

In the opinion of Bond Counsel, (i) under existing statutes and court decisions, and assuming compliance with the tax covenants referred to herein, interest on the Series 1998 Bonds is not included in gross income for Federal income tax purposes pursuant to Section 103 of the Internal Revenue Code of 1986, as amended (the "Code"), and (ii) under the Code, interest on the Series 1998 Bonds is not treated as a preference item in calculating alternative minimum taxable income for purposes of the alternative minimum tax applicable to individuals and corporations; such interest, however, is includable in the adjusted current earnings of certain corporations for purposes of computing the alternative minimum tax imposed on corporations by the Code. See "TAX MATTERS" herein for a description of certain provisions of law which may affect the Federal tax treatment of interest on the Series 1998 Bonds. In addition, in the opinion of Bond Counsel, under the existing laws of the State of Hawaii, the Series 1998 Bonds and the income therefrom are exempt from all taxation by the State or any county or any political subdivision thereof, except inheritance, transfer, and estate taxes and except to the extent such income may be included in the measure of the franchise tax imposed on banks and other financial corporations pursuant to the laws of the State of Hawaii.

**\$55,300,000**  
**City and County of Honolulu**  
**Wastewater System Revenue Bonds**  
**(First Bond Resolution)**  
**Senior Series 1998**

**Dated:** December 1, 1998

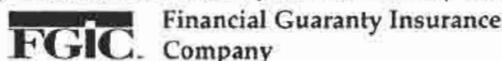
**Due:** July 1, as shown below

The Series 1998 Bonds are issuable in fully registered form and when issued will be registered initially in the name of Cede & Co., as nominee of The Depository Trust Company ("DTC"), New York, New York. Purchases of the Series 1998 Bonds will be made in book-entry form only, through brokers and dealers who are, or who act through, DTC participants. Purchases of the Series 1998 Bonds may be made in the denomination of \$5,000 or any integral multiple thereof. Beneficial owners of the Series 1998 Bonds will not receive physical delivery of Series 1998 Bond certificates so long as DTC or a successor securities depository acts as the securities depository with respect to the Series 1998 Bonds. So long as DTC or its nominee is the registered owner of the Series 1998 Bonds, payment of the principal of, and premium, if any, and interest on, the Series 1998 Bonds will be made directly to DTC or its nominee. Disbursement of such payments to DTC participants is the responsibility of DTC and disbursement of such payments to the beneficial owners is the responsibility of DTC participants (See "THE SERIES 1998 BONDS — Book-Entry System" herein).

The Series 1998 Bonds bear interest payable semiannually on January 1 and July 1 of each year, commencing July 1, 1999. The Series 1998 Bonds are subject to redemption prior to the stated maturity thereof as described herein.

The proceeds of the Series 1998 Bonds will be used: (i) to fund the cost of certain additions and improvements to the Wastewater System owned by the City and County; (ii) to fund the Common Reserve Account in an amount equal to the Common Reserve Account Requirement; and (iii) to pay the costs of issuance of the Series 1998 Bonds. The Series 1998 Bonds are limited special obligations of the City and County payable solely from, and secured solely by, a pledge of proceeds of Bonds held or set aside under the First Resolution, the Net Revenues, and certain funds and accounts established by the First Resolution, on a parity with Bonds which may be hereafter issued under and pursuant to the First Resolution. Such pledge of the Net Revenues is senior and superior to any pledge of the Net Revenues which the City and County may make to secure obligations which may be issued under and pursuant to any other bond resolution. **The Series 1998 Bonds are not a general or moral obligation of the State of Hawaii or any political subdivision thereof, including the City and County, and the faith and credit of the State of Hawaii or any political subdivision thereof, including the City and County, are not pledged to the payment of the principal of, premium, if any, or interest on the Series 1998 Bonds, and no holder of the Series 1998 Bonds shall have the right to compel the exercise of the taxing power of the State of Hawaii or any political subdivision thereof, including the City and County, in connection with any default with respect to the Series 1998 Bonds.**

Payment of the principal of and interest on the Series 1998 Bonds when due will be guaranteed by a municipal bond insurance policy issued simultaneously with the delivery of the Series 1998 Bonds by Financial Guaranty Insurance Company.



FGIC is a registered service mark used by Financial Guaranty Insurance Company, a private company not affiliated with any U.S. Government agency.

This cover page contains certain information for quick reference only. It is not a summary of the bond issue. Prospective investors must read the entire Official Statement (including the Appendices) to obtain information essential to the making of an informed investment decision.

**Maturity Schedule**  
**Serial Bonds, 15,375,000**

Year	Amount	Interest Rate	Yield or Price	Year	Amount	Interest Rate	Yield or Price
2001	\$1,010,000	4.00%	3.55%	2007	\$1,285,000	4.000%	4.10%
2002	1,050,000	4.00	3.75	2008	1,335,000	4.125	4.20
2003	1,095,000	4.00	3.85	2009	1,400,000	5.000	4.33
2004	1,140,000	4.00	3.95	2010	1,470,000	5.000	4.43
2005	1,185,000	4.00	4.00	2011	1,545,000	5.000	4.50 *
2006	1,235,000	4.00	4.05	2012	1,625,000	5.000	4.60 *

\$11,565,000 4.75% Term Bonds Due July 1, 2018, Price 97.391  
\$28,360,000 4.75% Term Bonds Due July 1, 2028, Price 95.864  
(plus accrued interest from December 1, 1998)

\*Priced to July 1, 2010 at 100%

The Series 1998 Bonds are offered when, as and if issued and received by the Underwriters, and are subject to the approval of legality by Hawkins, Delafield & Wood, New York, New York, Bond Counsel to the City and County. Certain legal matters will be passed upon for the Underwriters by their counsel Orrick, Herrington & Sutcliffe LLP, San Francisco, California, and McCriston Miho Miller Mukai, Honolulu, Hawaii. It is expected that the Series 1998 Bonds in definitive form will be available for delivery to DTC, in New York, New York, on or about December 23, 1998.

**PaineWebber Incorporated**

**Salomon Smith Barney**

Dated: December 9, 1998

No dealer, broker, salesperson or other person has been authorized by the City and County of Honolulu, Hawaii or by the Underwriters to give any information or to make any representations other than as contained in this Official Statement, and if given or made, such other information or representations must not be relied upon as having been authorized by any of the foregoing. This Official Statement does not constitute an offer to sell or the solicitation of an offer to buy, nor shall there be any sale of, the Series 1998 Bonds by any person in any jurisdiction in which it is unlawful for such person to make such offer, solicitation or sale. The information set forth herein has been furnished by the City and County of Honolulu, Hawaii and by other sources which are believed to be reliable but is not guaranteed as to accuracy or completeness and is not to be construed as a representation by the Underwriters. The information and expressions of opinion herein are subject to change without notice and neither the delivery of this Official Statement nor any sale made hereunder shall, under any circumstances, create any implication that there has been no change in the affairs of the City and County since the date hereof.

In connection with this offering, the Underwriters may over-allot or effect transactions which stabilize or maintain the market price of the Series 1998 Bonds at a level above that which might otherwise prevail in the open market. Such stabilizing, if commenced, may be discontinued at any time. The Underwriters may offer and sell the Series 1998 Bonds to certain dealers and certain dealer banks and banks acting as agents at prices lower than the public offering prices stated on the cover page hereof and said public offering prices may be changed from time to time by the Underwriters.

**City and County of Honolulu  
State of Hawaii**



**MAYOR**

Jeremy Harris

**CITY COUNCIL**

Mufi Hannemann  
Chair and Presiding Officer

John Henry Felix  
Vice-Chair

Duke Bainum  
John DeSoto  
Steve Holmes  
Donna Mercado Kim  
Rene Mansho  
Andy Mirikitani  
Jon Yoshimura

**DIRECTOR OF BUDGET AND FISCAL SERVICES**

Roy K. Amemiya, Jr.

**DIRECTOR OF ENVIRONMENTAL SERVICES**

Kenneth E. Sprague

**CORPORATION COUNSEL**

David Z. Arakawa

**BOND COUNSEL**

Hawkins, Delafield & Wood  
New York, New York

[THIS PAGE INTENTIONALLY LEFT BLANK]

## TABLE OF CONTENTS

	<u>Page</u>		<u>Page</u>
INTRODUCTORY STATEMENT	1	Reimbursable Obligations	44
SOURCES AND USES OF FUNDS	3	Support Facilities and Interest Rate Exchange	
SECURITY FOR THE BONDS	3	Agreements	44
General	3	Funds and Accounts	46
Funds and Accounts	4	Sewer Fund	46
Common Reserve Account and Separate Series		Purposes of the Various Funds and Account	47
Reserve Accounts	5	Investment of Funds	51
Rate Covenant	6	Valuation of Investment Securities	52
Additional Bonds and Refunding Bonds	7	Depositaries	52
BOND INSURANCE	8	Concerning Depositaries and Paying Agents	53
THE SERIES 1998 BONDS	9	Covenants	53
Description of Book-Entry	9	Events of Default	56
General	12	Notice to Bondholders of Event of Default	57
Optional Redemption	12	Acceleration of Bonds	57
Mandatory Redemption	12	Inspection of Books and Records; the City and County	
Notice of Redemption	13	to Account as Trustee for Express Trust	57
Effect of Redemption	13	Application of Revenues in an Event of Default	58
Selection for Redemption	13	Suits at Law or Equity and Mandamus and	
DEBT SERVICE REQUIREMENTS	14	Appointment of a Receiver	59
THE CITY AND COUNTY AND THE DEPARTMENT	14	Bondholders' Committee	59
Purpose and Powers	14	Bondholders May Direct Proceedings	59
Department Work Force	15	Abandonment of Proceedings; Adverse	
Department Principal Officers	16	Determination	59
Year 2000 Compliance	16	Amending and Supplementing of Resolution	60
THE WASTEWATER SYSTEM	17	Discharge of Liens and Pledges; Bonds No	
Introduction	17	Longer Outstanding and Deemed to be Paid	61
General Description of Existing Facilities	17	PENDING LITIGATION	62
Environmental Compliance	18	RATINGS	62
Projected Customer Growth	18	UNDERWRITING	63
CAPITAL IMPROVEMENT PROGRAM	20	TAX MATTERS	63
EPA Consent Decree	20	General	63
Criteria for Ranking CIP Projects by Priority	20	Certain Additional Federal Tax Consequences	63
Classification of CIP Projects	21	Original Issue Discount	64
1998-2002 Capital Improvement Program	21	Original Issue Premium	64
1998-2007 Capital Improvement Program	22	APPROVAL OF LEGAL PROCEEDINGS	64
1998-2017 Capital Improvement Program	22	CONTINUING DISCLOSURE	64
PROJECTED REVENUES, EXPENSES		MISCELLANEOUS	65
AND COVERAGES	23	Appendix A: Extracts from Audited Financial	
CONCLUSIONS OF CONSULTING ENGINEER	24	Statements of City and County	A-1
CERTAIN FINANCIAL, OPERATING AND OTHER		Appendix B: Consulting Engineer's Feasibility	
INFORMATION AND STATISTICS	25	Report	B-1
Management's Discussion of Financial Performance	25	Appendix C: Proposed Form of Continuing	
Billings and Collections	25	Disclosure Certificate	C-1
Ten Largest Customers	26	Appendix D: Proposed Form of Opinion of	
Debt and Financial Policies	26	Bond Counsel	D-1
FINANCIAL STATEMENTS	32	Appendix E: Specimen Municipal Bond Issue	
CERTAIN DEFINITIONS	33	Insurance Policy	
SUMMARY OF CERTAIN PROVISIONS		and Endorsement	E-1
OF THE FIRST RESOLUTION	40		
Pledge Made in the First Resolution	40		
Additional Bonds	41		
Refunding Bonds	43		
Bond Anticipation Notes	43		
Subordinate Obligations	43		

[THIS PAGE INTENTIONALLY LEFT BLANK]

## OFFICIAL STATEMENT

\$55,300,000

City and County of Honolulu

### Wastewater System Revenue Bonds (First Bond Resolution) Senior Series 1998

#### INTRODUCTORY STATEMENT

This Official Statement, which includes the cover page and the appendices, provides certain information in connection with the issuance by the City and County of Honolulu (the "City and County") of \$55,300,000 aggregate principal amount of Wastewater System Revenue Bonds (First Bond Resolution), Senior Series 1998 (the "Series 1998 Bonds"). The Series 1998 Bonds are to be issued under and secured by the First Wastewater Revenue Bond Resolution adopted by the Council of the City and County on November 10, 1998 (the "First Bond Resolution"), and the Series 1998 Resolution adopted by the Council of the City and County on November 10, 1998 (the "Series 1998 Resolution"). The First Bond Resolution, as amended and supplemented, is referred to herein as the "First Resolution."

The capitalization of any word herein not conventionally capitalized indicates that such word is defined in the First Resolution or this Official Statement. A glossary of certain terms used in this Official Statement and the First Resolution is set forth in CERTAIN DEFINITIONS.

The proceeds of the Series 1998 Bonds will be used: (i) to fund the cost of certain additions and improvements to the Wastewater System of the City and County; (ii) to fund the Common Reserve Account in an amount equal to the Common Reserve Account Requirement; and (iii) to pay the costs of issuance of the Series 1998 Bonds.

The Series 1998 Bonds are the first Series of an issue of bonds (the "Bonds") issued under and pursuant to the First Resolution and will be secured by and entitled to the protection of the First Resolution on a parity with all Bonds to be hereafter issued under and pursuant to the First Resolution. The Bonds are limited special obligations of the City and County payable solely from, and secured solely by a pledge of, proceeds of Bonds held or set aside under the First Resolution, the Net Revenues, and certain funds and accounts established by the First Resolution. Such pledge of the Net Revenues is senior and superior to any pledge of the Net Revenues which the City and County may make to secure obligations which may be issued under and pursuant to any other bond resolution. See SECURITY FOR THE BONDS.

As part of the same plan of finance, the City and County will be concurrently selling and issuing \$264,152,890 principal amount of Wastewater System Revenue Bonds (Second Bond Resolution), Junior Series 1998 (the "Junior Series 1998 Bonds"). The Junior Series 1998 Bonds are to be issued under and secured by the Second Wastewater Revenue Bond Resolution adopted by the Council of the City and County on November 10, 1998 (the "Second Bond Resolution"), and the Series 1998 Resolution adopted by the Council of the City and County on November 10, 1998 (the "Junior Series 1998 Resolution"). The Junior Series 1998 Bonds are limited special obligations of the City and County payable solely from, and secured solely by a pledge of, the Net Revenues, proceeds of bonds held or set aside under the Second Bond Resolution and certain funds and accounts established by the Second Bond Resolution. Such pledge of the Net Revenues is junior and subordinate to the pledge of the Net Revenues to secure the Bonds issued under and pursuant to the First Resolution. The Junior Series 1998 Bonds are considered to be Subordinate Obligations for purposes of the First Resolution. The proceeds of the Junior Series 1998 Bonds will be used: (i) to refund \$217,870,000 principal amount of general obligation bonds issued by the City and County for the purposes of the Wastewater System (the "Refunded Reimbursable Obligations"); (ii) to fund a junior debt service reserve subaccount in an amount equal to its requirement; and (iii) to pay the costs of issuing the Junior Series 1998 Bonds. The refunding of the Refunded Reimbursable Obligations will allow the City and County to achieve a more level overall debt service profile. The resulting structure will allow the City and County to match more closely the average life of its debt being refunded with the useful life of the wastewater facilities financed from the proceeds of such debt.

The Department of Environmental Services (the "Department") has the full and complete authority to manage, control and operate the Wastewater System owned and under the jurisdiction of the City and County, including all materials, supplies, equipment and properties used or useful in connection with the Wastewater System. The Department was created July 1, 1998 as part of a City-wide reorganization to streamline operations. Previously, the Department of Wastewater Management, created by a City Charter change effective July 1, 1993, provided operation, maintenance, planning, design and construction of City wastewater facilities. The City Charter and Chapter 49, Hawaii Revised Statutes (the "Act") empower the City and County to issue revenue bonds in its name for the purposes of the Wastewater System. See THE CITY AND COUNTY AND THE DEPARTMENT.

The Wastewater System services approximately 125,000 separate accounts and a population of approximately 600,000. The service area covers nearly 500 square miles. The customer base includes the residential population, business and industrial, and other users located in the service area. Of the 125,000 accounts, 120,000 are residential representing 71 % of the total revenue from sewer service charges; 5,000 are non-residential representing 29% of the total revenue from sewer service charges. A number of small private wastewater systems also serve some areas in the City and County. The average total volume of wastewater processed by all such private systems is 4.1 million gallons per day. The average total volume of wastewater processed by the City and County's Wastewater System is 114.8 million gallons per day. See THE WASTEWATER SYSTEM.

