



CITY OF NEWPORT BEACH

Sewer and Recycled Water Rate Study



October 13, 2015



HF&H Consultants, LLC

DRAFT

CITY OF NEWPORT BEACH

592 Superior Avenue
Newport Beach, CA 92663



SEWER AND RECYCLED WATER RATE STUDY

October 13, 2015

HF&H CONSULTANTS, LLC
201 North Civic Drive, Suite 230
Walnut Creek, CA 94596

© HF&H CONSULTANTS, LLC All rights reserved.

This document is printed on 100% recycled, post-consumer content paper

DRAFT



201 N. Civic Drive, Suite 230
Walnut Creek, California 94596
Telephone: 925/977-6950
Fax: 925/977-6955
www.hfh-consultants.com

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

October 13, 2015

Mr. George Murdoch
Municipal Operations Director
City of Newport Beach
100 Civic Center Drive
Newport Beach, CA 92660

Subject: Sewer and Recycled Water Rate Study

Dear Mr. Murdoch:

HF&H Consultants, LLC, is pleased to submit this Sewer and Recycled Water Rate Study to the City of Newport Beach (City). The report summarizes the analysis that was conducted to develop the recommended rates. A copy of the rate model is included in the appendix.

The recycled water revenue increases and recycled water rate design sections presented in this report summarize the analysis that was previously submitted as a staff report and presented to City Council on April 29, 2014. The City Council subsequently adopted, by Resolution 2014-78 on September 9, 2014, the recommended Recycled Water rates in compliance with Proposition 218, effective October 10, 2014, updated January 1, 2016, and each January 1 thereafter.

The City has demonstrated leadership in improving rate payer equity during a time when costs are increasing in compliance with regulatory mandates. It has been a privilege to assist the City with this step forward.

Very truly yours,
HF&H CONSULTANTS, LLC

John W. Farnkopf, P.E., Senior Vice President
Sima Mostafaei, Senior Associate

DRAFT

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY	1
Findings And Recommendations	1
Sewer	1
Recycled Water	2
2. INTRODUCTION	4
Study Purpose	4
Rate Making Objectives	4
Background	4
Sewer	4
Recycled Water	4
3. SEWER PROJECTED REVENUE INCREASES	6
Revenue Requirements	6
Salaries	6
Benefits	6
Operations & Maintenance	6
Internal Services Allocation	7
Operating Reserve Expense	7
Capital Reserve Expense	7
Miscellaneous Costs	7
Revenue Increases	7
Fund Balance	8
Minimum Fund Balance	9
Target Fund Balance	9
4. SEWER RATE DESIGN	10
Current Rate Structure	10
Proposed Rate Structure	10
Current and Proposed Customer Bill Comparisons	12
Residential Customer Impacts	13
Comparison with Neighboring agencies	14
5. RECYCLED WATER PROJECTED REVENUE INCREASES	16
Revenue Requirements	16
Operating Expenses	16
Purchased Recycled Water	16
Pump Station Operating and Maintenance	16
Depreciation	16
6. RECYCLED WATER RATE DESIGN	18
Current Rate Structure	18

Proposed Rate Structure..... 18
 Customer Bill Comparisons 21

APPENDIX A. SEWER AND RECYCLED WATER RATE MODEL

TABLE OF FIGURES

Figure 1-1. Current and Proposed Sewer Rates 2
 Figure 1-2. Average Current and Proposed Monthly Sewer Bills..... 2
 Figure 1-3. Current and Proposed Recycled Water Rates 3
 Figure 3-1. Annual Revenue Requirement Components 6
 Figure 3-2. Capital Projects..... 7
 Figure 3-3. Projected Revenue Increases 8
 Figure 3-4. Fund Balance With and Without Rate Increases 9
 Figure 4-1. Fixed and Variable Revenue 10
 Figure 4-2. Calculation of Monthly Fixed Charges..... 11
 Figure 4-3. Calculation of Sewer Consumption Charge 11
 Figure 4-4. Five Year Sewer Rate Projections 12
 Figure 4-5. Customer Bill Comparison 13
 Figure 4-6. Neighboring Agency Comparison 14
 Figure 4-7. Neighboring Agency Comparison 15
 Figure 5-1. Revenue Requirement Projections 16
 Figure 6-1. FY 2014-15 Revenue Requirement by Cost Category..... 19
 Figure 6-2. Calculation of Monthly Fixed Charges..... 20
 Figure 6-3. Calculation of Commodity and Pump Station Charges..... 20
 Figure 6-4. Five Year Recycled Water Rate Projections..... 21

ACRONYMS

CIP	Capital Improvement Plan
EDU	Equivalent Dwelling Unit; an average single-family residential customer
EMU	Equivalent meter unit
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
I&I	Inflow and Infiltration; stormwater runoff that enters collection systems through surface or subsurface connections, cracks, or other openings
O&M	Operations and Maintenance
OCSD	Orange County Sanitation District
OCWD	Orange County Water District

PAYGo	Pay-As-You-Go, in reference to funding capital improvements from cash rather than from borrowed sources of revenue
SFR	Single Family Residential

DRAFT

ACKNOWLEDGEMENTS

City Council

Edward Selich, Mayor
Diane Dixon, Mayor Pro Tem
Kevin Muldoon, Council Member
Tony Petros, Council Member
Duffy Duffield, Council Member
Scott Peotter, Council Member
Keith Curry, Council Member

City Finance Commission:

Keith Curry (Chair), Council Member
Diane Dixon, Mayor Pro Tem
Tony Petros, Council Member
William C. O'Neill, Citizen Advisor
John Warner, Citizen Advisor
Larry Tucker, Citizen Advisor

City Staff

George Murdoch, Municipal Operations Director
Dan Matusiewicz, Finance Director
Rachell Wilfert, Management Assistant

HF&H Consultants, LLC

John Farnkopf, Sr. Vice President
Sima Mostafaei, Senior Associate

DRAFT

**SEWER AND RECYCLED WATER RATE
STUDY**

DRAFT

This page intentionally left blank

DRAFT

1. EXECUTIVE SUMMARY

This report summarizes the analysis of the City's sewer and recycled water rates. The analysis represents a collaborative effort of the City's Staff and consulting team. HF&H prepared the financial plan model using the City's FY 2015-16 preliminary operating budget for sewer, and the FY 2014-15 preliminary operating budget for recycled water.

