	\$ 30,960	\$ 127,710	2017	51	4	55	94%	\$ 119,508	\$ 8,202					
							\$ 51,018,552	\$ 16,325,937	\$ 67,344,489						\$ 47,125,324	\$ 20,219,165					

**Central Marin Sanitation Agency
 Member Agencies and San Quentin Prison Equivalent Dwelling Units (EDUs)**

	SD#1	Larkspur	Total	SD#2	SQ
2008-09	19,685	3,116	22,801	6,196	7,936
2009-10	19,575	3,050	22,625	6,078	7,529
2010-11	19,401	3,021	22,422	5,975	7,209
2011-12	19,409	3,079	22,488	5,955	3,247
2012-13	19,482	2,997	22,479	6,116	4,005

Average = 22,563 To Fee Analysis
 SD#2 to RVSD Ratio (5 yr avg)= 27% To adjust FM-1: Ross Valley FM to SQ Junction
 SD#2 and SQ to RVSD Ratio (2 yr avg)= 21% To adjust FM-1: Ross Valley FM - SQ Junction to CMSA (tunnel)

**ABAG Report: June 3, 2013
 Final Regional Housing Need Allocation (2014-2022) - Total**

Fairfax	Larkspur	San Anselmo	Ross	Total RVSD - Incorporated	Total Marin County	RVSD as % of Total
61	132	106	18	317	2113	15%

RVSD as a Percent of Marin County = 15%
 Marin County Unincorporated = 185
 RVSD Unincorporated as a % of Total = 28

Total Housing Need Allocation - RVSD 345 To Fee Analysis
 Incorporated = 317
 Unincorporated = 28

Current Capacity - RVSD= 22,563
 Growth 2014-2022 -RVSD= 345
 Total Capacity In Facilities= 22,908