The additions and improvements to the Wastewater System, the costs of which are to be financed from the proceeds of the Series 1998 Bonds, are part of a five year capital improvement program adopted by the Department and approved by the Council of the City and County (the "1998-2002 Capital Improvement Program"). The 1998-2002 Capital Improvement Program is projected to cost \$341 million (in inflated dollars) and is being undertaken for the purposes, among others, of meeting certain consent decrees entered into by the Department with Federal and State regulatory bodies and reliably serving projected growth in the number of customers served by the Wastewater System. \$84 million of such cost has been financed by the City and County from previously issued Reimbursable Obligations. The 1998-2002 Capital Improvement Program is a part of the 1998-2017 twenty year capital improvement program (the "1998-2017 Capital Improvement Program") the Department plans to undertake. The 1998-2017 Capital Improvement Program is projected to cost \$1.7 billion (in 1998 dollars) and is expected to be undertaken for the same basic purposes as the 1998-2002 Capital Improvement Program. The cost of the 1998-2017 Capital Improvement Program, including the 1998-2002 Capital Improvement Program, is expected to be financed primarily from (i) the proceeds of the Series 1998 Bonds, (ii) proceeds of additional Bonds and Subordinate Obligations to be hereafter issued, (iii) proceeds of Reimbursable Obligations previously issued and currently available, (iv) the Net Revenues of the Wastewater System, and (v) Wastewater System Facilities Charges. See THE CAPITAL IMPROVEMENT PROGRAM and APPENDIX B - ENGINEER'S REPORT.

Carollo Engineers, P.C., Consulting Engineer (the "Consulting Engineer"), has projected revenues, expenses and coverages for the Wastewater System for the Fiscal Years 1998 to 2007, inclusive. The projections are based on inflated dollars (*i.e.*, adjusted from 1998 dollars). The projections indicate that with respect to the Fiscal Years 1998 to 2007, inclusive, the City and County can (i) issue the Series 1998 Bonds to finance \$50,000,000 of necessary additions and improvements to the Wastewater System, to fund the Common Reserve Account in an amount sufficient to satisfy its requirement, and to pay the costs of issuing the Series 1998 Bonds; (ii) issue the Junior Series 1998 Bonds to refund the Refunded Reimbursable Obligations, to fund a junior debt service reserve subaccount in an amount sufficient to satisfy its requirement and to pay the costs of issuing the Junior Series 1998 Bonds; (iii) finance an additional \$660 million of improvements to the Wastewater System from proceeds of additional Bonds and Subordinate Obligations to be hereafter issued, proceeds of Reimbursable Obligations previously issued and currently available, the Net Revenues and Wastewater System Facility Charges over the nine year period; and (iv) fully meet all reserve funding and coverage requirements under the First Resolution and the Second Bond Resolution by raising sewer rates and charges by 3.0% in Fiscal Year 1999-2000 and another 3.0% to 5.4% in each of the Fiscal Years thereafter, and by raising Wastewater System Facility Charges by 3.0% in Fiscal Year 1999-2000 and another 3.0% in each of the Fiscal Years thereafter. The average monthly residential wastewater charge is expected to increase from \$33.65 to \$46.75 (in inflated dollars) by 2007. The Wastewater System Facility Charge is expected to increase from \$1,146 to \$1,452 (in inflated dollars) by 2007. The Consulting Engineer has concluded that historical, current, and projected customer rates and charges for the City and County are relatively high compared to the rates and charges by other public agencies, but are reasonable considering a number of site specific factors including limited economies of scale, high electrical costs, and high equipment and supply costs due to the necessity of long distance shipping. See APPENDIX B - ENGINEER'S REPORT.

Pursuant to the Act and the City Charter, the City Council has the power to impose, prescribe and collect rates, rentals, fees or charges for the use and services of, and the facilities furnished by, the Wastewater System so that the Wastewater System will be and remain self-sustaining. The rates, rentals, fees or charges imposed and prescribed are required to produce revenues which will be at least sufficient to pay debt service on all revenue bonds issued for the purposes of the Wastewater System, including the Bonds, the Subordinate Obligations, and including reserves therefor, to pay the costs of operation, maintenance and repair of the Wastewater System, and to carry out the covenants of all resolutions authorizing the issuance of revenue bonds for the purposes of the Wastewater System, including the First Resolution and all series resolutions adopted thereunder as well as the Second Bond Resolution and all series resolutions adopted thereunder. The rates and charges fixed and imposed by the City Council are not subject to approval by any federal or state regulatory bodies. The City Council has not as of the date of this Official Statement adopted any of the rate increases discussed in the Engineer's Report.

### SOURCES AND USES OF FUNDS

Sources and uses of funds with respect to the Series 1998 Bonds are as follows:

Sources of Funds	
Principal Amount of Series 1998 Bonds . . . . .	\$55,300,000
Plus Accrued Interest . . . . .	157,270
Less Net Original Issue Discount . . . . .	<u>1,186,735</u>
Total Sources . . . . .	<u>\$54,270,535</u>
Uses of Funds	
Deposit to Improvement Account . . . . .	\$50,000,000
Deposit to Debt Service Account . . . . .	157,270
Common Reserve Account . . . . .	3,564,606
*Cost of Issuance . . . . .	<u>548,659</u>
Total Uses . . . . .	<u>\$54,270,535</u>

\* Includes insurance premium and underwriters' discount.

### SECURITY FOR THE BONDS

#### General

The Bonds issued under and pursuant to the First Resolution, including the Series 1998 Bonds, are limited special obligations of the City and County. Pursuant to the First Resolution, there has been pledged, as security for the payment of the debt service on the Bonds, proceeds of the Bonds held or set aside under the First Resolution, the Net Revenues, and all Funds and Accounts established by the First Resolution other than the Rebate Account, the Subordinate Obligation Account, and the Reimbursable Obligation Account and in certain instances pursuant to the First Resolution, the Common Reserve Account or Separate Series Reserve Accounts. The Bonds are equally and ratably payable and secured under the First Resolution except that the City and County has reserved the right under the First Resolution to afford a particular Series of Bonds or particular Bonds additional or different security through a Support Facility, escrow funds, or the establishment of separate funds and accounts with respect to a particular Series of Bonds funded from sources other than the Net Revenues.

Under the First Resolution, Net Revenues means, with respect to any period, the Revenues during such period less amounts required to pay Operation and Maintenance Expenses. Revenues means the moneys, including any moneys collected from the City and County or any department thereof other than the Department, derived by the Department from the rates, rentals, fees and charges prescribed for the use and services of, and the facilities and commodities furnished by, the Wastewater System. Revenues include (i) all income, receipts, profits, and other moneys derived from the furnishing or supplying of the services, facilities and commodities through the Wastewater System; (ii) all income from investments of moneys held under the First Resolution except the Rebate Account, the Subordinate Obligation Account or the Reimbursable Obligation Account; (iii) all payments made by Counterparties pursuant to Interest Rate Exchange Agreements; and (iv) moneys and Investment Securities transferred from the Rate Stabilization Account to the Sewer Fund within ninety (90) days following the end of a Fiscal Year. Certain

items such as certain deposits subject to refund, certain contributions in-aid-of construction and assessment, impact and other similar fees imposed and collected by the Department, income, fees, charges, receipts, profits or other moneys derived by the Department from the ownership or operation of any separate utility system, and certain gifts, grants, donations, moneys and Investment Securities transferred from the Sewer Fund to the Rate Stabilization Account within ninety (90) days following the end of a Fiscal Year, or Wastewater System Facility Charges do not constitute Revenues as provided in the First Resolution.

The pledge of the Net Revenues for the security and payment of the Bonds under the First Resolution is superior to the pledge and security for Subordinate Obligations and Reimbursable Obligations authorized to be issued pursuant to the First Resolution. "Subordinate Obligations" are any obligations of the City and County payable from the Net Revenues, other than the Bonds and the Reimbursable Obligations, issued in compliance with the provisions of the First Resolution. The Junior Series 1998 Bonds, which will be issued concurrently with the Series 1998 Bonds, will be the first Subordinate Obligations to be issued. "Reimbursable Obligations" are reimbursable general obligation bonds issued and delivered or to be issued and delivered by the City and County to finance certain costs related to the Wastewater System. The debt service on Reimbursable Obligations is paid from moneys in the City and County's general fund. Pursuant to State law, the amount of such debt service may be reimbursed from the Net Revenues. Upon the refunding of the Refunded Reimbursable Obligations, there will be \$124,942,267 principal amount of Reimbursable Obligations outstanding.

The Series 1998 Bonds will constitute Bonds under the First Resolution. The Series 1998 Bonds are the first Series of Bonds to be issued under the First Resolution. The City and County expects to issue additional Bonds under the First Resolution on a parity with the Series 1998 Bonds.

The Bonds are not a general or moral obligation of the State of Hawaii or any political subdivision thereof, including the City and County, and the faith and credit of the State of Hawaii or any political subdivision thereof, including the City and County, are not pledged to the payment of the principal of, premium, if any, or interest on the Bonds, and no holder of the Bonds shall have the right to compel the exercise of the taxing power of the State of Hawaii or any political subdivision thereof, including the City and County, in connection with any default with respect to the Bonds.

#### Funds and Accounts

The various funds and accounts established under or pledged by the First Resolution, the flow of Revenues through such funds and accounts, the rights and remedies of Bondholders under the First Resolution and other related matters are summarized in SUMMARY OF CERTAIN PROVISIONS OF THE FIRST RESOLUTION.

The City and County has established the Sewer Fund by ordinance. Revenues are deposited in the Sewer Fund. The First Resolution establishes in the Sewer Fund, a Debt Service Account, a Rate Stabilization Account, a Renewal and Replacement Account and a Wastewater General Account, all of which are pledged as security for the payment of debt service on all Bonds subject to the terms and provisions of and the exceptions provided in the First Resolution. The First Resolution also establishes a Common Reserve Account in the Sewer Fund and permits the establishment in the Sewer Fund of one or more Separate Series Reserve Account. The Common Reserve Account is pledged as additional security for the payment of debt service on the Bonds of such Series designated by the City and County to be entitled to the benefit of the Common Reserve Account. Each Separate Series Reserve Account is pledged as additional security for the payment of debt service on the Bonds of such individual Series designated by the City and County to be entitled to the benefit of such Separate Series Reserve Account.

Debt service on and redemption price of Bonds are payable from the Debt Service Account in the Sewer Fund. In the event of a deficiency in the Debt Service Account, debt service on and redemption price of particular Bonds are payable from the Common Reserve Account or the Separate Series Reserve Accounts, as applicable, but only if such Bonds are entitled to the benefit of such reserve accounts.

Moneys deposited and retained in the Sewer Fund may be maintained in an amount which is reasonable and necessary for working capital and reserves. The Rate Stabilization Account is to be used to stabilize the rates and charges of the Wastewater System. The Rate Stabilization Account is to be funded (i) from the Net Revenues but only after paying the Operation and Maintenance Expenses and after transferring required amounts to other funds and accounts as provided in the First Resolution, and (ii) from transfers from the Wastewater General Account. The Renewal and Replacement Account is to be used to pay the costs of improvements to or reconstruction of the Wastewater System, repairs, major or extraordinary repairs and renewals or replacements of the Wastewater System

and under certain conditions, as set forth in the First Resolution, to meet deficiencies in the Debt Service Account, the Common Reserve Account, Separate Series Reserve Accounts, if any, the Subordinate Obligation Account and the Reimbursable Obligation Account, and will be maintained in an amount provided for in the Annual Budget. The Wastewater General Account may be used for any lawful purpose of the City and County, including funding of the Rate Stabilization Account, and under certain conditions, may be used to meet deficiencies in the Sewer Fund, the Common Reserve Account, Separate Series Reserve Accounts, if any, the Renewal and Replacement Account, the Rebate Account, the Subordinate Obligation Account and the Reimbursable Obligation Account.

The First Resolution also establishes in the Sewer Fund, a Rebate Account, a Subordinate Obligation Account and a Reimbursable Obligation Account. Such accounts are not pledged as security for the Series 1998 Bonds, or any other Bonds. The funds in the Subordinate Obligation Account are to be used to pay debt service on and redemption price of Subordinate Obligations, provide necessary debt service reserves and other reserves and pay other costs related to Subordinate Obligations. The funds in the Reimbursable Obligation Account are to be used to pay debt service on and redemption price of Reimbursable Obligations. The funds in the Rebate Account are to be used to pay required rebates to the United States Treasury Department incurred in respect of the Bonds.

The First Resolution also establishes in the Sewer Fund, the Wastewater System Facility Charge Account. Wastewater System Facility Charges collected by the Department are deposited in the Wastewater System Facility Charge Account. The Wastewater System Facility Charge Account is pledged under the First Resolution as security for the payment of debt service on and redemption price of the Bonds. However, if any amounts are used pay debt service on or redemption price of the Bonds, the Wastewater System Facility Charge Account must be reimbursed from the Net Revenues with the priority set forth in the First Resolution. The Wastewater System Facility Charges are not considered to be Revenues under the First Resolution.

The City and County has also established by ordinance the Improvement Fund. The First Resolution establishes in the Improvement Fund an Improvement Account and permits the establishment within the Improvement Account of one or more Series Improvements Subaccounts and one or more Series Improvement Interest Subaccounts. Proceeds of Bonds issued under the First Resolution are to be deposited in the Improvement Account or a Series Improvement Subaccount pending application to pay the Costs of Improvements. Proceeds of Bonds issued under the First Resolution which are to be used to pay capitalized interest on the Bonds of a Series during the period of construction of an Improvement and for six months thereafter must be deposited in a Series Improvement Interest Subaccount. The Improvement Account, each Series Improvement Subaccount and each Series Improvement Interest Subaccount (but not the Improvement Fund) are pledged under the First Resolution as security for the payment of debt service on and redemption price of the Bonds.

#### **Common Reserve Account and Separate Series Reserve Accounts**

*Common Reserve Account.* The First Resolution establishes a Common Reserve Account. Under the First Resolution, the City and County may designate one or more Series of Bonds to be entitled to the benefit of the Common Reserve Account. The Series 1998 Bonds are entitled to the benefit of the Common Reserve Account. The moneys held in the Common Reserve Account are to be used to pay debt service on the Bonds entitled to the benefit of the Common Reserve Account in the event of a deficiency in the Debt Service Account to pay such debt service. The Common Reserve Account is to be maintained in an amount not less than the Common Reserve Account Requirement. The Common Reserve Account Requirement is an amount that is equal to the greatest amount of Aggregate Debt Service for the then current or any future Fiscal Year on all Outstanding Bonds entitled to the benefit of the Common Reserve Account; provided, however, that if upon the issuance of a Series of Bonds entitled to the benefit of the Common Reserve Account, such amount would require moneys credited to the Common Reserve Account from the proceeds of such Bonds in an amount in excess of the maximum amount permitted under the Code, the Common Reserve Account Requirement will then be the Common Reserve Account Requirement immediately preceding the issuance of such Bonds and the maximum amount permitted under the Code to be deposited from the proceeds of such Bonds, as certified by an Authorized Officer. The First Resolution provides that the Aggregate Debt Service is to be computed with respect to each Variable Rate Bond entitled to the benefit of the Common Reserve Account by using the Assumed Long-Term Fixed Rate.

In lieu of cash or securities, the First Resolution permits the Department to satisfy the Common Reserve Account Requirement in part or in whole by causing to be deposited into the Common Reserve Account a Support Facility (which may be an irrevocable letter of credit, surety bond, loan agreement, standby bond purchase agreement, or other agreement facility or insurance or guaranty agreement issued by a bank or banks, or other financial institution or institutions, or any combination of the foregoing) in an amount equal to the difference

between the Common Reserve Account Requirement and the sums then on deposit in the Common Reserve Account, if any. The Support Facility must be payable (upon the giving of notice as required thereunder) on or before any interest payment date on which moneys will be required to be withdrawn from the Common Reserve Account and applied to the payment of principal or redemption price of or interest on any Bonds and such withdrawal cannot be met by amounts on deposit in the Common Reserve Account or provided from any other available Fund under the First Resolution. Any Support Facility deposited in the Common Reserve Account or the long-term debt of the issuer of any Support Facility deposited in the Common Reserve Account must, in each case, be rated in the highest rating category by each Rating Agency, and if rated by A.M. Best & Company, also be rated in the highest rating category by A.M. Best & Company. In the event any Support Facility deposited in the Common Reserve Account or the long-term debt of the issuer of any Support Facility deposited in the Common Reserve Account falls below the second highest rating category of each Rating Agency, and A.M. Best & Company, if rated by A.M. Best & Company, the City and County must, within 120 days, obtain a new Support Facility which, or which the long-term debt of the issuer of such new Support Facility, is rated in the highest rating category of such rating agencies; provided, however, that if the new Support Facility is not obtained within 120 days, the City and County must deposit in the Common Reserve Account, Net Revenues in the amount provided in the First Resolution. If a disbursement is made pursuant to a Support Facility deposited in the Common Reserve Account, the City and County must: first, reinstate the full amount of such Support Facility; and second, if necessary deposit Net Revenues in the Common Reserve Account in the amount of the disbursement made under such Support Facility, in either case such that the amount in the Common Reserve Account will equal the Common Reserve Account Requirement within a period of time not longer than would be required to restore the Common Reserve Account by application of moneys in the Sewer Fund as required by the First Resolution. The City and County may at any time deposit cash or Investment Securities as replacement for one or more Support Facilities.