FINDINGS AND RECOMMENDATIONS

Sewer

1. **Key Assumptions.** Rates were set to generate revenue sufficient to fund the City's collection system expenses, local capital improvements funded from cash, and to maintain the City's reserves.
2. **Revenue Projections.** The revenue increases enable the City to address collection and pump station improvement projects that were identified in the City's Sewer Master Plan. These increases enable the City to ramp up PAYGo funding for capital projects over the next five years; by the fifth year, the rates will enable the City to fund \$1,300,000 per year on a pay-as-you-go cash basis without issuing debt.
3. **Rate Design.** The City's current sewer customers pay the sum of the following: a fixed monthly sewer use charge that is the same for all customers and a commodity charge based on metered water use during the monthly period. In addition, for meters 2-inch or larger, a \$10.00 monthly surcharge is assessed, and for connections servicing two or more dwelling units on the same connection, a \$2.00 per unit per month surcharge is assessed for any additional dwelling units. We recommend combining the two surcharges into the monthly use charge, and maintaining the commodity charge. Under the revised rate structure, customers will pay the sum of only two charges: a monthly sewer use charge, graduated based on the capacity of the connection, and the commodity charge.
4. **Projected Rates.** **Figure 1-1** shows the sewer rates that are needed to cover the projected revenue requirements, and compares the revised structure to the current structure. In the revised rate structure, the service charges were graduated using an EMU multiplier that was based on the ratio of \$4.50 to \$14.50 (the current rate ratio), the effect of which is to increase the service charges for the larger services. The revised rate structure maintains the consumption charge, but includes the larger meter and additional dwelling unit surcharges as part of the monthly sewer use charge.

Figure 1-1. Current and Proposed Sewer Rates

Effective Increase Date	Current Structure	Revised Structure	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20
			3/1/2016	1/1/2017	1/1/2018	1/1/2019	1/1/2020
Monthly Sewer Use Charge							
5/8" or 3/4"	\$4.50	\$5.44	\$6.04	\$6.71	\$7.44	\$8.26	\$9.17
1"	\$4.50	\$5.44	\$6.04	\$6.71	\$7.44	\$8.26	\$9.17
1 1/2"	\$4.50	\$5.99	\$6.65	\$7.38	\$8.19	\$9.09	\$10.09
2"	\$14.50	\$8.16	\$9.06	\$10.06	\$11.17	\$12.40	\$13.76
2 1/2"	\$14.50	\$8.71	\$9.67	\$10.73	\$11.91	\$13.22	\$14.68
3"	\$14.50	\$9.25	\$10.27	\$11.40	\$12.66	\$14.05	\$15.59
4"	\$14.50	\$10.89	\$12.08	\$13.41	\$14.89	\$16.53	\$18.34
6"	\$14.50	\$12.25	\$13.59	\$15.09	\$16.75	\$18.59	\$20.64
8"	\$14.50	\$13.61	\$15.11	\$16.77	\$18.61	\$20.66	\$22.93
10"	\$14.50	\$17.42	\$19.33	\$21.46	\$23.82	\$26.44	\$29.35
Monthly Sewer Use Charge (Sewer Only Customers)							
Rate per Account	\$6.25	\$9.46	\$10.51	\$11.66	\$12.94	\$14.37	\$15.95
Consumption Charge							
Rate per HCF	\$0.35	\$0.35	\$0.39	\$0.43	\$0.48	\$0.53	\$0.59
Sewer Surcharges							
Multi Unit surcharge (per DU)	\$2.00	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1

Note 1: The surcharge has been incorporated into the Monthly Sewer Use Charge under the revised structure.

- Customer Bills.** Figure 1-2 shows an average monthly residential and non-residential bill at the current rates, and the average bills over the five year projection period. In addition to paying the monthly sewer use charge based on the size of the connection, each customer’s monthly bill includes a consumption charge that is determined by multiplying the consumption charge times the average monthly residential flow of 11.49 HCF and non-residential flow of 64 HCF, respectively.

Figure 1-2. Average Current and Proposed Monthly Sewer Bills

Effective Increase Date	Flow (HCF)	Current Structure	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20
			3/1/2016	1/1/2017	1/1/2018	1/1/2019	1/1/2020
Single Family Residential	11.49	\$8.52	\$10.52	\$11.65	\$12.96	\$14.35	\$15.95
Non-Residential	64.00	\$36.90	\$34.02	\$37.58	\$41.89	\$46.32	\$51.52

Recycled Water

- Key Assumptions.** Rates were set to generate revenue sufficient to fund the City’s recycled water system’s operations and maintenance expense, the cost of

purchasing recycled water from OCWD, and capital replacement expense related to pump stations and meters.

2. **Rate Design.** The City's current recycled water customers pay the sum of two charges: a monthly fixed charge that is based on the size of the connection, and a commodity charge based on metered water use during the monthly period. The fixed and commodity charges are based on 80% of the potable water rate. We recommend unlinking the recycled water rate from the potable water rate and aligning the recycled fixed and commodity charges with the fixed costs and the cost of purchased water from OCWD, respectively. In addition to the fixed and commodity charges, pump station users will be charged a pump station charge based on the cost to operate and maintain the stations and convey recycled water.
3. **Projected Rates.** The rate projections are shown in **Figure 1-3**.

Figure 1-3. Current and Proposed Recycled Water Rates

Effective Increase Date	Current	FY 2014-15 10/10/2014	FY 2015-16 1/1/2016	FY 2016-17 1/1/2017	FY 2017-18 1/1/2018	FY 2018-19 1/1/2019
Monthly Service Charge						
5/8" or 3/4"	\$13.82	\$18.91	\$19.29	\$19.68	\$20.07	\$20.47
1"	\$23.03	\$31.53	\$32.16	\$32.80	\$33.46	\$34.13
1 1/2"	\$46.06	\$63.05	\$64.32	\$65.60	\$66.91	\$68.25
2"	\$73.70	\$100.88	\$102.90	\$104.95	\$107.05	\$109.19
3"	\$138.18	\$189.15	\$192.94	\$196.80	\$200.73	\$204.75
4"	\$230.30	\$315.25	\$321.56	\$327.99	\$334.55	\$341.24
6"	\$460.61	\$630.50	\$643.11	\$655.98	\$669.10	\$682.48
8"	\$736.98	\$1,008.81	\$1,028.99	\$1,049.57	\$1,070.56	\$1,091.97
Monthly Commodity Charge						
Rate per HCF	\$2.46	\$0.86	\$0.87	\$0.89	\$0.91	\$0.93
Monthly Pump Station Charge						
Rate per HCF	none	\$0.36	\$0.37	\$0.38	\$0.38	\$0.39

2. INTRODUCTION

STUDY PURPOSE

The purpose of this study is to update the City's rates to ensure that they generate sufficient revenue and that the rate structures for sewer and recycled water reflect the City's current rate-making objectives. The study was commissioned by the City to evaluate the effect of certain rate structure modifications in response to input from its customers.

RATE MAKING OBJECTIVES

The City's current rate-making objectives include the following:

- Provide revenue sufficiency and financial stability to cover the projected capital and O&M costs of providing recycled water and funding the City's Sewer fund.
- Meet the City's operations and capital funds reserve targets for the sewer enterprise fund.
- Rates should reflect equity of costs in proportion to the level of service.
- Provide for efficient administration and execution of utility billing.
- Minimize "rate shock" overall and to any specific customer class.
- Rates should be clear and understandable to the customers.
- The rates must comply with Proposition 218 and applicable State codes.

BACKGROUND

Sewer

The City provides sewer service to approximately 64,465 customers. The City's existing sewer collection system consists of a network of force main and gravity sewers. This system is composed of approximately 197 miles of mainline gravity pipes, 4.7 miles of force mains with 4,922 manholes and cleanouts, and 25,525 sewer laterals with an approximate length of 121 miles in the public-rights-of-way. The City's service area lies within the OCSD who is responsible for treating the City's sewer. The City also owns and operates 21 pump stations in various areas which lift sewer from the lower areas and several island communities for treatment at OCSD's treatment plant.

Recycled Water

The City currently has five recycled water customers totaling 14 water connections. The customers include Big Canyon and Newport Beach Country Club golf courses; East Bluff School, Our Lady Queen of Angels School, and the City which uses recycled water for irrigation of medians and parks.

In 1991, the City entered into an agreement with OCWD for the distribution and sale of Green Acres Project water. The agreement stipulates the rules and regulations for the

City to provide recycled water. Included in this agreement is the stipulation that recycled water rates may not exceed 80% of the potable water rate. The agreement term is for 25 years with five 5-year automatic extensions, with an estimated ending term year of 2041.

The City subsequently entered into “End User Agreements” for the sale of recycled water to large customers in 1996 for a 10-year term. These agreements, now expired, included provisions that OCWD and the City would provide funding to modify golf courses and construct pump stations to facilitate the use of recycled water. However, in 2011, the City and the Big Canyon Country Club entered into an agreement that provided for the delivery and sale of recycled water, and a pump station license agreement.

3. SEWER PROJECTED REVENUE INCREASES

REVENUE REQUIREMENTS

Rate analysis begins by determining the revenue requirements that must be met by rates. For purposes of this study, a ten-year rate projection period was developed using a spreadsheet model (see Appendix A). However, only the first five years are shown in **Figure 3-1** for rate-setting purposes. **Figure 3-1** summarizes the major categories comprised in the revenue requirements, indicating the annual change.

Figure 3-1. Annual Revenue Requirement Components

	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20
Salaries	\$ 947,547	\$ 975,973	\$ 1,005,253	\$ 1,035,410	\$ 1,066,472
Benefits	575,693	604,478	622,612	641,290	660,529
Operations & Maintenance	995,721	989,549	1,006,668	1,024,084	1,041,800
Internal Services Allocation	670,581	682,182	693,984	705,990	718,203
Operating Reserve Expense	1,580	(145,880)	(74,251)	39,254	149,401
Capital Reserve Expense	-	500,000	750,000	1,000,000	1,300,000
Miscellaneous Costs	13,477	13,710	13,947	14,188	14,434
Total Revenue Requirement	\$ 3,204,599	\$ 3,620,012	\$ 4,018,213	\$ 4,460,216	\$ 4,950,840

Salaries

This cost category includes regular and overtime pay and is projected to increase gradually at about 3% per year during the projection period. No staff headcount increases are anticipated; the cost trend is driven primarily by cost of living adjustments set in labor agreements.

Benefits

This cost category includes health, dental, and vision as well as Other Post-Employment (OPEB) and Public Employment (PERS) retirement benefits. During the projection period these costs are projected to increase at about 5% per year. The cost trend is driven primarily by increases in health care benefit costs set in labor agreements.

Operations & Maintenance

This cost category includes non-personnel related operating and maintenance expenses, such as electrical utility costs, fuel, and non-capital materials and equipment. During the projection period, these costs are expected to increase gradually at about 1.73% per year, based on the five-year historical average of inflation for the Los Angeles area.

Internal Services Allocation

The City has historically transferred funds from the Sewer Enterprise Fund to the General Fund as reimbursement for governmental costs incurred by the General Fund on behalf of the Enterprise. Much of this funding reimburses the General Fund for salaries, equipment, and program costs associated with general services. During the projection period, these costs are expected to increase gradually at about 1.73% per year, based on the five-year historical average of inflation for the Los Angeles area.

Operating Reserve Expense

The City transfers rate revenue to its Operating Reserve during the projection period to smooth out the annual revenue requirements and meet the minimum fund balance requirement. Please refer to the section titled 'minimum fund balance' in this report for further discussion of the fund policy.

Capital Reserve Expense

The City's 30-year capital improvement program planned expenditures are summarized in **Figure 3-2**.

Figure 3-2. Capital Projects

CIP Project Description	Project Cost
Collection System Capacity Improvements	\$1,281,391
Collection System Condition Improvements	\$16,648,060
Pump Station Improvements	\$11,088,000
Total	\$29,017,451

The City plans to fund these capital improvements with cash from rate revenue. To accomplish this goal, the program is phased based upon the implementation cost of the facilities, and the quantity of work the City can reasonably administer each year. The programmed rate increases over the next five years allow the City to ramp up funding for capital projects and provide the City approximately \$1.3 million annually by FY 2019-20 with the additional revenue generated from the recommended rate increases.