*Separate Series Reserve Accounts.* The First Resolution permits the establishment of a Separate Series Reserve Account to provide additional security for the Bonds of a Series which is not entitled to the benefit of the Common Reserve Account. In the event of a deficiency in the Debt Service Account to pay debt service on the Bonds of a Series entitled to the benefit of a Separate Series Reserve Account, the amounts held in such Separate Series Reserve Account are to be used exclusively to pay such debt service. The amount to be maintained in any such Separate Series Reserve Account for a Series of Bonds is to be determined at the time such Bonds are authorized or sold. The credit quality of a Support Facility to be deposited in any Separate Series Reserve Account for a Series of Bonds is also to be determined at the time such Bonds are authorized or sold. No Separate Series Reserve Account has been established for the Series 1998 Bonds.

*Transfers to Reserve Accounts.* The First Resolution requires that in each month, after paying and setting aside an amount sufficient to pay the Operation and Maintenance Expenses for such month, and after transferring to the Debt Service Account an amount sufficient to pay debt service on the Bonds to accrue in such month, moneys in the Sewer Fund are to be transferred pro rata to the Common Reserve Account and each Separate Series Reserve Account in such amounts as are required so that the balances in the Common Reserve Account and each Separate Series Reserve Account are equal to their respective requirements, or at the election of the Department, so that at least one-sixth of any deficiency in the Common Reserve Account or each Separate Series Reserve Account is eliminated.

#### **Rate Covenant**

The City and County is required by the First Resolution, among other things, to fix, charge and collect such rates and other charges as shall be required in order that in each Fiscal Year the Net Revenues shall not be less than the Net Revenue Requirement for such Fiscal Year. The Net Revenue Requirement means with respect to any Fiscal Year or any period, an amount equal to the greater of: (i) the sum of (a) the Aggregate Debt Service in such Fiscal Year or such period and (b) the Required Deposits for such Fiscal Year or such period; or (ii) 1.20 times the Aggregate Debt Service in such Fiscal Year plus 1.00 times the aggregate Support Facility Reimbursement Obligations outstanding as of the end of such Fiscal Year. Net Revenues means, with respect to any period, the Revenues during such period less amounts required to pay Operation and Maintenance Expenses. Aggregate Debt Service means, for any period and as of any date of computation, the sum of the amounts of Debt Service for such period with respect to all Series of Bonds. Support Facility Reimbursement Obligations are obligations of the City and County to directly reimburse the Support Facility Provider of a Support Facility for amounts paid thereunder or a Counterparty under an Interest Rate Exchange Agreement for amounts paid, whether or not such obligation to reimburse is evidenced by a promissory note or similar instrument.

Failure by the City and County to comply with the foregoing rate covenant in any Fiscal Year will not constitute an Event of Default under the First Resolution so long as the provisions of the First Resolution described below are complied with. Prior to the end of each Fiscal Year the Director of Environmental Services or the Director of Budget and Fiscal Services if requested by the Director of Environmental Services is required by the First Resolution to complete a review of the financial condition of the Department for the purpose of estimating whether the Net Revenues for such Fiscal Year and for the next succeeding Fiscal Year will be sufficient to comply with the foregoing rate covenant and to make a written certification with respect to compliance or noncompliance. Such review is to take into consideration the completion of any uncompleted Improvement and the issuance of future Series of Bonds if necessary to finance the completion of such Improvements. Such written certification is to set forth a reasonably detailed statement of the actual and estimated Revenues, Operation and Maintenance Expenses, Aggregate Debt Service, and any other estimates or assumptions upon which such determination was based, shall be filed with the City Clerk on or before July 1 in each year. If it is determined in such written certification that the Revenues may not be so sufficient, the Director of Environmental Services or the Director of Budget and Fiscal Services if requested by the Director of Environmental Services must forthwith make a study for the purpose of determining a schedule of fees, rates and charges which, in the opinion of the Director of Environmental Services or the Director of Budget and Fiscal Services, will cause sufficient Revenues to be collected in the following Fiscal Year to comply with such rate covenant, or the Director of Environmental Services or the Director of Budget and Fiscal Services may elect to cause the Consulting Engineer to make such a study and render such certification. The City Council, as promptly as practicable but no later than 120 days following such determination by the Director of Environmental Services or the Director of Budget and Fiscal Services, or receipt of the Consulting Engineer's recommendation, is required to adopt and place in effect a schedule of fees, rates and charges as so determined or recommended. See CERTAIN OPERATING AND OTHER STATISTICS - "Summary of Current Sewer Rate Ordinance" for current sewer charges, PROJECTED REVENUES, EXPENSES AND COVERAGES and APPENDIX B - ENGINEER'S REPORT for a discussion of the Department's projected rates, revenues and expenses, and THE CITY AND COUNTY AND THE DEPARTMENT - "Purpose and Powers" for a discussion of the rate making powers of the City Council.

#### Additional Bonds and Refunding Bonds

The First Resolution permits the issuance of additional Series of Bonds (exclusive of refunding Bonds) on a parity with the Bonds then Outstanding ("Additional Bonds") for any lawful use or purpose relating to the Wastewater System, including, without limitation, payment of all or a portion of the Costs of Improvements, but only upon compliance as to each such Series with the conditions set forth in the First Resolution, which conditions include delivery to the Director of Budget and Fiscal Services of the following documents or moneys or securities:

1. A written certificate of the City and County stating the amount required to be in the Common Reserve Account after issuance of the Bonds then to be issued and that the amounts deposited will not be less than the Common Reserve Account Requirement.

2. A written certificate of the City and County stating the amount required to be in the Separate Series Reserve Account established for the Bonds of such Series after issuance of the Bonds then to be issued and that the amounts deposited will not be less than the Separate Series Reserve Account Requirement for the Bonds of such Series.

3. Either:

- (i) a written certificate of the City and County based: (i) on audited figures or (ii) to the extent audited figures are not available, on figures taken by an independent certified public accountant from the Department's books and records, showing that the Net Revenues for: (a) the most recent Fiscal Year, or (b) any consecutive twelve (12) month period out of twenty-four (24) months immediately preceding the month in which such Bonds are issued were not less than the greater of: (x) the sum of (1) the maximum Aggregate Debt Service on all Bonds then Outstanding and on the proposed Series of Bonds in any Fiscal Year and the twelve (12) month period selected and (2) the Required Deposits for such Fiscal Year or the twelve (12) month period selected; and (y) 1.20 times the maximum Aggregate Debt Service on all Bonds then Outstanding and on the proposed Series of Bonds in any Fiscal Year and the twelve (12) month period selected, plus 1.00 times the aggregate Support Facility Reimbursement Obligations outstanding as of the date of the written certificate of the City and County; or

(II) a written certificate of the City and County or Certificate of the Consulting Engineer that the Net Revenues to be derived in each of the five (5) Fiscal Years following the earlier of: (i) the end of the period during which interest is capitalized or, if no interest is to be capitalized, the Fiscal Year in which the proposed Series of Bonds are issued, and (ii) the date on which substantially all Improvements to be financed with the proceeds of the proposed Series of Bonds are expected to commence operations, or, if the proceeds of such Series of Bonds will not be used to fund the Costs of Improvements, the Fiscal Year in which the proposed Series of Bonds are issued, are estimated to be not less than the greater of: (x) the sum of (1) the maximum Aggregate Debt Service on all Bonds then Outstanding and on the proposed Series of Bonds in any such Fiscal Year, and (2) the Required Deposits for any such Fiscal Year; and (y) 1.20 times the maximum Aggregate Debt Service on all Bonds then Outstanding and on the proposed Series of Bonds in any such Fiscal Year, plus 1.00 times the aggregate Support Facility Reimbursement Obligations outstanding as of the date of such written certificate of the City and County or certificate of the Consulting Engineer.

The provisions of the First Resolution described in item 3 above do not apply to the Series 1998 Bonds. In determining Net Revenues for purposes of the certificate described above, the City and County or the Consulting Engineer, as the case may be, is permitted, and in certain instances is required, to make certain adjustments as provided in the First Resolution. In addition, the First Resolution requires that certain other adjustments to Net Revenues derived from Debt Service on Variable Rate Bonds and debt service on Bond Anticipation Notes and short-term Subordinate Obligations and Reimbursable Obligations be made for purposes of the written certificates described above. See SUMMARY OF CERTAIN PROVISIONS OF THE FIRST RESOLUTION.

Bonds may be issued as variable rate bonds, fixed rate bonds, bonds providing for the right of the owner thereof to present the Bond for redemption or purchase prior to maturity, zero interest rate or deep discount bonds, bonds providing for the compounding of interest, or any combination thereof. Bonds may be issued or outstanding from time to time with or without credit enhancement provisions. See SUMMARY OF CERTAIN PROVISIONS OF THE FIRST RESOLUTION.

The First Resolution also permits the issuance of Bonds ("Refunding Bonds") on a parity with the Bonds then Outstanding to refund all or any part of: (i) a Series of Outstanding Bonds; (ii) Subordinate Obligations; or (iii) Reimbursable Obligations. Refunding Bonds may only be issued by the City and County upon satisfaction of certain conditions set forth in the First Resolution.

A more detailed description of the requirements relating to the issuance of Additional Bonds or Refunding Bonds is set forth in SUMMARY OF CERTAIN PROVISIONS OF THE FIRST RESOLUTION -- "Additional Bonds" and "Refunding Bonds."

The First Resolution also permits the issuance of notes in anticipation of a Series of Bonds if the City and County has theretofore authorized the issuance of such Bonds. The interest on such notes (and any renewal thereof) shall be payable from the proceeds of such notes or other notes or from the proceeds of the sale of the Bonds in anticipation of which such notes are issued. A more detailed description of the provisions for security for payment of such notes and other requirements relating to the issuance of notes is set forth in SUMMARY OF CERTAIN PROVISIONS OF THE FIRST RESOLUTION -- "Bond Anticipation Notes."

## BOND INSURANCE

Concurrently with the issuance of the Series 1998 Bonds, Financial Guaranty Insurance Company ("Financial Guaranty") will issue its Municipal Bond New Issue Insurance Policy for the Series 1998 Bonds (the "Policy"). The Policy unconditionally guarantees the payment of that portion of the principal of and interest on the Series 1998 Bonds which has become due for payment, but shall be unpaid by reason of nonpayment by the City and County. Financial Guaranty will make such payments to State Street Bank and Trust Company, N.A., or its successor as its agent (the "Fiscal Agent"), on the later of the date on which such principal and interest is due or on the business day next following the day on which Financial Guaranty shall have received telephonic or telegraphic notice, subsequently confirmed in writing, or written notice by registered or certified mail, from an owner of Series 1998 Bonds or the Paying Agent of the nonpayment of such amount by the City and County. The Fiscal Agent will disburse such amount due on any Series 1998 Bond to its owner upon receipt by the Fiscal Agent of evidence satisfactory to the Fiscal Agent of the owner's right to receive payment of the principal and interest due for payment and evidence, including any appropriate instruments of assignment, that all of such owner's rights to payment of

such principal and interest shall be vested in Financial Guaranty. The term "nonpayment" in respect of a Series 1998 Bond includes any payment of principal or interest made to an owner of a Series 1998 Bond which has been recovered from such owner pursuant to the United States Bankruptcy Code by a trustee in bankruptcy in accordance with a final, nonappealable order of a court having competent jurisdiction.

The Policy is non-cancellable and the premium will be fully paid at the time of delivery of the Series 1998 Bonds. The Policy covers failure to pay principal of the Series 1998 Bonds on their respective stated maturity dates, or dates on which the same shall have been duly called for mandatory sinking fund redemption, and not on any other date on which the Series 1998 Bonds may have been otherwise called for redemption, accelerated or advanced in maturity, and covers the failure to pay an installment of interest on the stated date for its payment.

Generally, in connection with its insurance of an issue of municipal securities, Financial Guaranty requires, among other things, (i) that it be granted the power to exercise any rights granted to the holders of such securities upon the occurrence of an event of default, without the consent of such holders, and that such holders may not exercise such rights without Financial Guaranty's consent, in each case so long as Financial Guaranty has not failed to comply with its payment obligations under its insurance policy; and (ii) that any amendment or supplement to or other modification of the principal legal documents be subject to Financial Guaranty's consent. The specific rights, if any, granted to Financial Guaranty in connection with its insurance of the Series 1998 Bonds are set forth in the description of the principal legal documents appearing elsewhere in this Official Statement. Reference should be made as well to such description for a discussion of the circumstances, if any, under which the City and County is required to provide additional or substitute credit enhancement, and related matters.

This Official Statement contains a section regarding the ratings assigned to the Series 1998 Bonds and references should be made to such section for a discussion of such ratings and the basis for their assignment to the Series 1998 Bonds. Reference should be made to the description of the City and County and the Series 1998 Bonds for a discussion of the ratings, if any, assigned to such entity's outstanding parity debt that is not secured by credit enhancement and the circumstances, if any, under which the City and County is required to provide additional or substitute credit enhancement, and related matters.

The Policy is not covered by the Property/Casualty Insurance Security Fund specified in Article 76 of the New York Insurance Law.

Financial Guaranty is a wholly-owned subsidiary of FGIC Corporation (the "Corporation"), a Delaware holding company. The Corporation is a subsidiary of General Electric Capital Corporation ("GE Capital"). Neither the Corporation nor GE Capital is obligated to pay the debts of or the claims against Financial Guaranty. Financial Guaranty is a monoline financial guaranty insurer domiciled in the State of New York and subject to regulation by the State of New York Insurance Department. As of September 30, 1998, the total capital and surplus of Financial Guaranty was approximately \$1,288,640,899. Financial Guaranty prepares financial statements on the basis of both statutory accounting principles and generally accepted accounting principles. Copies of such financial statements may be obtained by writing to Financial Guaranty at 115 Broadway, New York, New York 10006, Attention: Communications Department (telephone number: (212) 312-3000) or to the New York State Insurance Department at 25 Beaver Street, New York, New York 10004-2319, Attention: Financial Condition Property/Casualty Bureau (telephone number: (212) 480-5187).

## THE SERIES 1998 BONDS

### Description of Book-Entry

The Depository Trust Company ("DTC"), New York, New York, will act as securities depository for the Series 1998 Bonds. The Series 1998 Bonds will be issued as fully-registered securities in the name of Cede & Co. (DTC's partnership nominee). One fully-registered Series 1998 Bond certificate will be issued for each maturity of the Series 1998 Bonds, each in the aggregate principal amount of such maturity of such series, and will be deposited with DTC.

DTC is a limited-purpose trust company organized under the New York Banking Law, a banking organization within the meaning of the New York Banking Law, a member of the Federal Reserve System, a clearing corporation within the meaning of the New York Uniform Commercial Code, and a clearing agency

registered pursuant to the provisions of Section 17A of the Securities Exchange Act of 1934. DTC holds securities that its participants ("Participants") deposit with DTC. DTC also facilitates the settlement among Participants of securities transactions, such as transfers and pledges, in deposited securities through electronic computerized book-entry changes in Participants' accounts, thereby eliminating the need for physical movement of securities certificates. Direct Participants include securities brokers and dealers, banks, trust companies, clearing corporations and certain other organizations ("Direct Participants"). DTC is owned by a number of its Direct Participants and by the New York Stock Exchange, Inc., the American Stock Exchange, Inc., and the National Association of Securities Dealers, Inc. Access to the DTC system is also available to others such as securities brokers and dealers, banks and trust companies that clear through or maintain a custodial relationship with a Direct Participant, either directly or indirectly ("Indirect Participants"). The rules applicable to DTC and its Participants are on file with the Securities and Exchange Commission.

Purchases of Series 1998 Bonds under the DTC system must be made by or through Direct Participants, which will receive a credit for the Series 1998 Bonds on DTC's records. The ownership interest of each actual purchaser of each Series 1998 Bond ("Beneficial Owner") is in turn to be recorded on the Direct and Indirect Participants' records. Beneficial Owners will not receive written confirmation from DTC of their purchase, but Beneficial Owners are expected to receive written confirmations providing details of the transaction, as well as periodic statements of their holdings, from the Direct or Indirect Participant through which the Beneficial Owner entered into the transaction. Transfers of ownership interests in the Series 1998 Bonds are to be accomplished by entries made on the books of Participants acting on behalf of Beneficial Owners. Beneficial Owners will not receive certificates representing their ownership interests in the Series 1998 Bonds, except in the event that use of the book-entry system for the Series 1998 Bonds is discontinued.

To facilitate subsequent transfers, all Series 1998 Bonds deposited by Participants with DTC and their registration in the name of Cede & Co. effect no change in beneficial ownership. DTC has no knowledge of the actual Beneficial Owners of the Series 1998 Bonds; DTC's records reflect only the identity of the Direct Participants to whose accounts such Series 1998 Bonds are credited, which may or may not be the Beneficial Owners. The Participants will remain responsible for keeping account of their holdings on behalf of their customers.