Miscellaneous Costs

This cost category includes non-capital office and shop equipment. During the projection period, these costs are expected to increase gradually at about 1.73% per year, based on the five-year historical average of inflation for the Los Angeles area.

REVENUE INCREASES

To determine how much additional rate revenue is required, the projected revenue requirements are compared to the revenue from current rates. The revenue from

current rates also reflects the impact of reduced water demand required of the City's customers to comply with the State Water Resources Control Board's emergency regulations. For the City's consumption charges, sewer flows from individual City customers are not metered; therefore water use data is the closest representation of flows that customers discharge to the City's system for conveyance and treatment. Estimating current rate revenue took into account 23,100 currently active meters whose flow equaled 4,320,000 HCF. We also included the annual surcharge revenue for meters 2" or larger, as well as the surcharge for multiple dwelling units serviced by the same meter. The resulting rate revenue for FY 2014-15, prior to rate increases, but net of 0.4% of bad debt, was estimated at \$3,092,000. Based on this estimate, annual revenue increases were projected as shown in **Figure 3-3**.

Figure 3-3. Projected Revenue Increases

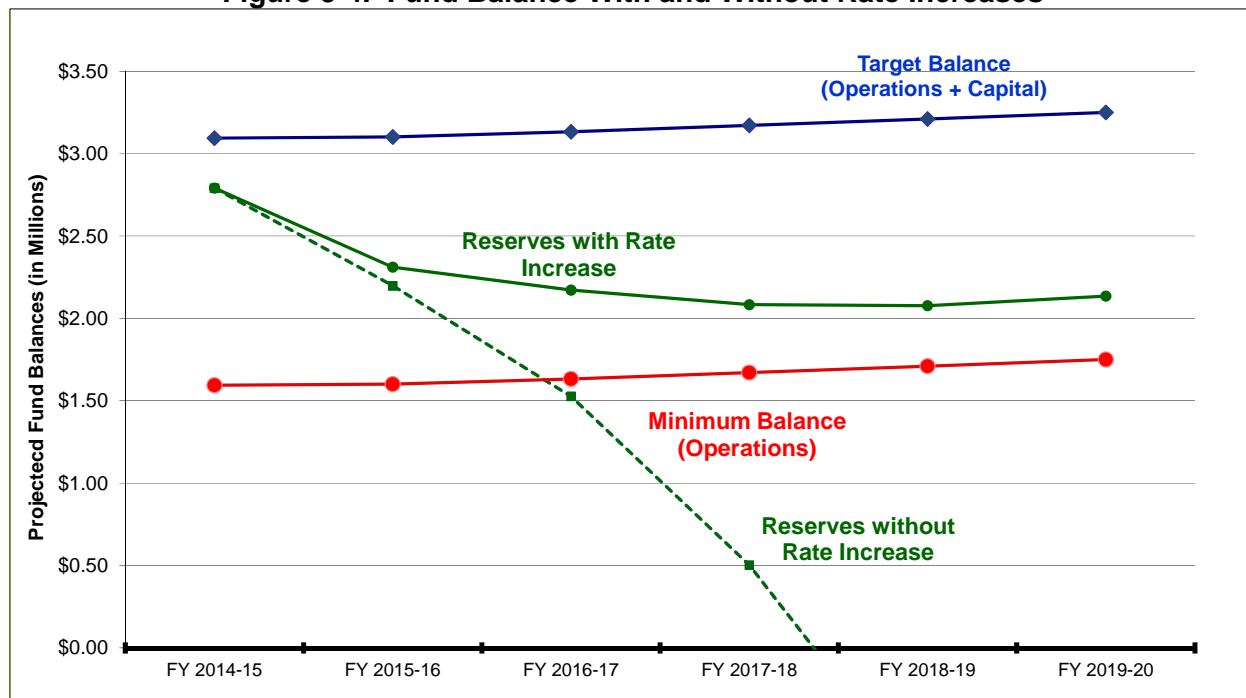
	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20
Increase in Revenue from Rates	11%	11%	11%	11%	11%
Revenue from Current Rates**	\$3,091,253	\$3,091,253	\$3,091,253	\$3,091,253	\$3,091,253
Revenue from Rate Increases					
FY15-16 (effective 3/1/16)	\$113,346	\$340,038	\$340,038	\$340,038	\$340,038
FY16-17 (effective 1/1/17)		\$188,721	\$377,442	\$377,442	\$377,442
FY17-18 (effective 1/1/18)			\$209,480	\$418,961	\$418,961
FY18-19 (effective 1/1/19)				\$232,523	\$465,046
FY19-20 (effective 1/1/20)					\$258,101
Subtotal - Revenue Increases	\$113,346	\$528,759	\$926,960	\$1,368,964	\$1,859,587
Total Rate Revenue	\$3,204,599	\$3,620,012	\$4,018,213	\$4,460,216	\$4,950,840
Net Revenue Requirements	\$3,204,599	\$3,620,012	\$4,018,213	\$4,460,216	\$4,950,840
Surplus/(Deficit) after Increase	\$0	\$0	\$0	\$0	\$0

**Includes bad debt allowance of 0.4% of existing revenue and cutbacks to consumption charge revenue based on conservation efforts

FUND BALANCE

The FY 2014-15 estimated year-end fund balance is projected to be \$2,790,000, which is higher than the minimum operations balance of \$1,593,000. **Figure 3-4** shows the fund balance is above the minimum balance throughout the five year rate projection period, however, the ten-year outlook shows the fund balance meeting the target in FY 2024-25 based on the projected revenue increases. Fluctuations in annual flow will affect revenue generation and the resulting fund balance. The City is advised to carefully monitor the fund balance in the event of downward fluctuations in flow.

Figure 3-4. Fund Balance With and Without Rate Increases



Minimum Fund Balance

The minimum balance (red line) is the balance that is required to meet the City’s operating expenses during the year. If this minimum balance were maintained, the Sewer Fund should be able to fund its monthly cash flow over this extended period without relying on the General Fund for a short-term loan. When the Operations Reserve balance is below the minimum balance, the likelihood increases that temporary funding from the General Fund will be required to meet cash flow needs. The City’s reserve policy dictates that the minimum Operations Reserve balance be set equal to 50% of annual O&M expenses.

Target Fund Balance

The proposed revenue increases move the fund balance (solid green line) upward toward the target balance (blue line). The target balance is the sum of the minimum balance for operations (red line) plus an allowance for capital projects. This allowance provides liquidity to fund construction for projects on a pay-as-you-go basis. With adequate capital reserves, the City is able to pay construction contractors without encroaching on the Operations Reserve. The allowance is based on the average annual budgeted capital improvement projects.

4. SEWER RATE DESIGN

CURRENT RATE STRUCTURE

The City currently has 23,100 active accounts who pay the sum of two charges every month for Sewer service: a basic service charge of \$4.50 per account plus a sewer consumption charge of \$0.35 per HCF based on metered water use during the billing period. In addition to the charges specified above, customers with a water service connection of 2" or greater pay a \$10.00 monthly surcharge. Moreover, customers with more than one dwelling unit that is serviced by the same connection pay a surcharge of \$2.00 for each additional dwelling unit. Lastly, the City's 485 sewer customers who do not purchase potable water from the City are charged \$6.25 per account per month.

PROPOSED RATE STRUCTURE

The proposed rate structure is based on the revenue generated by the current rate structure and categorizes the revenue into two categories: fixed revenue and variable revenue. Fixed revenue is considered fixed because it does not vary based on flow, while variable costs vary because they are based on the amount of water purchased, or sewage produced and therefore, are solely comprised of the sewer consumption charge. For the purpose of rate design, the sewer use charge for customers who do not purchase water from the City was analyzed separately. **Figure 4-1** presents the breakdown of the current revenue by revenue category:

Figure 4-1. Fixed and Variable Revenue

		Current Revenue
Fixed Revenue		
Sewer Use Charge (per account)	\$1,179,651	
Surcharge (2" meters or greater)	\$61,586	
Surcharge (per additional DU)	\$314,371	
Total Annual Fixed Revenue		\$1,555,608
Variable Revenue		
Consumption Charge (per HCF)	\$1,511,712	
Total Annual Variable Revenue		\$1,511,712
	Subtotal	\$3,067,320
	Sewer Use Charge (per account)*	36,268.00
	Grand Total**	\$3,103,588

*Sewer Revenue from customers who do not purchase potable water from the City of Newport Beach

**Gross revenues; does not account for bad debt

In order to determine the monthly charge by size of connection, we first converted the number of active meters to equivalent meter units (EMU) as shown in **Figure 4-2**. The EMU multiplier by meter size is the same multipliers used to determine the fixed charge by meter size for the current sewer rates; in other words, it is the ratio between \$4.50 to \$14.50, or 1 to 3.2. The monthly charge for an EMU of 1.00 is derived by dividing the total fixed revenue of \$1,556,000 by the total number of EMUs, or 23,815. This quotient was then divided by 12 to convert from an annual charge of \$71.59 to a monthly charge of \$5.44. The service charges were then graduated using the EMU multipliers, the effect of which is to increase the service charges for the larger services. Note the total annual revenue of \$1,556,000 from fixed charges in **Figure 4-2** is equal to the total annual fixed revenue presented in **Figure 4-1**.

Figure 4-2. Calculation of Monthly Fixed Charges

Meter Size	Total Active Accounts	EMU Multiplier	Total EMUs	Monthly Service Charge	Total Annual Fixed Revenue
	a	b	a*b	c	a*c*12
5/8" or 3/4"	15,357	1.00	15,357	\$5.44	\$1,003,119
1"	6,276	1.00	6,276	\$5.44	\$409,948
1 1/2"	364	1.10	400	\$5.99	\$26,154
2"	886	1.50	1,329	\$8.16	\$86,810
2 1/2"	1	1.60	2	\$8.71	\$105
3"	34	1.70	58	\$9.25	\$3,775
4"	119	2.00	238	\$10.89	\$15,546
6"	54	2.25	122	\$12.25	\$7,936
8"	11	2.50	28	\$13.61	\$1,796
10"	2	3.20	6	\$17.42	\$418
	<u>23,104</u>		<u>23,815</u>		<u>\$1,555,608</u>

The sewer consumption charge was derived using the monthly meter readings in HCF for all customers. **Figure 4-3** presents the derivation of the proposed sewer consumption charges.

Figure 4-3. Calculation of Sewer Consumption Charge

Cost Category	Current Revenue	Usage (HCF)	Charge per HCF
Variable Revenue	\$1,511,712	4,320,000	\$0.35

For sewer customers who do not purchase potable water from the City, and therefore, do not have a proxy for their sewer flows, an average flow per account was derived by using average water use per single family residential account. The 11.49 HCF average

use was determined using FY 2011-12 customer billing data and dividing total single family consumption by the number of single family accounts. Next, using the revised rate structure, the \$9.46 charge shown in **Figure 4-4** represents the average single family bill per month. It was calculated as the monthly sewer use charge of \$5.44 per account plus the product of the \$0.35 consumption charge times 11.49 HCF.

Using the fixed and variable rates as calculated in **Figure 4-2** and **Figure 4-3**, a five-year rate plan was prepared based on the City's Sewer revenue requirements as presented in **Figure 3-1**. The rates included in the 5-year plan reflect annual rate increases starting in FY 2015-16 to keep pace with the increase in the revenue requirements. The proposed 5-year rate plan is shown in **Figure 4-4**.

Figure 4-4. Five Year Sewer Rate Projections

Effective Increase Date	Current	Revised	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20
	Structure	Structure	3/1/2016	1/1/2017	1/1/2018	1/1/2019	1/1/2020
Monthly Sewer Use Charge							
5/8" or 3/4"	\$4.50	\$5.44	\$6.04	\$6.71	\$7.44	\$8.26	\$9.17
1"	\$4.50	\$5.44	\$6.04	\$6.71	\$7.44	\$8.26	\$9.17
1 1/2"	\$4.50	\$5.99	\$6.65	\$7.38	\$8.19	\$9.09	\$10.09
2"	\$14.50	\$8.16	\$9.06	\$10.06	\$11.17	\$12.40	\$13.76
2 1/2"	\$14.50	\$8.71	\$9.67	\$10.73	\$11.91	\$13.22	\$14.68
3"	\$14.50	\$9.25	\$10.27	\$11.40	\$12.66	\$14.05	\$15.59
4"	\$14.50	\$10.89	\$12.08	\$13.41	\$14.89	\$16.53	\$18.34
6"	\$14.50	\$12.25	\$13.59	\$15.09	\$16.75	\$18.59	\$20.64
8"	\$14.50	\$13.61	\$15.11	\$16.77	\$18.61	\$20.66	\$22.93
10"	\$14.50	\$17.42	\$19.33	\$21.46	\$23.82	\$26.44	\$29.35
Monthly Sewer Use Charge (Sewer Only Customers)							
Rate per Account	\$6.25	\$9.46	\$10.51	\$11.66	\$12.94	\$14.37	\$15.95
Consumption Charge							
Rate per HCF	\$0.35	\$0.35	\$0.39	\$0.43	\$0.48	\$0.53	\$0.59
Sewer Surcharges							
Multi Unit surcharge (p	\$2.00	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1

Note 1: The surcharge has been incorporated into the Monthly Sewer Use Charge under the revised structure.