Conveyance of notices and other communications by DTC to Direct Participants, by Direct Participants to Indirect Participants, and by Direct Participants and Indirect Participants to Beneficial Owners will be governed by arrangements among them, subject to any statutory or regulatory requirements as may be in effect from time to time.

Redemption notices shall be sent to Cede & Co. If less than all of the Bonds within a maturity of a Series of the Series 1998 Bonds are being redeemed, DTC's practice is to determine by lot the amount of the interest of each Direct Participant in such maturity to be redeemed.

Neither DTC nor Cede & Co. will consent or vote with respect to Series 1998 Bonds. Under its usual procedures, DTC mails an omnibus proxy (the "Omnibus Proxy") to the City and County as soon as possible after the record date. The Omnibus Proxy assigns Cede & Co.'s consenting or voting rights to those Direct Participants to whose accounts the Series 1998 Bonds are credited on the record date (identified in a listing attached to the Omnibus Proxy).

Principal, redemption premium, if any, and interest payments on the Series 1998 Bonds will be made to DTC. DTC's practice is to credit Direct Participants' accounts on the payable date in accordance with their respective holdings shown on DTC's records unless DTC has reason to believe that it will not receive payment on the payable date. Payments by Participants to Beneficial Owners will be governed by standing instructions and customary practices, as is the case with securities held for the accounts of customers in bearer form or registered in street name, and will be the responsibility of such Participant and not of DTC, the Paying Agent or the City and County, subject to any statutory or regulatory requirements as may be in effect from time to time. Payment of principal, redemption premium, if any, and interest to DTC is the responsibility of the City and County or the Paying Agent, disbursement of such payments to Direct Participants shall be the responsibility of DTC, and disbursement of such payments to the Beneficial Owners shall be the responsibility of Direct and Indirect Participants.

The City and County and the Paying Agent may treat DTC (or its nominee) as the sole and exclusive registered owner of the Series 1998 Bonds for the purpose of payment of the principal and redemption premium, if any, of, or interest on, the Series 1998 Bonds, giving any notice permitted or required to be given to registered

owners under the First Resolution, registering the transfer of the Series 1998 Bonds, or other action to be taken by registered owners and for all other purposes whatsoever. The City and County and the Paying Agent shall not have any responsibility or obligation to any Participant, any person claiming a beneficial ownership interest in the Series 1998 Bonds under or through DTC or any Participant, or any other person which is not shown on the registration books of the City and County (kept by the Paying Agent) as being a registered owner, with respect to the accuracy of any records maintained by DTC or any Participant; the payment by DTC or any Participant of any amount in respect of the principal, redemption premium, if any, or interest on the Series 1998 Bonds; any notice which is permitted or required to be given to registered owners thereunder or under the conditions to transfers or exchanges adopted by the City and County; or other action taken by DTC as registered owner. Interest, redemption premium, if any, and principal will be paid by the Paying Agent to DTC, or its nominee. Disbursement of such payments to the Participants is the responsibility of DTC and disbursement of such payments to the Beneficial Owners is the responsibility of the Participants or the Indirect Participants.

For every transfer and exchange of beneficial ownership of any of the Series 1998 Bonds, a Beneficial Owner may be charged a sum sufficient to cover any tax, fee or other governmental charge that may be imposed in relation thereto.

DTC may discontinue providing its service with respect to the Series 1998 Bonds at any time by giving notice to the City and County and discharging its responsibilities with respect thereto under applicable law, or the City and County may terminate its participation in the system of book-entry transfer through DTC at any time by giving notice to DTC. In either event, the City and County may retain another securities depository for the Series 1998 Bonds or may direct the Paying Agent to deliver bond certificates in accordance with instructions from DTC or its successor. If the City and County directs the Paying Agent to deliver such bond certificates, such Series 1998 Bonds may thereafter be exchanged for an equal aggregate principal amount of Series 1998 Bonds in any other authorized denominations and of the same maturity as set forth in the First Resolution, upon surrender thereof at the principal corporate trust office of the Paying Agent, who will then be responsible for maintaining the registration books of the City and County.

DTC management is aware that some computer applications, systems, and the like for processing data ("Systems") that are dependent upon calendar dates, including dates before, on, and after January 1, 2000, may encounter "Year 2000 problems." DTC has informed its Participants and other members of the financial community (the "Industry") that it has developed and is implementing a program so that its Systems, as the same relate to the timely payment of distributions (including principal and income payments) to security holders, book-entry deliveries, and settlement of trades within DTC ("DTC Services"), continue to function appropriately. This program includes a technical assessment and a remediation plan, each of which is complete. Additionally, DTC's plan includes a testing phase, which is expected to be completed within appropriate time frames.

However, DTC's ability to perform properly its services is also dependent upon other parties, including but not limited to issuers and their agents, as well as third party vendors from whom DTC licenses software and hardware, and third party vendors on whom DTC relies for information or the provision of services, including telecommunication and electrical utility service providers, among others. DTC has informed the Industry that it is contacting (and will continue to contact) third party vendors from whom DTC acquires services to: (i) impress upon them the importance of such services being Year 2000 compliant; and (ii) determine the extent of their efforts for Year 2000 remediation (and, as appropriate, testing) of their services. In addition, DTC is in the process of developing such contingency plans as it deems appropriate.

According to DTC, the foregoing information with respect to DTC has been provided to the Industry for informational purposes only and is not intended to serve as a representation, warranty, or contract modification of any kind.

Unless otherwise noted, certain of the information contained in the preceding paragraphs of this subsection "Book-Entry Only System" has been extracted from information given by DTC. Neither the City and County, the Paying Agent nor the Underwriters make any representation as to the completeness or the accuracy of such information or as to the absence of material adverse changes in such information subsequent to the date hereof.

Neither the City and County nor the Paying Agent will have any responsibility or obligations to such DTC Participants, Indirect Participants, or the persons for whom they act as nominees with respect to the payments to or the providing of notice for such DTC Participants, Indirect Participants, or the Beneficial Owners. Payments

made to DTC or its nominee shall satisfy the City and County's obligation under the First Resolution to the extent of such payments.

So long as Cede & Co. is the registered owner of the Series 1998 Bonds, as nominee for DTC, references herein to the Bondholders or registered owners of the Series 1998 Bonds (other than under the captions TAX EXEMPTION and CONTINUING DISCLOSURE herein) shall mean Cede & Co., as aforesaid, and shall not mean the Beneficial Owners of the Series 1998 Bonds.

#### General

The Series 1998 Bonds will be dated and bear interest from December 1, 1998, with interest payable on January 1 and July 1 of each year, commencing July 1, 1999, at the rates per annum and will mature in the principal amounts on July 1 in each year, as set forth on the cover page of this Official Statement.

#### Optional Redemption

The Series 1998 Bonds maturing on and after July 1, 2010, are subject to redemption at the option of the City and County, on or after July 1, 2009 in whole or in part at any time, from any maturities selected by the City and County at the redemption prices (expressed as percentages of the principal amount of the Series 1998 Bonds or portions thereof to be redeemed) set forth below, plus accrued interest to the date of redemption.

<u>Period</u> <u>(Both Dates Inclusive)</u>	<u>Redemption</u> <u>Price</u>
July 1, 2009 to June 30, 2010	101%
July 1, 2010 and thereafter	100

#### Mandatory Redemption

The Series 1998 Bonds maturing on July 1, 2018 and July 1, 2028 are also subject to redemption, in part, on each of the dates and in the respective principal amounts set forth below, at a Redemption Price of 100% of the principal amount thereof, plus accrued interest to the date of redemption, from mandatory Sinking Fund Installments which are required to be made in amounts sufficient to redeem the principal amount of Series 1998 Bonds specified for each of the dates shown below:

<u>Series 1998 Bonds</u> <u>Maturing July 1, 2018</u>		<u>Series 1998 Bonds</u> <u>Maturing July 1, 2028</u>	
<u>Date</u>	<u>Principal</u> <u>Amount</u>	<u>Date</u>	<u>Principal</u> <u>Amount</u>
2013	\$1,705,000	2019	\$2,270,000
2014	1,790,000	2020	2,380,000
2015	1,875,000	2021	2,495,000
2016	1,965,000	2022	2,615,000
2017	2,065,000	2023	2,745,000
† 2018	2,165,000	2024	2,875,000
		2025	3,015,000
		2026	3,165,000
		2027	3,320,000
		† 2028	3,480,000

† Final maturity.

### **Notice of Redemption**

The City and County will mail notice of redemption not less than 30 days prior to the redemption date by registered, certified or regular first-class mail, to the registered owners of any of the Series 1998 Bonds or portions of the Series 1998 Bonds which are to be redeemed, at their last addresses appearing upon the Bond Registry. The City and County may also but is not required to cause such notice to be published at least once in such newspapers as provided in the First Resolution not less than thirty (30) days prior to the date fixed for redemption date. Failure of the City and County to publish any such notice shall not affect the validity of the proceedings for the redemption of such Series 1998 Bonds. See THE SERIES 1998 BONDS - "Description of Book-Entry"

### **Effect of Redemption**

If, on the redemption date, moneys for the redemption of all the Series 1998 Bonds or portions thereof of any maturity to be redeemed, together with interest to the redemption date, shall be held by the City and County or Paying Agent so as to be available therefor on said date and if notice of redemption shall have been given as provided in the First Resolution, then, from and after the redemption date, interest on the Series 1998 Bonds or portions thereof of such maturity so called for redemption shall cease to accrue and become payable. If such moneys shall not be so available on the redemption date, such Series 1998 Bonds or portions thereof shall continue to bear interest until paid at the same rate as they would have borne had they not been called for redemption.

### **Selection for Redemption**

So long as the Book-Entry System for the Series 1998 Bonds is in effect, if less than all of the Series 1998 Bonds of any one maturity are to be redeemed, the particular Series 1998 Bonds or portions of Series 1998 Bonds of such maturity to be redeemed will be selected by DTC and its Participants in such manner as DTC and its Participants may determine. If the Book-Entry System for the Series 1998 Bonds is no longer in effect, selection for redemption of less than all Series 1998 Bonds of any one maturity will be made by the Paying Agent by lot as provided in the First Resolution.

## DEBT SERVICE REQUIREMENTS

Years Ending June 30<sup>(1)</sup>

Year	Principal Series 1998 Bonds	Interest Series 1998 Bonds <sup>(2)</sup>	Debt Service Junior Series 1998 Bonds <sup>(2)</sup>	Total Debt Service
2000	\$ -	\$2,787,965.11	\$12,415,728.54	\$15,203,693.65
2001	-	2,573,506.26	11,460,672.50	14,034,178.76
2002	1,010,000.00	2,553,306.26	11,460,672.50	15,023,978.76
2003	1,050,000.00	2,512,106.26	11,460,672.50	15,022,778.76
2004	1,095,000.00	2,469,206.26	11,460,672.50	15,024,878.76
2005	1,140,000.00	2,424,506.26	11,460,672.50	15,025,178.76
2006	1,185,000.00	2,378,006.26	11,460,672.50	15,023,678.76
2007	1,235,000.00	2,329,606.26	11,460,672.50	15,025,278.76
2008	1,285,000.00	2,279,206.26	11,460,672.50	15,024,878.76
2009	1,335,000.00	2,225,971.88	12,341,772.50	15,902,744.38
2010	1,400,000.00	2,163,437.50	14,148,691.25	17,712,128.75
2011	1,470,000.00	2,091,687.50	16,898,703.75	20,460,391.25
2012	1,545,000.00	2,016,312.50	21,331,767.50	24,893,080.00
2013	1,625,000.00	1,937,062.50	22,905,356.25	26,467,418.75
2014	1,705,000.00	1,855,943.75	22,906,656.25	26,467,600.00
2015	1,790,000.00	1,772,937.50	22,911,156.25	26,474,093.75
2016	1,875,000.00	1,685,893.75	22,912,937.50	26,473,831.25
2017	1,965,000.00	1,594,693.75	22,916,081.25	26,475,775.00
2018	2,065,000.00	1,498,981.25	22,919,537.50	26,483,518.75
2019	2,165,000.00	1,398,518.75	22,922,256.25	26,485,775.00
2020	2,270,000.00	1,293,187.50	22,918,925.00	26,482,112.50
2021	2,380,000.00	1,182,750.00	22,922,800.00	26,485,550.00
2022	2,495,000.00	1,066,968.75	22,919,675.00	26,481,643.75
2023	2,615,000.00	945,606.25	22,921,175.00	26,481,781.25
2024	2,745,000.00	818,306.25	22,920,175.00	26,483,481.25
2025	2,875,000.00	684,831.25	22,922,487.50	26,482,318.75
2026	3,015,000.00	544,943.75	22,920,512.50	26,480,456.25
2027	3,165,000.00	398,168.75	22,918,937.50	26,482,106.25
2028	3,320,000.00	244,150.00	22,920,850.00	26,485,000.00
2029	3,480,000.00	82,650.00	22,919,337.50	26,481,987.50

(1) *Based on payments, not on accruals; does not include debt service on Reimbursable Obligations.*

(2) *includes accrued interest from December 1, 1998 on Series 1998 Bonds and on Junior Series 1998 Bonds issued as current interest bonds and compounded interest on Junior Series 1998 Bonds issued as capital appreciation bonds.*

### THE CITY AND COUNTY AND THE DEPARTMENT

#### Purpose and Powers

*The City and County.* The City and County of Honolulu includes the entire island of Oahu and a few outlying islands. Of the eight major islands that constitute the State of Hawaii, Oahu, with an area of 593 square miles, is smaller than the Islands of Hawaii and Maui but larger than the Islands of Kauai, Molokai, Lanai, Niihau and

Kahoolawe. With slightly less than a tenth of the land area in the entire State, Oahu contains three-fourths of the State's resident population. Based on the 1990 U.S. Census, the resident population of the State is 1,115,274 and the population of Oahu is 836,231, or 75 percent of the total State population. Honolulu is located on the Island of Oahu. Honolulu is the seat of the State Government, and is the State's trade, finance, communication, and transportation center. Most Federal establishments and personnel (both civilian and military), manufacturing, major educational and scientific, and significant agricultural activities are located on Oahu.

*City Council and Mayor.* The City Council (the "Council") is the governing body of the City and County and it consists of nine members. All members are elected from nine districts to serve four year terms with a limitation of two consecutive full terms. Pursuant to the Charter of the City and County, the Council has the power, among other things: (i) to exercise the legislative power of the City, (ii) to enact operating and capital budget ordinances, (iii) with certain exceptions, to fix fees and charges for services rendered by the City, and (iv) to authorize the issuance of revenue bonds for the purpose of initiating, constructing, acquiring, extending, replacing or otherwise improving any revenue-producing facility. The Mayor is the Chief Executive Officer of the City. The Mayor is elected to serve a four year term with a limitation of two consecutive full terms. The Mayor exercises direct supervision over all agencies specifically identified in the Charter and, through the Managing Director, exercises supervision over all other executive agencies of the City.

*Department of Environmental Services.* Pursuant to a plan of reorganization implemented July 1, 1998, certain components of the Department of Wastewater Management, a department created by the City Charter in 1993, were combined with other administrative departments having compatible functions into the Department of Environmental Services. The Department of Environmental Services, among other things, is charged with the responsibility to administer the planning, design and construction of wastewater facilities, oversee the operation and maintenance of sewer lines, treatment plants and pumping stations, monitor the collection, treatment and disposal of wastewater, provide chemical treatment and pumping of defective cesspools, provide solid waste processing, collection and disposal, promulgate rules and regulations as necessary to administer and enforce requirements established by law, and perform such other duties as may be required by law. The Department consists of four divisions: Environmental Quality, Treatment and Disposal, Collection System Maintenance and Refuse Collection and Disposal.

*Power to Fix and Collect Rates and Charges.* By ordinance and resolution, the City Council requires that revenues of the wastewater system be kept in the Sewer Fund and that the wastewater program shall be self-supporting. Consistent with such requirements, the Department is effectively budgeted as a self-sustaining enterprise for the purpose of determining costs associated with providing wastewater services. Through the adoption of the annual operating and capital budgets, the revenue requirements and wastewater rates are reviewed to determine the adequacy of revenues to meet needs. Pursuant to the Act and the City Charter, the City Council has the power to impose, prescribe and collect rates, rentals, fees or charges for the use and services of, and the facilities furnished by, the Wastewater System so that the Wastewater System will be and remain self-sustaining. The rates, rentals, fees or charges imposed and prescribed are required to produce revenues which will be at least sufficient to pay debt service on all revenue bonds issued for the purposes of the Wastewater System, including the Bonds, and including reserves therefor, to pay the costs of operation, maintenance and repair of the Wastewater System, and to carry out the covenants of all resolutions authorizing the issuance of revenue bonds for the purposes of the Wastewater System, including the First Resolution and all series resolutions adopted thereunder and the Second Bond Resolution and all series resolutions adopted thereunder. The rates and charges fixed and imposed by the City Council are not subject to approval by any federal or state regulatory bodies. Rates and charges are determined on the basis of a recommendation by the Director of Environmental Services and the Mayor, subject to approval by ordinance of the City Council. An ordinance requires three readings and a public hearing for enactment by the City Council.

#### **Department Work Force**

The Department employs approximately 630 persons in various managerial, clerical, engineering and operational positions in support of wastewater activities. This work force, with the exception of 9 excluded employees, is represented by one blue-collar, non-supervisory bargaining unit, one blue collar, supervisory bargaining unit, one white-collar, non-supervisory bargaining unit, one white-collar supervisory bargaining unit, and one professional and scientific bargaining unit. All contracts, with the exception of the one blue-collar, non-supervisory bargaining unit, are covered by Memorandums of Agreement which extend the provisions of the July 1, 1993-June 30, 1997 contract until a successor collective bargaining agreement is reached. The one blue-collar, non-supervisory bargaining unit contract is in negotiation. All bargaining unit contracts are state-wide and apply to all

State government and county government activities. All employees are covered by the Hawaii State Employees Retirement System.

#### Department Principal Officers

The principal officers of the Department of Environmental Services include the Director, Deputy Director and Executive Assistant.

The following are brief biographies of the Department's principal officers:

*Kenneth E. Sprague, Ph.D., Director.* Dr. Sprague was appointed Director of the Department of Wastewater Management in February 1997 and became Director of the Department of Environmental Services on its creation in July 1998. He previously served as the Director and Chief Engineer of the Department of Public Works, City and County of Honolulu, for over four years. Prior to that, he served as the Deputy Manager and Chief Engineer of the Honolulu Board of Water Supply from 1985 to 1993. Dr. Sprague has a Bachelor of Science degree from the United States Military Academy and a Master of Science in Engineering and a Ph.D. in Nuclear Engineering from the University of Florida. He is a Registered Professional Engineer.

*Cheryl Okuma-Sepe, Deputy Director.* Ms. Okuma-Sepe was appointed Deputy Director of the Department of Wastewater Management in November 1994 and became Deputy Director of the Department of Environmental Services on its creation in July 1998. She previously served in the City's Department of the Corporation Counsel from 1989 to 1994, having advised and defended a number of city departments, including the former Department of Wastewater (now the Department of Environmental Services). Ms. Okuma-Sepe has a Juris Doctorate Degree from California Western School of Law and is a member of the Hawaii Bar Association and the California Bar Association (inactive). Prior to service with the City and County of Honolulu, Ms. Okuma-Sepe was in private practice.

*Timothy A. Houghton, Executive Assistant.* Mr. Houghton has served as Executive Assistant for the Department of Wastewater Management from its creation July 1, 1993 and continues in that role with the Department of Environmental Services. As Executive Assistant, among other things, Mr. Houghton is responsible for Department financial and personnel activities. Prior to that he worked on the Honolulu Rapid Transit Project and with the Department of Auditoriums. Mr. Houghton has a Bachelor of Arts degree from San Francisco State University and a Master of Science in Systems Management degree from the University of Southern California.

#### Year 2000 Compliance

The "Year 2000 Issue" ("Y2K") arises because most computer software programs allocate two digits to the data filed for "year" on the assumption that the first two digits will be "19". Such programs will thus interpret the year 2000 as the year 1900, the year 2001 as 1901, etc., absent reprogramming. Y2K affects both computer hardware (i.e., the embedded logic of computer chips) and computer software, and could impact both the ability to enter data into computer programs and the ability of such programs to correctly process data. Y2K affects the computer applications of the City and County and the Department and their vendors, servicers, mortgagors, insurers, investment providers and bond trustees.

The City and County Department of Information Technology ("DIT") began putting procedures in place as early as 1988 to address the problems of Y2K compliance. In 1998, DIT set a goal to have all new applications implemented by DIT be Y2K compliant.

DIT has taken action in developing and implementing plans to address the Y2K compliance of the applications and systems that are its responsibility. This includes those applications developed, supported and/or maintained by DIT and associated hardware and operating systems. These plans include an inventory of applications, allocation of resources to resolve problems, and targeted completion dates. Additionally, DIT has identified those applications that it will not be able to repair and has made or are in the process of making the necessary arrangements to upgrade the applications to a Y2K compliant version or obtain outside assistance to make the application compliant. The goal is to complete revisions by December 1998, testing during 1999, and completion by December 1999. The City and County is not presently aware of any non-compliance by its yet untested applications or of any costs for Y2K compliance that will have a material negative impact on the Department's operations or financial status; however, the Department can give no assurance that circumstances will not change.

In late 1997, the Board of Water Supply of the City and County replaced its billing system with a new customer accounting system which is Y2K compliant. This new system is now operational. The Board of Water Supply bills include sewer service charge billing for over 90% of the Wastewater System customers.

The Department has solicited information from other persons whose Y2K compliance could affect the Department regarding the status of their assessment, testing and remediation of their computer applications. Of the responses received to date, all expect to achieve compliance in a manner that will not materially negatively affect the Department's operations. In addition, the City and County has established an executive level effort to ensure issues such as vendor and supplier compliance, facilities and equipment, end user computing, project tracking and risk management, contractor management, quality control, and communication are addressed, and deficiencies identified and corrected. The Department is an active participant in this process. The Department does not have full and complete information, however, from all other persons regarding status of implementing Y2K compliance. Any failure by some or all of these persons to be Y2K compliant may have a material negative impact on the Department's operations or financial status.

## THE WASTEWATER SYSTEM

### Introduction

The Wastewater System services approximately 125,000 separate accounts and a population of approximately 600,000. The service area covers nearly 500 square miles. The customer base includes the residential population, business and industries, and other users located in the service area. Of the 125,000 accounts, 120,000 are residential, representing 71% of the total revenue from sewer service charges; and 5,000 are non-residential representing 29% of the total revenue from sewer service charges. See CERTAIN OPERATING AND OTHER STATISTICS. A number of small private wastewater systems also serve some areas in the City and County. The average total volume of wastewater processed by all such private systems is 4.1 million gallons per day. The average total volume of wastewater processed by the City and County's Wastewater System is 114.8 million gallons per day.

### General Description of Existing Facilities

The Wastewater System serving the island of Oahu is divided into eight wastewater basins for planning purposes: Central Oahu, East Mamala Bay, Kailua/Kaneohe/Kahaluu, North Oahu East/West, Waianae, Waimanalo, and West Mamala Bay. Each basin is served by a wastewater treatment plant ("WWTP"). The function of each WWTP is to treat the wastewater by removing or reducing the levels of organic and inorganic materials contained in the wastewater to levels that satisfy federal and state permit requirements for the discharge of such wastewater into the ocean, streams, reservoirs or injection wells. In addition to treatment facilities, the Wastewater System includes collection, pumping and other related facilities.

A description of the wastewater basins and major facilities is as follows:

*Central Oahu.* Central Oahu is served by the Wahiawa WWTP (2.5 million gallons per day ("MGD") capacity, secondary). It serves the communities of Wahiawa and Whitmore Village.

*East Mamala Bay.* The largest and the most densely populated basin is East Mamala Bay. Approximately 374,000 people reside in East Mamala Bay representing more than 44% of the resident population of the entire island. The basin is served by the Sand Island WWTP, a primary plant. Sand Island WWTP is the largest treatment facility in terms of wastewater flow. The treatment plant has the capacity to process 82 MGD of wastewater flow, and currently treats 70.5 MGD.

*Kailua/Kaneohe/Kahaluu.* The third largest basin includes the communities of Kailua, Kaneohe, and Kahaluu and surrounding areas in the eastern part of the island. The eastern portion of Oahu is also referred to as the Windward basin area. The basin area population is nearly 110,000 or more than 13 percent of the island's population. The basin is served by the Kailua Regional WWTP, the third largest treatment plant in the Wastewater System. The Kailua WWTP has a design capacity of 15.25 MGD and currently treats about 12.5 MGD of wastewater flow.

*North Oahu.* The North Oahu area is largely unsewered. Small facilities existing are the Kahuku WWTP (0.4 MGD capacity, secondary) and the Pa'alaai Kai WWTP (0.14 MGD capacity, secondary).

*Waianae.* The Waianae basin serves the west coast of the island. The Waianae WWTP has the capacity to process 5.2 MGD at a secondary level.

*Waimanalo.* The Waimanalo basin is served by the Waimanalo WWTP with a capacity of 0.7 MGD. It is a secondary plant and serves the Waimanalo community.

*West Mamala Bay.* West Mamala Bay is the second largest basin. The basin includes Ewa, Central Oahu as far north as Mililani, and the Halawa to Pearl City area of the Primary Urban Center. The population of the basin area is approximately 245,000, or more than 29 percent of the estimated population of Oahu. The basin is served by the Honouliuli WWTP, which is the second largest treatment plant in the Wastewater System, with a primary treatment design capacity of 38 MGD and a secondary treatment design capacity of 13 MGD. It currently processes 25.8 MGD of wastewater flow.

The Sand Island WWTP, the Honouliuli WWTP and the Kailua Regional WWTP are the three largest WWTPs. The remaining WWTPs provide treatment of wastewater to the rest of the island. Though the four basin areas including Central Oahu, North Oahu, Waianae, and Waimanalo comprise the majority of the geographical area of the island, the population density is much lower in comparison to the East and West Mamala Bay and the Kailua/Kaneohe/Kahaluu basin areas. The combined population of the four basin areas is less than 12 percent of the total population of Oahu. The total design capacity of the WWTPs in the 4 basin areas is nearly 9 MGD and the current wastewater flow is approximately 6 MGD. Two private wastewater systems provide collection and treatment for the communities of Hawaii Kai and Laie. The Hawaii Kai system has an average flow of 3.8 MGD, including flows from the City and County's Kuliouou WWPS, and the Laie system has an average flow of 0.3 MGD. The two systems combined process less than 4% of the average flow of the City and County's Wastewater System.

For a more detailed description of the Wastewater System, see APPENDIX B - ENGINEER'S REPORT.

#### Environmental Compliance

The WWTPs and other facilities operated by the Department are governed by either a National Pollutant Discharge Elimination System (NPDES) Permit or a State of Hawaii Department of Health Underground Injection Control Permit. Since 1991, the United State Environmental Protection Agency ("EPA"), the State of Hawaii and several environmental groups have filed various legal and regulatory actions against the City and County alleging violations of the federal Clean Water Act and the several NPDES and State of Hawaii permits held by the Department. The City and County has entered into settlements with respect to several of such actions. The consent decrees entered into by the City and County in connection with such settlements require the City and County, among other things, to rehabilitate and expand certain existing facilities and to construct new facilities. The Department has undertaken the rehabilitation and expansion of existing facilities and the construction of new facilities in the last several years for the purpose of complying with the existing consent decrees. The Department has developed the 1998-2002 Capital Improvement Program, the 1998-2007 Capital Improvement Program and the 1998-2017 Capital Improvement Program, in part, to comply with existing consent decrees.

The Consulting Engineer has concluded that, except for the Waimanalo WWTP which is operated by the Department but is owned by the State of Hawaii, facilities of the Wastewater System are meeting current regulatory requirements and are operated and maintained in accordance with standard utility practices. However, the Consulting Engineer has also concluded that the collection and pumping facilities of the Wastewater System do not meet all of the current and anticipated federal and state regulatory requirements and will require additional capacity to serve projected growth in the service area. The Department has developed plans which will provide for anticipated requirements and established procedures.

See CAPITAL IMPROVEMENT PROGRAM and APPENDIX B - ENGINEER'S REPORT.

#### Projected Customer Growth

The resident population in Oahu, the area served by the Wastewater System, is projected to grow until 2020. The actual and projected resident population, by basin area, for the years 1990 through 2020 is shown in the following tables. The majority of growth between the years 1995 and 2020 will occur in East and West Mamala

Bay. Of the total population growth estimated to occur between 1995 and 2020, 112,000 or 61% will take place in West Mamala Bay and over 57,000, or 31%, will occur in East Mamala Bay. The tables show an estimated average annual population increase of 7,325 between 1995 and 2020, or roughly 0.9% annually.

**Actual and Projected Resident Population  
By Basin, Oahu, 1995-2020**

Basin	1990	1995	2000	2005	2010	2015	2020
North Oahu (East)	6,909	6,911	6,572	7,099	7,457	7,644	7,782
Kailua/Kaneohe/Kahaluu	108,639	109,618	109,990	109,727	110,980	111,156	112,012
Waimanalo	9,055	9,397	9,487	9,583	9,820	9,920	10,071
East Mamala Bay	361,462	374,123	384,558	398,266	413,654	422,264	431,586
West Mamala Bay	215,483	245,135	271,896	296,728	321,989	339,522	357,545
Waianae	37,411	39,231	41,595	43,660	45,966	47,113	48,155
Central Oahu	43,886	44,332	44,646	43,903	43,678	43,239	43,115
North Oahu (West)	<u>11,549</u>	<u>11,623</u>	<u>11,797</u>	<u>12,134</u>	<u>12,643</u>	<u>12,910</u>	<u>13,221</u>
Total	794,394	840,370	880,541	921,100	966,187	993,768	1,023,487

Source: City & County of Honolulu, Department of Environmental Services, City & County of Honolulu, Planning Department, 1995.

**Actual and Projected Percentage Growth in Resident Population  
By Basin, Oahu, 1995-2020**

Basin	1995-2000		1995-2020	
	Average Annual Change	of Total Growth	Average Annual Change	of Total Growth
North Oahu (East)	(68)	-0.8%	35	0.5%
Kailua-Kaneohe/Kahaluu	74	0.9%	96	1.3%
Waimanalo	18	0.2%	27	0.4%
East Mamala Bay	2,087	26.0%	2,299	31.4%
West Mamala Bay	5,352	66.6%	4,496	61.4%
Waianae	473	5.9%	357	4.9%
Wahiawa	63	0.8%	(49)	-0.7%
North Oahu (West)	<u>35</u>	<u>0.4%</u>	<u>64</u>	<u>0.9%</u>
Total	8,034	100.0%	7,325	100.0%

Source: City & County of Honolulu, Department of Environmental Services, City & County of Honolulu, Planning Department, 1995.

The Department has developed the 1998-2002 Capital Improvement Program, the 1998-2007 Capital Improvement Program and the 1998-2017 Capital Improvement Program, in part, to provide new facilities which will be required to reliably serve projected growth in the number of customers served by the Wastewater System. See CAPITAL IMPROVEMENT PROGRAM and APPENDIX B - ENGINEER'S REPORT.

## CAPITAL IMPROVEMENT PROGRAM

The Department staff manages and updates at least annually a long-range Capital Improvement Program (the "CIP") to achieve several goals. The CIP is a long-range planning tool used to estimate project costs and timing of expenditures over a 20-year period. The Department develops the CIP with the objective to provide safe and reliable facilities to process the wastewater discharge of all sewer customers throughout Oahu. CIP projects are needed for the rehabilitation of existing facilities, the expansion of capacity to accommodate growth, and the improvement of facilities and processes.

### EPA Consent Decree

The City and County and the EPA have entered into a legal agreement that will establish the City's direction on future wastewater issues. The overall goal established by the consent decree is to develop a proactive plan to reduce and prevent wastewater spills and bypasses from the collection system, pump stations, and treatment plants.

A number of projects identified in the CIP are designed to comply with an EPA consent decree approved October 17, 1995. Consent decree projects are developed to meet three major program objectives.

1. *Pretreatment*: Source control program to control introduction of inappropriate materials into the collection and treatment system. This program does not require funding of any CIP project.
2. *Collection system compliance*: Spill reduction program for both dry weather spills, and wet weather spills
3. *Avoided cost*: Additional measures taken by the Department to avoid fines for violations or noncompliance

### Criteria for Ranking CIP Projects by Priority

The Department considers the CIP to be a flexible tool which allows the Department staff to determine the impact of adjusting the phasing and priority of projects. As of early 1997, the long-range CIP included a list of projects with estimated appropriations totaling \$1,668,857,000 (in 1998 dollars). Many of the projects shown in the CIP may not begin in the year specified or at all if needs change. The Department staff has developed a policy for ranking the CIP projects by priority to determine order and timing of projects. The policy is shown in the following table, with the highest priority criteria listed first:

Priority Class	Description
I	Safety and public health - immediate
II	Protection of the environment - immediate
III	Permit and regulatory compliance - immediate
IV	Completion on ongoing projects
V	Preventive
VI	Funding requirements
VII	System expansion
VIII	Other

The rankings are intended as guidelines for CIP project planning, not as hard and fast rules. A project considered in a low priority class may climb to a high priority position in the CIP due to any number of factors. For example, if a service area is very close to reaching and surpassing the capacity of its wastewater facilities, the expansion of the system in that area rises in priority. System expansion can entail projects which affect permit and regulatory compliance, protection of the environment, or safety and public health. Through the use of these guidelines combined with analyses of funding and other resource constraints, staff can develop a CIP which best satisfies the needs of the Department customer base. The 1998-2017 Capital Improvement Program was developed using these CIP guidelines and constitutes the current 20-year CIP.