CURRENT AND PROPOSED CUSTOMER BILL COMPARISONS

Figure 4-5 presents a comparison of monthly customer bills using the current rate structure and the recommended revised rate structure. The rates used to calculate the revised bills are the FY 2015-16 charges presented in **Figure 4-4**. It is notable that current customers who are subjected to the multiple dwelling \$2.00 monthly surcharge will

experience a decrease in their monthly bill. This occurs based on the revisions to the monthly sewer use charge. The graduated rates, based on meter capacity, better reflect associated flow assumed per dwelling unit, and its equivalent.

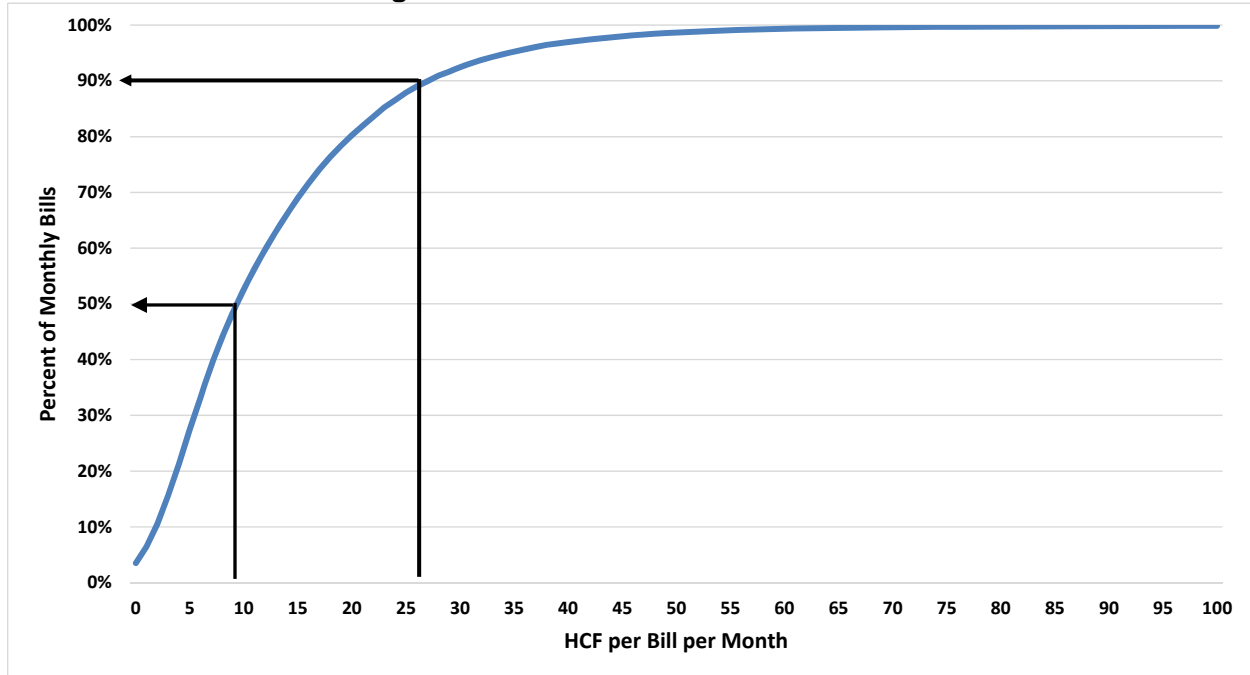
Figure 4-5. Customer Bill Comparison

Customer Name	Meter Size	Number of Dwelling Units	Average	Current Monthly Bill	FY 15-16 Monthly Bill	Difference (\$)
			Monthly Flow (HCF)			
Single Family Residential (low flow)	5/8" - 1"	1	2	\$ 5.20	\$ 6.82	\$1.62
Single Family Residential (avg flow)	5/8" - 1"	1	11	\$ 8.35	\$ 10.32	\$1.97
Single Family Residential (high flow)	5/8" - 1"	1	16	\$ 10.10	\$ 12.26	\$2.16
Multi Family Residential	3"	55	243	\$ 209.55	\$ 104.68	(\$104.87)
Commercial	4"	1	595	\$ 224.75	\$ 243.24	\$18.49
Commercial	8"	141	2,074	\$1,022.40	\$ 820.85	(\$201.55)
Commercial	6"	1	1,584	\$ 568.90	\$ 628.98	\$60.08

RESIDENTIAL CUSTOMER IMPACTS

Using the City's FY 2011-12 customer billing data, **Figure 4-6** illustrates the distribution of monthly billed sewer customer flow. It is important to note that the FY 2011-12 customer billing data is considered a snapshot in time and does not reflect continuous changes in customer behavior; additional factors (economic, climate) may impact consumption patterns in the future. Figure 4-6 indicates that customers who are billed 10 HCF or less on a monthly basis comprise 50% of total bills. Moreover, 90% of monthly bills are 27 HCF or less. This indicates that 90% of customers will not see more than an increase of \$2.00 per month, per year, over the five year projection period.