## Classification of CIP Projects

The City and County expects to use various funding sources to finance CIP projects: (i) proceeds of the Series 1998 Bonds, (ii) proceeds of additional Bonds and Subordinate Obligations to be issued, (iii) proceeds of Reimbursable Obligations previously issued, (iv) the Net Revenues of the Wastewater System, and (v) Wastewater System Facilities Charge. Revenues from Wastewater System Facility Charges are intended to cover a portion of the project expenditures relating to expansion of the Wastewater System to serve to future growth in the number of customers. Revenues from sewer service charges are earmarked for the expenditures resulting from rehabilitation or upgrade of the wastewater system for existing users. To effectively determine the costs to be recouped by these respective charges, the Department makes a fair estimate of the share of costs attributable to expansion and rehabilitation. Where an improvement benefits both existing and future users, the Department identifies the relative portion allocable to each. The classes of CIP projects include system expansion, system upgrade, and replacement/rehabilitation.

*System expansion:* Improvements which increase the design capacity of treatment, transmission, or support facilities and equipment to accommodate new or future growth. Future users would finance system expansion project costs partially through wastewater system facility charge revenue.

*System upgrade:* Improvements which upgrade the service level standard. For example, an upgrade to secondary treatment processes where only primary treatment processes were used. To fairly allocate costs between future and existing users, the portions of upgrade costs attributable to expansion and current use must be identified.

*Replacement/rehabilitation:* Improvements which replace or rehabilitate facilities serving existing development. Existing users pay the costs of replacement and rehabilitation projects through sewer service charges.

## 1998-2002 Capital Improvement Program

To meet certain consent decrees entered into by the Department with Federal and State regulatory bodies and to reliably serve projected growth in the number of customers served by the Wastewater System, the Department has developed and adopted the 1998-2002 Capital Improvement Program which has been approved by the City Council. The additions and improvements to the Wastewater System, the costs of which are to be financed from the proceeds of the Series 1998 Bonds, are part of the 1998-2002 Capital Improvement Program. The 1998-2002 Capital Improvement Program is projected to cost \$341 million (in inflated dollars). The projected costs of the various CIP projects of and the expected sources of funding for the 1998-2002 Capital Improvement Program are set forth in the following tables.

### Projected Costs of 1998-2002 Capital Improvement Program

Project	Projected Cost
CIP Projects	257,127,000
<u>Ongoing Projects</u>	<u>84,420,000</u>
Total	\$341,547,000

### Expected Sources of Funding for 1998-2002 Capital Improvement Program

Funding Source	Projected Amount
Reimbursable Obligations <sup>(1)</sup>	\$ 84,420,000
Subordinate Obligations <sup>(2)</sup>	20,000,000
Facility Charges <sup>(3)</sup>	8,876,000
Net Revenues <sup>(4)</sup>	37,900,000
Series 1998 Bonds	50,000,000
<u>Additional Bonds</u>	<u>165,000,000</u>
Total <sup>(5)</sup>	\$366,196,000

- (1) *Previously issued general obligation bonds.*
- (2) *State revolving fund load proceeds.*
- (3) *Fees collected for new Wastewater System connections.*
- (4) *Cash funded CIP.*
- (5) *The excess of funding sources over project costs for this period will be applied towards project costs to be incurred in future years.*

### 1998-2007 Capital Improvement Program

The 1998-2007 Capital Improvement Program is part of the 1998-2017 Capital Improvement Program the Department plans to undertake. The 1998-2007 Capital Improvement Program is projected to cost \$902 million (in inflated dollars). The projected costs of the various CIP projects of and the expected sources of funding for the 1998-2007 Capital Improvement Program are set forth in the following tables.

#### Projected Costs of 1998-2007 Capital Improvement Program

Project	Projected Cost
CIP Projects	\$818,060,000
<u>Ongoing Projects</u>	<u>84,420,000</u>
Total	\$902,480,000

#### Expected Sources of Funding for 1998-2007 Capital Improvement Program

Funding Source	Projected Amount
Reimbursable Obligations <sup>(1)</sup>	\$ 84,420,000
Subordinate Obligations <sup>(2)</sup>	50,000,000
Facility Charges <sup>(3)</sup>	19,130,000
Net Revenues <sup>(4)</sup>	140,520,000
Series 1998 Bonds	50,000,000
<u>Additional Bonds</u>	<u>610,000,000</u>
Total <sup>(5)</sup>	\$954,070,000

- (1) *Previously issued general obligation bonds.*
- (2) *State revolving fund load proceeds.*
- (3) *Fees collected for new Wastewater System connections.*
- (4) *Cash funded CIP.*
- (5) *The excess of funding sources over project costs for this period will be applied towards project costs to be incurred in future years.*

### 1998-2017 Capital Improvement Program

The 1998-2017 Capital Improvement Program is the current twenty year CIP the Department plans to undertake. The 1998-2017 Capital Improvement Program is projected to cost \$2.3 billion (in inflated dollars) and is expected to be undertaken for the same purposes as the 1998-2002 Capital Improvement Program. The projected costs of the various CIP projects of and the expected sources of funding for the 1998-2017 Capital Improvement Program are set forth in the following tables.

#### Projected Costs of 1998-2017 Capital Improvement Program

Project	Projected Cost
CIP Projects	\$2,228,090,000
<u>Ongoing Projects</u>	<u>84,420,000</u>
Total	\$2,312,510,000

**Expected Sources of Funding for  
1998-2017 Capital Improvement Program**

Funding Source	Projected Amount
Reimbursable Obligations <sup>(1)</sup>	\$ 84,420,000
Subordinate Obligations <sup>(2)</sup>	100,000,000
Facility Charges <sup>(3)</sup>	62,000,000
Net Revenues <sup>(4)</sup>	298,650,000
Series 1998 Bonds	50,000,000
<u>Additional Bonds</u>	<u>1,747,020,000</u>
<b>Total<sup>(5)</sup></b>	<b>\$2,342,090,000</b>

(1) Previously issued general obligation bonds.

(2) State revolving fund load proceeds.

(3) Fees collected for new Wastewater System connections.

(4) Cash funded CIP.

(5) The excess of funding sources over project costs for this period will be applied towards project costs to be incurred in future years.

The Consulting Engineer has concluded that (i) the estimated project costs and construction schedules that have been developed for the projects to be financed, including the projects to be financed from the proceeds of the Series 1998 Bonds, are reasonable and achievable; (ii) the 1998-2017 Capital Improvement Program is technically sound and conforms with good engineering practice and the estimated total costs of the program have been realistically assessed; (iii) the cost-effectiveness of the Wastewater System operations and maintenance activities is anticipated to improve after the proposed projects in the 1998-2017 Capital Improvement Program are accomplished; and (iv) completion of the proposed projects will permit the City and County of to attain and to remain in compliance with all federal, state, and local regulations regarding the treatment and discharge as expressed in the current NPDES permit and consent decrees.

**PROJECTED REVENUES, EXPENSES AND COVERAGES**

The Consulting Engineer has projected revenues, expenses and coverages for the Wastewater System for the Fiscal Years 1998 to 2007, inclusive. The projections are based on inflated dollars (*i.e.*, adjusted from 1998 dollars). The projections indicate that with respect to the Fiscal Years 1998 to 2007, inclusive, the City and County can (i) issue the Series 1998 Bonds to finance \$50,000,000 of necessary additions and improvements to the Wastewater System, to fund the Common Reserve Account in an amount sufficient to satisfy its requirement, and to pay the costs of issuing the Series 1998 Bonds; (ii) issue the Junior Series 1998 Bonds to refund the Refunded Reimbursable Obligations, to fund a junior debt service reserve subaccount in an amount sufficient to satisfy its requirement and to pay the costs of issuing the Junior Series 1998 Bonds; (iii) finance an additional \$660 million of improvements to the Wastewater System from proceeds of additional Bonds and Subordinate Obligations to be hereafter issued, proceeds of Reimbursable Obligations previously issued and currently available, the Net Revenues and Wastewater System Facility Charges over the nine year period; and (iv) fully meet all reserve funding and coverage requirements under the *First Resolution* and the *Second Bond Resolution* by raising sewer rates and charges by 3.0% in Fiscal Year 1999-2000 and another 3.0% to 5.4% in each of the Fiscal Years thereafter, and by raising Wastewater System Facility Charges by 3.0% in Fiscal Year 1999-2000 and another 3.0% in each of the Fiscal Years thereafter. The average monthly residential wastewater charge is expected to increase from \$33.65 to \$46.75 (in inflated dollars) by 2007. The Wastewater System Facility Charge is expected to increase from \$1,146 to \$1,452 (in inflated dollars) by 2007. The revenues from the Wastewater System Facility Charge were 1% of total revenues of the Wastewater System in fiscal year 1997-98 and is projected still to be 1% by fiscal year 2007-08. The Consulting Engineer has concluded that historical, current, and projected customer rates and charges for the City and County are relatively high compared to the rates and charges by other public agencies, but are reasonable considering a number of site specific factors including limited economies of scale, high electrical costs, and high equipment and supply costs due to the necessity of long distance shipping. See APPENDIX B - ENGINEER'S REPORT.

## CONCLUSIONS OF CONSULTING ENGINEER

The Consulting Engineer, based upon its studies, the assumptions discussed in the Engineer's Report and its review of the data and analysis provided by the City and County and its consultants, has concluded in its Engineer's Report that:

1. Except for periodic events of noncompliance at the Waimanalo wastewater treatment plant owned by the State of Hawaii and operated by the Department, the Wastewater System treatment facilities are meeting current regulatory requirements and are operated and maintained in accordance with standard utility practices. The Wastewater System collection and pumping facilities do not meet all the current and anticipated federal and state regulatory requirements, and will require additional capacity to serve the projected growth in the service area. These collection and pumping facilities constitute much of the need for capital facility improvements.
2. Completion of the proposed CIP projects constituting the 1998-2017 Capital Improvement Program described in the Engineer's Report will permit the City and County to attain and to remain in compliance with all federal, state, and local regulations regarding the treatment and discharge as described in the current NPDES permit and consent decrees.
3. An estimated \$1.4 billion (in 1998 dollars) of non-discretionary CIP projects for various treatment, collection and other facilities are required to be constructed over the next 20 years as part of the 1998-2017 Capital Improvement Program to eliminate the current and projected critical deficiencies, to meet consent decree milestones, and to bring the Wastewater System to a satisfactory operating condition, based on projected wastewater usage and environmental and other regulatory requirements. The remaining \$0.3 billion (in 1998 dollars) of CIP projects of the 1998-2017 Capital Improvement Program are discretionary and have been identified to improve wastewater treatment and collection systems. The CIP projects of the 1998-2017 Capital Improvement Program are to be funded from proceeds of bonds, including the Series 1998 Bonds and from net revenues and other fees.
4. The proposed \$1.7 billion (in 1998 dollars) 1998-2017 Capital Improvement Program is technically sound and conforms with good engineering practice and the estimated total costs of the CIP projects of the 1998-2017 Capital Improvement Program have been realistically assessed.
5. The cost-effectiveness of the Wastewater System operations and maintenance activities is anticipated to improve after the proposed 1998-2017 Capital Improvement Program is accomplished.
6. The projects to be financed by proceeds of the Series 1998 Bonds are the highest priority projects required to meet consent decree requirements and protect public health. They are included in recently completed facility plans, which identify the need for projects through the year 2017, and provide the most cost effective facilities evaluated in those plans.
7. The estimated project costs and construction schedules that have been developed for the projects of the 1998-2002 Capital Improvement Program are reasonable and achievable.
8. The operations of the Wastewater System are directed by a competent professional staff for the disciplines of operations specialists, maintenance (including electrical, instrumentation and mechanical), laboratory personnel and other technical support personnel.
9. The financial projections with respect to the Wastewater System are based on reasonable and conservative assumptions and should fairly reflect the financial performance of the Wastewater System.
10. Historical, current, and projected customer rates and charges imposed by the City and County for services provided by Wastewater System are relatively high compared to the rates and charges of other agencies, but are reasonable considering a number of site specific factors.

11. In the opinion of the Consulting Engineer, projected sewer service charges and connection fees will provide revenue sufficient to: (i) meet all projected costs of operation, maintenance and routine replacement of Wastewater System facilities; (ii) meet the existing debt service obligations and the projected requirements for the Series 1998 Bonds, the Junior Series 1998 Bonds and future bond issues; and (iii) provide sufficient revenues to pay the costs of the CIP projects of the 1998-2007 Capital Improvement Program for the Wastewater System through the end of the forecast period.
12. The funds obtained from the sale of the Series 1998 Bonds, current cash reserves, fees collected over the next few years and future bond issues will be adequate to fund these current projects.
13. The rate at which growth occurs will not affect the ability of the City and County to meet its debt obligations because the growth is a small component of the overall costs and revenues associated with the financial projections. In general, many of the CIP projects of the 1998-2017 Capital Improvement Program are necessary and must proceed based on consent decree requirements and public safety and health concerns with or without any additional connections.

## CERTAIN FINANCIAL, OPERATING AND OTHER INFORMATION AND STATISTICS

### Management's Discussion of Financial Performance

In the period since the wastewater program became fully self-supporting in 1993, the program's financial position has been consistently strong. Service charge revenues grew with the July 1, 1993, rate increase and continue to hold steady at that increased rate. Minor changes reflect increased water conservation efforts which have held water use at the same level for several years; however, the significant base component of the rate structure precludes this from having a major impact on revenues. The overall strength of the service charge program reflects the high residential component of Wastewater System customers and the lack of any single large commercial customer. As indicated, receipts from the Wastewater System Facility Charge have decreased over the past two years reflecting the local economic conditions limiting new development; however, the Wastewater System Facility Charge provides less than 1% of revenues for the Wastewater System and is dedicated solely to expansion.

Equally important to the financial strength of the program has been the continuing efforts of the Department to control increases in expenses. This is reflected in reduced operational expenditures and budget over the past three years. Continuing analysis of staffing levels, operational procedures, and automation opportunities will help contain expenditures in the future.

Net revenues have declined over the period reflecting a non-changing rate structure, and one time expenses in Fiscal Years 1995, 1996, 1997 and 1998 and reduced System Facility Charge revenues in Fiscal Years 1996, 1997 and 1998. Excluding the one time expenses and facility charge revenue, net revenues declined only about 5% between Fiscal 1994 and Fiscal 1997, a rate less than inflation. Even with these declines the Wastewater System has continued to maintain a surplus throughout the entire period.

Although the Wastewater System had a net deficit of revenues versus expenses in Fiscal Years 1996, 1997 and 1998, all three years showed net income when one-time expenses were excluded. Reductions in direct operating expenses in Fiscal Years 1997 and 1998 showed commitment to a fiscally sound operation. Over the past five year period, net income was \$20.6 million (3.7% of total revenues) without any increase in fees and charges.

In the opinion of the Department, the position of the Wastewater System is strong, with a substantial reserve balance which provides reasonable protection against unforeseen events and financial flexibility for the future. Financial planning has identified the best alternatives to maintain a strong financial picture while providing quality service to the customer and the community. City Council and Administration policies support the continuing revenue levels necessary to provide for current and future requirements.

### Billing and Collection

Over 90% of Wastewater System sewer service charge billing is done by the Board of Water Supply through inclusion on the water bill. This billing program has consistently had a delinquency rate of less than 0.3%.

Should bills not be paid, the authority exists, and has been exercised, to terminate water service for non-payment of water and sewer service charges.

#### **Ten Largest Customers**

The ten largest customers of the Wastewater System account for less than 3% of annual revenues of the Wastewater System.

#### **Debt and Financial Policies**

The City Council by resolution adopted on November 10, 1998, established Debt and Financial Policies for the Wastewater System to provide a general framework for the conduct of financial activities. Such Debt and Financial Policies specify, among other things, that the City and County will target to maintain revenues (excluding Wastewater System Facility Charges) of 1.60 times senior revenue bond debt service and 1.25 times debt service for all revenue bonds, regardless of the priority of lien. It is expected that the City and County will annually adopt increases in the sewer service charges necessary to meet the debt service coverage requirements prescribed in its debt and financial policies. The debt and financial policies do not constitute an agreement with holders of Bonds, and the City and County has not undertaken any obligation to such holders or any other person to comply with such policies or to meet such targets.

Certain operating and financial statistics of the Department are summarized in the following tables. Unless otherwise noted, tables provided herein contain data furnished by the City and County.