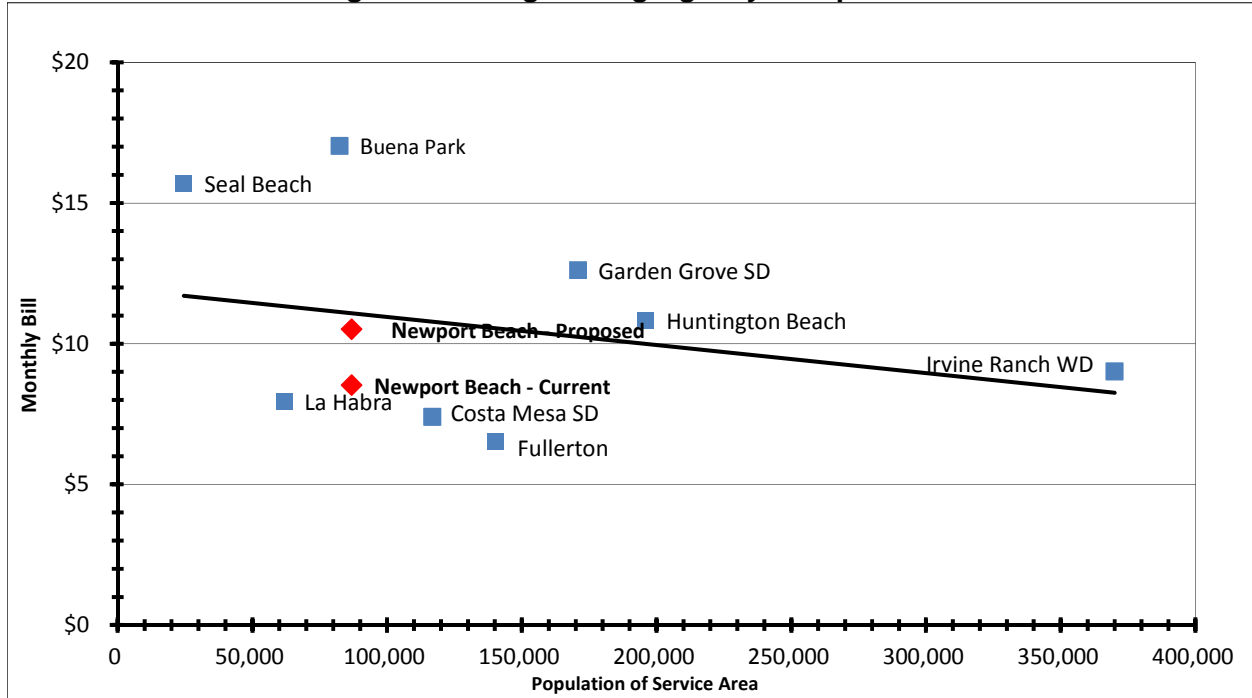
Figure 4-6. Cumulative Bill Distribution



COMPARISON WITH NEIGHBORING AGENCIES

Based on available sources, **Figure 4-7** shows the recent charges for sewer service among similar Orange County agencies, specifically ones that charge a fixed monthly use charge coupled with a flow-based commodity charge. Larger agencies tend to have lower rates because they can take advantage of economies of scale and have a larger base of customers over which to distribute fixed costs. **Figure 4-7** indicates that the City’s current and proposed sewer rates track the trend line along with its neighbors (identified with red diamonds in **Figure 4-7**).

Figure 4-7. Neighboring Agency Comparison



DRAFT

5. RECYCLED WATER PROJECTED REVENUE INCREASES

REVENUE REQUIREMENTS

The City's FY 2013-14 revenue requirement served as the basis for determining the revenue requirement projections through FY 2018-19. **Figure 5-1** summarizes the sources and assumptions for the data as well as the projected expenditure trends:

Figure 5-1. Revenue Requirement Projections

	FY 13-14	FY 14-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
Operating Costs	\$ 40,488	\$ 41,188	\$ 41,901	\$ 42,626	\$ 43,363	\$ 44,114
Purchased Recycled Water	167,598	173,417	179,438	182,810	186,245	189,745
Pump Station Operating & Mainte	39,408	47,218	48,104	49,007	49,927	50,864
Depreciation	17,500	17,543	17,587	17,632	17,678	17,724
Total Revenue Requirement	\$ 264,994	\$ 279,366	\$ 287,030	\$ 292,075	\$ 297,213	\$ 302,446

Operating Expenses

This cost category includes administration and overhead expenses that are calculated as 10% of the total recycled water revenue requirement and 1% of the budgeted general fund overhead charged to the water fund, respectively. During the projection period, the City's operating expenses are projected to increase gradually at about 1.73% per year, based on the five-year historical average of general inflation for the Los Angeles area.

Purchased Recycled Water

This cost category for FY 13-14 was based on the actual water purchases in FY 12-13 multiplied by the cost of purchased water from OCWD of \$360 per acre foot. During the projection period, the City's purchased water costs are projected to increase gradually at about 1.88% per year, based on the five-year historical average of OCWD purchased water charges per acre foot.

Pump Station Operating and Maintenance

This cost category for FY 13-14 was based on the actual cost of inspections, scheduled and corrective maintenance, source changeovers and pump station rehabilitation and maintenance as provided by the city. During the projection period, the City's pump station operating and maintenance costs are expected to increase gradually at about 1.73% per year, based on the five-year historical average of general inflation for the Los Angeles area.

Depreciation

This cost category includes replacement costs for pump station facilities and water meters. The annual pump station facility replacement cost was based on \$600,000 in

construction costs, amortized over 40 years. The annual meter replacement cost was based on the American Water Works Association's standard cost of \$259 per meter per year, amortized over 15 years. During the projection period, the City's pump station facility replacement costs are held constant at \$15,000 per year, while the meter replacement costs are projected to increase gradually at about 1.73% per year, based on the five-year historical average of inflation for the Los Angeles area.

DRAFT

6. RECYCLED WATER RATE DESIGN

The following section was previously submitted as a separate report dated April 24, 2014. The City Council subsequently adopted the recommended rates in compliance with Proposition 218, effective October 10, 2014. The following text summarizes the rates documented in the April 2014 report and subsequently adopted by the City Council.

CURRENT RATE STRUCTURE

The City currently has five recycled water customers totaling 14 connections. These customers pay the sum of two charges every month for water service: a basic service charge based on the size of the service connection plus a commodity charge based on metered water use during the billing period. In 1991, the City entered into an agreement with OCWD for the distribution and sale of recycled water. The agreement stipulated that the recycled water rate may not exceed 80% of the potable water rate. It is the City's current practice to charge customers 80% of the potable water rate based on that agreement.