Sewer Customer Accounts as of May 1997

Customer Class	A	B	C	D	E	F	G	J	L	M	N	P	Q
	Sewer Regular Monthly Charges	Cesspool Monthly Charge (Contract)	Cesspool Per Call	Separate BWS Water Meter (domestic use)	Cesspool Chemical Treat	Agreed to Monthly Charge	Sewer No Charge	Non-residential SS surcharge	Private Water Well	Private Waste-water Meter	Private Water Meter	Minimum Monthly Charge Only	Septic System
													Percent Accounts
1 - Public Sewer	--	--	--	--	--	--	--	--	--	--	--	--	--
10 - Single family/duplex	113,928	830	9,836	--	251	--	7	--	--	--	--	1	38
15 - Mixed residential	--	--	1	--	--	--	161	--	--	--	--	--	--
20 - Multi-family	5742	8	105	--	--	--	3	--	--	--	--	--	--
25 - Mixed users	240	--	--	--	--	5	--	--	--	--	20	--	--
Total residential	119,910	838	9,942	0	251	5	171	0	0	0	20	1	38
Residential Sewer Accounts	119,910	838	--	--	251	5	--	--	0	0	20	1	--
30 - Commercial	4,045	--	480	1	--	13	4	577	1	2	72	7	0
40 - Hotels	255	--	4	--	--	--	--	--	1	--	--	--	--
50 - Industrial	484	--	162	--	--	2	--	--	2	1	--	--	--
61 - US Military Installation	6	--	10	--	--	--	3	--	--	--	2	--	--
62 - US Non-military	25	--	7	--	--	--	--	--	--	--	--	--	--
63 - State	176	--	107	--	--	144	32	--	1	--	10	--	--
65 - City	95	--	123	--	--	264	56	--	--	--	5	42	--
70 - Agriculture	2	--	399	--	--	--	--	--	--	--	--	--	--
80 - Religious	437	--	51	--	--	1	--	--	--	--	10	--	--
Total Non-residential	5,525	0	1,343	1	0	424	95	577	3	4	100	49	0
Non-residential Sewer Accounts	5,525	0	--	1	0	424	--	577	3	4	100	49	0
Total Accounts	125,435	838	11,285	1	251	429	266	577	3	4	120	50	38
Total Sewer Accounts	125,435	838	0	1	251	429	0	577	3	4	120	50	0
Percent Total Accounts	90.05%	0.60%	8.10%	0.00%	0.18%	0.31%	0.19%	0.41%	0.00%	0.00%	0.09%	0.04%	0.03%
Percent Sewer Accounts	98.22%	0.66%	0.00%	0.00%	0.20%	0.34%	0.00%	0.45%	0.00%	0.00%	0.09%	0.04%	0.00%
Total	127,708	139,297	127,708	127,708	127,708	127,708	127,708	127,708	127,708	127,708	127,708	127,708	127,708

### History of New Sewer Connections by Type

Fiscal Year Ending	Single Family New Units	Multi Family		Nonresidential ESDUs	Total ESDUs
		New Units	ESDUs		
1993	2,039	1,542	1,079	237	3,355
1994	1,801	1,700	1,190	189	3,180
1995	1,204	281	197	150	1,551
1996	1,359	1,399	979	79	2,417
1997	915	716	498	202	1,615
5 year average	1,464	1,128	789	171	2,424
Projected annual growth	921	679	425	104	1,500

### Existing Sewer Users Fiscal Year Ended June 30, 1995

Customer Classification	Number of Living Units	Number of Equivalent Single-Family Dwelling Units (ESDUs)	Estimated Wastewater Flow (MGD)
Residential			
Single family/duplex	133,898	113,898	42.847
Multi-family residences	108,837	76,186	24.38
Less: Hawaii Kai	994	994	0.303
Total residential	241,741	209,090	66.924
Nonresidential	N/A	77,650	30.058
Infiltration/Inflow	N/A		32.039
Total		286,740	129.021

### Historic Population Growth Oahu, 1950 - 1997

Year	Resident Population	Defacto Population
1950	353,020	NA
1960	500,409	NA
1970	630,528	650,700
1980	762,565	822,000
1990	836,231	908,000
1991	846,092	916,500
1992	856,944	911,700
1993	861,238	909,100
1994	868,236	920,500
1995	869,147	915,500
1996	869,343	919,200
1997	869,857	NA

Source: State of Hawaii Department of Business, Economic Development & Tourism, Data Book, 1997.

**Number of Equivalent Single Family Dwelling Units (ESDUs)**

Year	Single Family Units *	Multi-family Units	ESDUs	Commercial ESDUs	Total ESDUs
1989/90	110,089	98,233	68,764	75,806	254,659
1990/91	110,738	99,582	69,708	75,881	256,327
1991/92	111,663	101,403	70,983	76,166	258,812
1992/93	114,407	103,516	72,462	76,704	263,573
1993/94	116,446	105,058	73,541	76,941	266,928
1994/95	118,247	106,758	74,731	77,130	270,166
1995/96	119,451	107,039	74,928	77,280	271,659
1996/97	120,810	108,437	75,907	77,359	274,076
1997/98	121,725	109,514	76,405	77,561	275,691

\* Does not include Hawaii Kai where a private WWTP is operated.

**Comparison of Total and Sewered Population  
By Basin, Oahu, 1995**

Basin	Total Population(1)	Sewered Population(2)	Percent of Total
Kahuku	6,911	667	9.7%
Kailua-Kaneohe	109,618	73,491	67.0%
Waimanalo	9,397	7,099	75.5%
East Mamala Bay	374,123	330,414	88.3%
West Mamala Bay	245,135	133,602	54.5%
Waianae	39,231	20,599	52.5%
Wahiawa	44,332	15,814	35.7%
North Shore	<u>11,623</u>	<u>1,239</u>	<u>10.7%</u>
Total	840,370	582,925	69.4%

1 - Figures from Planning Department. Military bases are not included.

2 - Figures from Department of Environmental Services.

Source: City & County of Honolulu, Planning Department, 1995; City & County of Honolulu, Department of Environmental Services, SFAS Summary Report, 1997.

**Wastewater Flows by Treatment Facility (MGD)**

Treatment Facility	Design Capacity	1997 Flow	Projected Flow (2020)
Sand Island	82.00	70.50	92.60
Kahuku WWTP	0.40	0.13	0.38
Honouliuli WWTP	38.00	25.8	34.70
Waimanalo WWTP	0.70	0.58	1.10
Kuliouou WWPS* (Hawaii Kai WWTP)	N/A	0.42	0.38
Wahiawa WWTP	2.50	1.97	1.58
Kailua WWTP	15.25	12.50	12.30
Waianae WWTP	5.20	3.25	5.20
Paalaa Kai WWTP	0.14	0.11	0.09

\* The Kuliouou WWPS does not provide treatment, but pumps wastewater from a Department Collection System to a private treatment plant (Hawaii Kai WWTP). Inclusion here is to show total volume of wastewater handled by the Department.

**History of Major Wastewater Revenue Sources**

Fiscal Year Ending	Sewer Service Charges*	Wastewater Facilities Charge
1982	\$21,666,000	\$ 0
1983	26,908,000	0
1984	27,263,000	0
1985	29,631,000	0
1986	31,548,000	0
1987	31,600,000	0
1988	31,917,000	0
1989	33,422,000	0
1990	51,204,000	0
1991	53,333,000	1,726,000
1992	74,967,000	3,256,000
1993	77,492,000	5,206,000
1994	105,303,000	3,895,000
1995	109,541,000	3,543,000
1996	111,259,000	1,769,000
1997	110,891,000	1,166,000
1998**	110,991,000	900,000

\* Sewer Service Charge Only - Does Not Include Connection Or Lateral Installation Charges.  
 \*\* Unaudited estimate.

**Summary of Current Sewer Rate Ordinance\***

	<u>Effective 9/1/93</u> <u>Standard</u>
<b>Residential sewer service charges</b>	
Single family and duplex dwellings served by city water system per dwelling unit per month:	
Monthly base charge:	\$24.85
Month usage charge:	
First 2,000 gallons of metered water consumed:	no charge
Charge per 1,000 gallons of metered water consumed over 2,000 gallons, the water consumed reduced by the irrigation factor of 18%:	1.05
Single family and duplex dwellings not served by city water system per dwelling unit per month:	33.65
Multiple-unit dwellings served by city water system per dwelling unit per month:	
Monthly base charge:	17.40
Monthly usage charge:	
First 2,000 gallons of metered water consumed 2,000:	no charge
Charge per 1,000 gallons of metered water consumed over gallons, the water consumed reduced by the irrigation factor of 18%:	1.05
Multiple-unit dwellings not served by city water system per dwelling unit per month:	23.55
<b>Nonresidential sewer service charges</b>	
Domestic strength wastewater:	
1. Metered water usage:	
a. If 9,000 gallons or less per month,	
(1) Monthly base charge:	22.35
(2) Charge per 1,000 gallons:	0.13
b. If more than 9,000 gallons per month,	
(1) Charge per 1,000 gallons:	2.49
2. Metered wastewater discharge:	
a. If 7,000 gallons or less per month,	
(1) Monthly base charge:	22.35
(2) Charge per 1,000 gallons:	0.16
b. If more than 7,000 gallons per month,	
(1) Charge per 1,000 gallons:	3.12
Extra strength wastewater:	
1. Charge per 1,000 gallons of water usage: 0.857 + 0.143 (S.M./200):	2.49
2. Charge per 1,000 gallons of wastewater discharge: 0.857 + 0.143 (S.M./200):	3.12

\* A separate and modified rate schedule exists for those customers, such as the U.S. Government agencies, who prepay a capital contribution to account for additional capacity requirements.

	<u>Effective 1991/92</u>
<b>Wastewater system facility charges</b>	
Wastewater system facility charge per ESDUS Terms in strength surcharge formula (A + (SSI/200xB)): 1,146	
A. Flow component of wastewater system facility charge	985
B. Strength component of wastewater system facility charge	161

## FINANCIAL STATEMENTS

The operations of the Department are accounted for in the Sewer Fund and the Wastewater Facilities Charge Account. Such funds are classified as special revenue funds of the City and County and are currently audited as a part of the City and County's general purpose financial statements that are prepared annually. The following tables have been extracted from both unaudited and audited financial statements of the City and County relating to the Department. It should be noted that "Revenues" as defined in the First Bond Resolution does not include Wastewater System Facility Charges.

### Department of Environmental Services Summary of Wastewater Revenues and Expenses

	1993/94	1994/95	1995/96	1996/97	1997/98*
<b>Revenues</b>					
Sewer service charges	\$104,462,813	\$108,701,070	\$109,764,828	\$110,608,822	\$110,329,766
Systems facility charge	3,894,925	3,542,710	1,769,950	1,166,000	900,928
Cesspool services	839,978	839,978	747,271	839,978	661,482
Sewer connections	34,895	7,618	205,436	30,000	5,505
Sewer lateral installations	32,896	26,314	44,602	17,000	36,431
Other	160,058	139,000	198,032	147,000	365,392
State	-	-	492,702	480,107	397,491
Total Revenues	<u>109,425,565</u>	<u>113,256,690</u>	<u>113,222,821</u>	<u>113,288,907</u>	<u>112,696,995</u>
<b>Expenses</b>					
<i>Direct operating expenses:</i>					
Administration	1,888,370	1,448,229	3,776,689	5,286,243	2,750,213
Service control	1,600,929	1,851,654	1,696,143	1,842,568	1,850,266
Planning	819,268	1,679,463	1,126,531	856,884	1,075,815
Engineering	1,825,003	2,114,928	2,214,424	1,898,116	1,904,285
Construction	1,245,927	1,476,551	1,473,593	1,426,919	1,622,423
Water quality	5,523,314	3,976,854	5,321,592	4,978,702	4,188,302
Sewer maintenance	6,215,467	7,701,550	8,132,024	9,155,549	7,384,467
Cesspool pumping	1,365,569	1,190,717	984,100	866,482	930,565
Chemical treatment	26,432	97,003	92,233	104,508	98,171
Wilson Tunnel maintenance	295,251	401,432	327,055	480,107	262,425
Treatment and disposal					
Administration/maintenance	11,612,984	11,172,364	12,683,571	11,196,024	10,564,837
East Oahu	12,105,637	12,610,330	14,125,950	6,241,750	5,532,331
Windward	-	-	-	4,508,448	4,274,048
West Oahu	<u>6,324,600</u>	<u>5,785,206</u>	<u>6,831,720</u>	<u>6,578,957</u>	<u>6,112,403</u>
Total treatment and disposal	30,043,221	29,567,900	33,641,241	28,525,179	26,483,619
Subtotal direct operating expenses	50,848,751	51,506,281	58,785,625	55,421,257	48,560,551
<i>Indirect operating expenses:</i>					
Central administrative support	5,609,055	5,366,353	6,198,783	5,467,795	5,785,000
Non-salary personnel costs	6,776,494	8,145,770	9,658,708	10,267,344	11,077,079
Other city agencies	1,324,696	1,460,318	2,381,350	2,904,509	3,550,012
Building rental	-	-	-	675,000	675,000
Radio support	-	-	-	175,000	175,000
Judgment and losses	-	1,804,558	7,000,000	-	-
General fund reimbursement	-	-	-	13,224,360	3,772,163
Subtotal indirect operating expenses	<u>13,710,245</u>	<u>16,776,999</u>	<u>25,238,841</u>	<u>32,714,008</u>	<u>25,044,254</u>
Existing general obligation bond debt service & state revolving fund loan	24,476,915	31,745,000	33,431,876	35,577,183	38,630,000
Facilities replacement reserve	1,179,278	737,240	-	156,251	-
Total expenses	90,215,189	100,765,520	117,456,342	119,528,574	113,434,805
Net Income (deficit)	19,210,376	12,491,170	(4,233,521)	(6,239,667)	(737,810)

\* Fiscal Year 1997/98 figures are estimated.

Accounting changes throughout the period reflect the conversion of the Wastewater System to a fully self-supporting operation. Rate increases in Fiscal Year 1994 and prudent management practices provided an overall positive cash flow despite several one-time expenses caused by the move to a self-supporting operation. Reimbursements to the City and County's general fund in Fiscal Years 1997 and 1998 reflect repayment of wastewater costs paid during the early part of the five-year period by the City and County's general fund.

**Department of Environmental Services  
Five-Year Summary of Wastewater Fund Balances**

	1993/94	1994/95	1995/96	1996/97	1997/98†
	(in Thousands)				
<b>Sewer Fund (#170)</b>					
Excess of revenues	\$22,569	\$13,445	\$45,082	\$43,859	\$ 1,256
Unreserved - undesignated fund balance, July 1	<u>6,495</u>	<u>30,884</u>	<u>43,273</u>	<u>42,734</u>	<u>42,983</u>
Unreserved - undesignated fund balance, June 30 (budgetary basis)	29,064	44,329	12,842	6,281	44,239
Adjustments to conform with GAAP:					
Encumbrances included above	9,698	9,872	(\$9,766)	(\$9,672)	5,522
Expenditures - prior year encumbrances	(12,162)	(11,827)	0	(\$45)	<u>(10,366)</u>
Decrease in reserved for encumbrances	4,284	2,708	(\$2,490)	(\$3,685)	5,208
Decrease in replacement reserve account					
Unreserved - undesignated fund balance, June 30 (GAAP basis)	30,884	45,082	43,859	42,983	42,885
Reserved for encumbrances, June 30	<u>20,000</u>	<u>17,292</u>	<u>19,782</u>	<u>16,097</u>	<u>10,889</u>
Fund balance (GAAP basis), June 30	\$50,884	\$62,374	\$63,641	\$59,080	\$53,774
<b>Wastewater System Facility Charge Fund (#175)*</b>					
Excess of revenues over expenditures and other uses	\$(2,983)	\$ (457)	\$ (2,259)	\$ (2,915)	--
Unreserved-undesignated fund balance, July 1	<u>5,951</u>	<u>2,968</u>	<u>2,511</u>	<u>252</u>	--
Unreserved-undesignated fund balance, June 30 (budgetary basis)	2,968	2,511	252	(2,663)	--
Unreserved-undesignated fund balance, June 30 (GAAP basis)	2,968	2,511	252	(2,663)	--
Reserved for encumbrances, June 30			0	0	--
Fund balance (GAAP basis), June 30	\$2,958	\$2,511	\$ 252	\$ (2,663)	--

\* The Wastewater System Facility Charge Fund was abolished in May 1998. Wastewater System Facility Charges are accounted for in the Wastewater System Facility Charge Account.

Source: Comprehensive Annual Financial Reports, June 30, 1993, 1994, 1995, 1996 and 1997. †Unaudited data for Fiscal Year 1997-1998.

The First Resolution requires the Department to maintain and keep proper books of account relating to the Wastewater System and in accordance with generally accepted accounting principles. The First Resolution also requires that within one hundred eighty (180) days after the end of each Fiscal Year commencing with the Fiscal Year ending June 30, 1999, the Department will cause such books of account to be audited by an independent certified public accountant. Such audit may be part of a comprehensive audit of the City and County if the Wastewater System in such audit is treated as an "enterprise fund" and the revenues and expenses of the Wastewater System are stated in a manner which permits identification by category of the sources and uses of the Revenues.