PROPOSED RATE STRUCTURE

Under the new rate structure, the recycled water rates will no longer be linked to 80% of the potable water rates. The proposed rate structure is based on the FY 2014-15 revenue requirement, and categorizes the expenses into three categories: fixed costs, variable costs and pump station-related costs. Fixed costs are considered fixed because they do not vary based on flow, and include the annual cost of meter reading and replacement, as well as administrative and overhead. Variable costs vary because they are based on the amount of water purchased, and therefore, are solely comprised of the annual cost of purchased water from OCWD. Pump station-related costs are comprised of inspections, maintenance, and rehabilitation & replacement that are directly related to the pump stations. **Figure 6-1** presents the breakdown of the FY 2014-15 revenue requirement by cost category:

Figure 6-1. FY 2014-15 Revenue Requirement by Cost Category

FY2014-15	
Fixed Costs	
Administration	\$25,433
Overhead	\$12,208
Meter Reading	\$1,514
Meter replacement	\$2,543
Other agency fees	\$2,035
Total Fixed Costs	<u>\$43,732</u>
Variable Costs	
Purchased Water	\$173,417
Total Variable Costs	<u>\$173,417</u>
Pump Station Costs	
Inspections	\$7,021
Maintenance	\$13,109
Rehab & Replacement	\$42,087
Total Pump Station Costs	<u>\$62,218</u>
Total Revenue Requirement	<u>\$279,366</u>

In order to determine the monthly charge by size of connection, we first converted the number of active meters to equivalent meter units (EMU) as shown in **Figure 3-2**. The EMU multiplier by meter size is the same multipliers used to determine the fixed charge by meter size for potable water rates. The monthly charge for an EMU of 1.00 is derived by dividing the total fixed costs of \$43,732 by the total number of EMUs or 192.70. This quotient was then divided by 12 to convert from an annual charge of \$226.94 to a monthly charge of \$18.91. The service charges were then graduated using the EMU multipliers, the effect of which is to increase the service charges for the larger services. Note the total annual revenue of \$43,732 from fixed charges in **Figure 6-2** is equal to the total fixed costs presented in **Figure 6-1**.

Figure 6-2. Calculation of Monthly Fixed Charges

Meter Size	Total Active Accounts	EMU Multiplier	Total EMUs	Monthly Service Charge	FY 14-15 Annual Revenue
	a	b	a*b	c	a*c*12
5/8" or 3/4"	0	1.00	0	\$18.91	\$0
1"	0	1.67	0	\$31.53	\$0
1 1/2"	0	3.33	0	\$63.05	\$0
2"	8	5.33	42.67	\$100.88	\$9,684
3"	3	10.00	30.01	\$189.15	\$6,810
4"	0	16.67	0	\$315.25	\$0
6"	2	33.34	66.68	\$630.50	\$15,132
8"	1	53.34	53.34	\$1,008.81	\$12,106
	<u>14</u>		<u>192.70</u>		<u>\$43,732</u>

The commodity and pump station charges were derived using the FY 2012-13 monthly meter readings in HCF for all customers, and FY 2012-13 monthly meter readings for pump station customers in HCF, respectively. **Figure 6-3** presents the derivation of the proposed commodity and pump station charges for FY 2014-15:

Figure 6-3. Calculation of Commodity and Pump Station Charges

Cost Category	FY14-15 Costs	FY12-13 Usage (HCF)	FY14-15 Charge per HCF
Variable Costs	\$173,417	202,793	\$0.86
Pump Station Costs	\$62,218	172,426	\$0.36

Using the FY 2014-15 rates as calculated in **Figure 6-2** and **Figure 6-3**, a five-year rate plan was prepared based on the City’s recycled water revenue requirements as presented in **Figure 5-1**. The proposed five-year rate plan is shown in **Figure 6-4**.

Figure 6-4. Five Year Recycled Water Rate Projections

Effective Increase Date	Current	FY 2014-15 10/14/2014	FY 2015-16 1/1/2016	FY 2016-17 1/1/2017	FY 2017-18 1/1/2018	FY 2018-19 1/1/2019
Monthly Service Charge						
5/8" or 3/4"	\$13.82	\$18.91	\$19.29	\$19.68	\$20.07	\$20.47
1"	\$23.03	\$31.53	\$32.16	\$32.80	\$33.46	\$34.13
1 1/2"	\$46.06	\$63.05	\$64.32	\$65.60	\$66.91	\$68.25
2"	\$73.70	\$100.88	\$102.90	\$104.95	\$107.05	\$109.19
3"	\$138.18	\$189.15	\$192.94	\$196.80	\$200.73	\$204.75
4"	\$230.30	\$315.25	\$321.56	\$327.99	\$334.55	\$341.24
6"	\$460.61	\$630.50	\$643.11	\$655.98	\$669.10	\$682.48
8"	\$736.98	\$1,008.81	\$1,028.99	\$1,049.57	\$1,070.56	\$1,091.97
Monthly Commodity Charge						
Rate per HCF	\$2.46	\$0.86	\$0.87	\$0.89	\$0.91	\$0.93
Monthly Pump Station Charge						
Rate per HCF	none	\$0.36	\$0.37	\$0.38	\$0.38	\$0.39

CUSTOMER BILL COMPARISONS

Figure 6-5 presents a comparison of monthly customer bills using the current rate structure and the recommended revised rate structure. The rates used to calculate the revised bills are the Year 1 charges presented in Figure 6-4. It is notable that all current recycled water customers will experience no less than a 44% bill decrease with the recommended structure change.

Figure 6-5. Customer Bill Comparison

Customer Name	Meter Size	Average Monthly Flow (HCF)	Current Monthly Bill	Revised Monthly Bill	Difference (\$)	Difference (%)
Newport Beach Country Club	6"	6,650	\$16,820	\$8,717	(\$8,103)	-48%
Our Lady Queen of Angels	2"	151	\$446	\$230	(\$215)	-48%
Big Canyon Country Club	8"	5,256	\$13,668	\$5,504	(\$8,164)	-60%
Big Canyon Country Club	6"	2,463	\$6,518	\$3,625	(\$2,894)	-44%
Eastbluff School	3"	321	\$928	\$464	(\$464)	-50%

APPENDIX A. SEWER AND RECYLED WATER RATE MODEL

DRAFT

DRAFT

DRAFT



HF&H Consultants, LLC
201 N. Civic Drive, Suite 230
Walnut Creek, CA 94596