**CERTAIN DEFINITIONS**

Certain definitions contained in the First Resolution are summarized below. This summary does not purport to be comprehensive or definitive, and is subject to all provisions of the First Resolution, to which reference is hereby made. Copies of the First Resolution are available from the Department of Budget and Fiscal Services or the Department of Environmental Services of the City and County.

*"Accrued Debt Service"* means as of any date of computation and with respect to the Bonds of any Series, an amount equal to the sum of: (i) interest on such Bonds accrued and unpaid and to accrue to the end of the then current calendar month, and (ii) principal, Sinking Fund Installment and redemption premium which are due and unpaid for such Bonds and that portion of the principal, unsatisfied balance of any Sinking Fund Installment (as determined in accordance with the First Resolution) and redemption premium for such Bonds next due which would have accrued to the end of such calendar month if deemed to accrue monthly from a date one year prior to its due date.

*"Act"* means Chapter 49, Hawaii Revised Statutes, and all laws amendatory or supplemental thereto.

*"Aggregate Debt Service"* means, for any period and as of any date of computation, the sum of the amounts of Debt Service for such period with respect to all Series of Bonds.

*"Assumed Long-Term Fixed Rate"* means, with respect to Variable Rate Bonds, (i) a numerical rate of interest that such Bonds would have borne if issued as Fixed Rate Bonds with the same maturity and taking into account Sinking Fund Installments; or (ii) if the City and County has in connection with such Variable Rate Bonds entered into an Interest Rate Exchange Agreement which provides that the City and County is to pay to another person an amount determined based upon a fixed rate of interest on a notional amount and which requires the Counterparty to pay to the City and County an amount equal to the amount by which interest on the notional amount stated therein at the rate borne by such Variable Rate Bonds exceeds the interest payable on such notional amount at a rate stated therein, the fixed rate or other rate of interest set forth in or determined in accordance with such agreement. With respect to the Bonds described in clause (i) of the preceding sentence, an Authorized Officer is to certify or cause the Remarketing Agent for such Series of Variable Rate Bonds or other qualified person to certify such Assumed Long-Term Fixed Rate on the issue date of such Bonds, taking into account such market factors as such Authorized Officer or such Remarketing Agent or such qualified person deems necessary or appropriate.

*"Authorized Officer"* means the Director of Budget and Fiscal Services, any Deputy Director of Budget and Fiscal Services, the Director of Environmental Services or any other officer of the City and County designated by resolution of the City Council.

*"Bond Anticipation Notes"* means bond anticipation notes which the City and County may issue for purposes of the Wastewater System if the requirements set forth in the First Resolution for such issuance are satisfied.

*"Bond Counsel"* means an attorney or a firm of attorneys of nationally recognized standing in the field of law relating to municipal bonds selected by the City and County.

*"Bondholder"* or *"holder of a Bond"* means the registered owner of any Bond which at the time is registered other than to bearer, or such holders' duly authorized attorney in fact, representative or assigns.

*"Capital Appreciation Bond"* means any Bond as to which interest is compounded on each Valuation Date therefor and is payable only at the maturity or prior redemption thereof.

*"City Charter"* means the 1973 Revised Charter of the City and County of Honolulu (1994 Edition), as the same may be amended from time to time.

*"City Code"* means the Revised Ordinances of Honolulu 1990, as the same may be amended from time to time.

*"City Council"* mean the Council of the City and County.

*"Code"* means the Internal Revenue Code of 1986, as amended, and any successor statutes thereto, and any applicable regulations thereunder.

*"Common Reserve Account Requirement"* means as of any date of computation, an amount equal to the greatest amount of Aggregate Debt Service for the then current or any future Fiscal Year on all Outstanding Bonds entitled to the benefit of the Common Reserve Account; provided however, that if upon issuance of a Series of Bonds entitled to the benefit of the Common Reserve Account, such amount would require moneys to be credited to the Common Reserve Account from such Bond proceeds in an amount in excess of the maximum amount permitted under the Code, the Common Reserve Account Requirement will then mean an amount equal to the sum of the Common Reserve Account Requirement immediately preceding issuance of such Bonds and the maximum amount permitted under the Code to be deposited therein from the proceeds of such Bonds, as certified by an Authorized Officer; provided further, however,

that for purposes of this definition, Aggregate Debt Service is to be computed with respect to each Variable Rate Bond entitled to the benefit of the Common Reserve Account by using the Assumed Long-Term Fixed Rate applicable thereto.

*"Consulting Engineer"* means the engineer or engineering firm or corporation retained from time to time pursuant to the First Resolution to perform the acts and carry out the duties provided for such Consulting Engineer in the First Resolution.

*"Costs"* means all costs of any Improvement and include, but are not be limited to, all costs and estimated costs of the issuance of the Bonds, all architectural, engineering, inspection, financial and legal expenses, the cost of causing the payment of the principal or interest or both of the Bonds to be insured or guaranteed, the initial cost of any Support Facility or Interest Rate Exchange Agreement obtained or permitted by the Act, and interest which it is estimated will accrue during the construction of any Improvements and for six (6) months thereafter.

*"Debt Service"* means, as of any particular date of computation, with respect to any Bonds and with respect to any period, the aggregate of the amounts to be paid or set aside in such period for the payment (or retirement) of the principal and Redemption Price (if any) and interest on such Bonds; provided, however, that the term "Debt Service" does not include interest on Bonds to the extent it is to be paid from amounts on credit to a Series Improvement Interest Subaccount, amounts on credit to the Debt Service Account or any other provisions made for the payment of interest.

*"Department"* means the Department of Environmental Services of the City and County as established by the City Charter, or the successor thereto.

*"Depository"* means any bank, national banking association or trust company selected and appointed by an Authorized Officer in accordance with the First Resolution as a depository of moneys and Investment Securities held under the provisions of the First Resolution.

*"Depository"* means The Depository Trust Company, New York, New York.

*"Director of Budget and Fiscal Services"* means the Director of Budget and Fiscal Services of the City and County appointed pursuant to and having the powers as set forth in the Act and the City Charter, or any successor.

*"Director of Environmental Services"* means the Director of the Department of Environmental Services of the City and County appointed pursuant to and having the powers as set forth in the Act and the City Charter, or any successor.

*"Exempt Obligation"* means an obligation of any state or territory of the United States of America, any political subdivision of any state or territory of the United States of America, or any agency, authority, public benefit corporation or instrumentality of such state, territory or political subdivision, the interest on which is excludable from gross income under Section 103 of the Code, and which, at the time an investment therein is made or such obligation is deposited in any fund or account under the First Resolution, is rated, without regard to qualification of such rating by symbols such as "+" or "-" or numerical notation, "Aa" or better by Moody's and "AA" or better by S&P, or, if such obligation is not rated by Moody's or S&P, or, if such obligation is rated by neither Moody's nor S&P, has been assigned a comparable rating by another nationally recognized rating service, but in no event rated lower than the lowest rating on Outstanding Bonds assigned by Moody's or S&P.

*"Fiscal Year"* means the twelve month period established by the City and County or provided by law from time to time as its fiscal year, and which, as of the date of adoption of the Bond Resolution, is the twelve month period commencing on July 1 of any year and ending on June 30 of the following year.

*"Government Obligation"* means a direct obligation of the United States of America, an obligation the principal of, and interest on, which are guaranteed by the United States of America, provided, that the full faith and credit of the United States of America is pledged to any such direct obligation or guarantee.

*"Improvements"* means the acquisition, purchase, construction, reconstruction, improvement, betterment or extension of the Wastewater System.

*"Interest Rate Exchange Agreement"* means an agreement entered into by the City and County relating to Bonds of one or more Series which provides that during the term of such agreement the City and County is to pay to the Counterparty an amount based on the interest accruing at a fixed or variable rate per annum on a notional amount and that the Counterparty is to pay to the City and County either (i) an amount based on the interest accruing on such notional

amount at a fixed, capped or variable rate per annum, in each case computed according to a formula set forth in such agreement, or ) an amount based on the amount by which the rate per annum at which such Bonds bear interest exceeds a rate per annum stated in such agreement.

*"Investment Agreement"* means an agreement for the investment of moneys with a Qualified Financial Institution.

*"Investment Securities"* means any of the following, if and to the extent that the same are legal for the investment of funds of the Department:

- (i) Government Obligations;
- (ii) Investment Agreements;
- (iii) Direct obligations and fully guaranteed certificates of beneficial interest of the Export-Import Bank of the United States; consolidated debt obligations and letter of credit-backed issues of the Federal Home Loan Banks; participation certificates and senior debt obligations of the Federal Home Loan Mortgage Corporation ("FHLMCs"); debentures of the Federal Housing Administration; mortgage-backed securities (except stripped mortgage securities which are valued greater than par on the portion of unpaid principal) and senior debt obligations of Fannie Mae ("FNMA's"); participation certificates of the General Services Administration; guaranteed mortgage-backed securities and guaranteed participation certificates of the Government National Mortgage Association ("GNMA's"); guaranteed participation certificates and guaranteed pool certificates of the Small Business Administration; debt obligations and letter of credit-backed issues of the Student Loan Marketing Association; local authority bonds of the U.S. Department of Housing & Urban Development; guaranteed Title XI financings of the U.S. Maritime Administration; guaranteed transit bonds of the Washington Metropolitan Area Transit Authority; Resolution Funding Corporation securities.
- (iv) direct obligations of any state or territory of the United States of America or any subdivision or agency thereof whose unsecured, uninsured and unguaranteed general obligation debt is rated, at the time of purchase, "Aa" or better by Moody's and "AA" or better by S&P, or any obligation fully and unconditionally guaranteed by any state, subdivision or agency whose unsecured, uninsured and unguaranteed general obligation debt is rated, at the time of purchase, "Aa" or better by Moody's and "AA" or better by S&P;
- (v) commercial paper (having original maturities of not more than 270 days) rated, at the time of purchase, "P-1" by Moody's and "A-1" or better by S&P;
- (vi) Federal funds, unsecured certificates of deposit, time deposits or bankers acceptances (in each case having maturities of not more than 365 days) of any domestic bank including a branch office of a foreign bank which branch office is located in the United States, provided legal opinions are received to the effect that full and timely payment of such deposit or similar obligation is enforceable against the principal office or any branch of such bank, which, at the time of purchase, has a short-term "Bank Deposit" rating of "P-1" by Moody's and a "Short-Term CD" rating of "A-1" or better by S&P.
- (vii) deposits of any bank or savings and loan association which has combined capital, surplus and undivided profits of not less than \$3 million, provided such deposits are continuously and fully insured by the Bank Insurance Fund or the Savings Association Insurance Fund of the Federal Deposit Insurance Corporation ("FDIC");
- (viii) investments in money-market funds rated "Aaa" by Moody's, and "AAAm" or "AAAm-G" by S&P;
- (ix) repurchase agreements collateralized by Government Obligations, GNMA's, FNMA's or FHLMC's with any registered broker/dealer subject to the Securities Investors' Protection Corporation jurisdiction or any commercial bank insured by the FDIC, if such broker/dealer or bank has an uninsured, unsecured and unguaranteed obligation rated in the top two rating tiers by Moody's, and "AA-1" or "AA-" or better by S&P, provided:

- (a) a master repurchase agreement or specific written repurchase agreement governs the transaction; and
- (b) the securities are held free and clear of any lien by the Depository or an independent third party acting solely as agent ("Agent") for the Depository, and such third party is (i) a Federal Reserve Bank, or (ii) a bank which is a member of the Federal Deposit Insurance Corporation and which has combined capital, surplus and undivided profits of not less than \$50 million, and the Depository has received written confirmation from such third party that it holds such securities, free and clear of any lien, as agent for the Depository; and
- (c) a perfected first security interest under the Uniform Commercial Code, or book entry procedures prescribed at 31 C.F.R. 306.1 et seq. or 31 C.F.R. 350.0 et seq. in such securities is created for the benefit of the Depository; and
- (d) the repurchase agreement has a term of 3 years or less, and the Depository or the Agent will value the collateral securities no less frequently than weekly and will liquidate the collateral securities if any deficiency in the required collateral percentage is not restored within two business days of such valuation; and
- (e) the fair market value of the securities in relation to the amount of the repurchase obligation, including principal and interest, is equal to at least 100%;
- (x) investments in any mutual fund whose portfolio is limited to Government Obligations and the investments described in clause (ii) of Investment Securities; and
- (xi) student loan resource securities including student loan auction rate securities, student loan asset-backed notes, student loan program revenue notes and bonds, and securities issued pursuant to Rule 144A of the Securities Act of 1933, including any private placement issues, issued with either bond insurance or overcollateralization guaranteed by the United States Department of Education, provided all insurers maintain an "Aaa" by Moody's, "AAA" by S&P or equivalent rating by other rating agencies.

"*Moody's*" means Moody's Investors Service, Inc., its successors and their assigns, and, if such corporation for any reason no longer performs the functions of a securities rating agency, "Moody's" is deemed to refer to any other nationally recognized rating agency, if any, designated by the Director of Budget and Fiscal Services.

"*Net Revenue Requirement*" means with respect to any Fiscal Year or any period, an amount equal to the greater of (i) the sum of (a) the Aggregate Debt Service in such Fiscal Year or such period, and (b) the Required Deposits for such Fiscal Year or such period; or (ii) 1.20 times the Aggregate Debt Service in such Fiscal Year or such period, plus 1.00 times the aggregate Support Facility Reimbursement Obligations outstanding as of the end of such Fiscal Year or such period.

"*Net Revenues*" means, with respect to any period, the Revenues during such period less amounts required to pay Operation and Maintenance Expenses.

"*Operation and Maintenance Expenses*" means the costs and expenses of operating and maintaining the Wastewater System, including, without limiting the generality of the foregoing, (i) all expenses includable in the operation and maintenance expense accounts of the Department relating to the Wastewater System according to generally accepted accounting principles, exclusive of depreciation and amortization of property values or losses, (ii) to the extent not included in the preceding clause (i) or paid from Bond proceeds or otherwise, the Department's share of the costs and expenses of operating and maintaining any plants and properties jointly owned with others, and (iii) the amounts, if any, payable to the United States Treasury Department pursuant to Section 148 of the Code.

"*Opinion of Counsel*" means with respect to the City and County a written opinion of counsel selected by the Director of Budget and Fiscal Services who is not an employee of the City and County, and which, with respect to Federal income tax law and securities law relating to obligations issued by state and local governmental units, is Bond Counsel. Any Opinion of Counsel may be based (insofar as it relates to factual matters or information which is in the possession of the City and County) upon a written certificate of the City and County unless such counsel knows, or in the exercise of reasonable care should have known, that such written certificate is erroneous.

*"Outstanding"* or *"outstanding"* when used with reference to Bonds means, as of any date, Bonds theretofore or thereupon issued pursuant to the First Resolution, except: (a) any Bonds canceled by a Paying Agent or paid at or prior to such date; (b) Bonds in lieu of or in substitution for which other Bonds have been delivered pursuant to the First Resolution; (c) Bonds deemed to be no longer outstanding under the First Resolution as provided in the First Resolution and (d) Option Bonds tendered or deemed tendered in accordance with the First Resolution.

*"Parity Support Facility Reimbursable Obligation"* means the obligation of the City and County described in the First Resolution to directly reimburse the Support Facility Provider of any Support Facility for amounts paid by such Support Facility Provider under such Support Facility or a Counterparty under an Interest Rate Exchange Agreement for amounts paid thereunder, on a parity with the obligation of the City and County to pay the Bonds, whether or not such obligation to reimburse is evidenced by a promissory note or other similar instrument.

*"Paying Agent"* means, as to Bonds of any particular Series, the Director of Budget and Fiscal Services or the bank or trust company designated for the payment of the principal and Redemption Price, if any, and interest on the Bonds of such Series in the Series Resolution authorizing the issuance of such Series or the Series Certificate relating to such Series.

*"Record Date"* means, with respect to any Series of Bonds, (i) with respect to the payment of interest, the fifteenth (15th) day (whether or not a Business Day) of the month preceding an interest payment date; (ii) with respect to notice of redemption, the forty-fifth (45th) day (whether or not a Business Day) preceding the date of redemption; or (iii) such other day as may be provided in the Series Resolution authorizing the issuance of such Series or the Series Certificate relating to such Series.

*"Refunded Municipal Obligations"* means Exempt Obligations which are rated in the highest rating category by Moody's and S&P and provision for the payment of the principal of and interest on which has been made by an irrevocable deposit with a trustee or escrow agent of Governmental Obligations, which are held by a bank or trust company organized and existing under the laws of the United States of America or any state, the District of Columbia or possession thereof in the capacity as custodian, the maturing principal of and interest on which Government Obligations are sufficient to pay, when due, the principal of and interest on such Exempt Obligations.

*"Reimbursable Obligations"* means reimbursable general obligation bonds issued and delivered or to be hereafter issued and delivered by the City and County to finance certain costs related to the Wastewater System, the debt service on which the Department is required by State law to reimburse the City and County's General Fund.

*"Reimbursable Obligation Requirement"* means, with respect to any period of time, the amount required to be credited to the Reimbursable Obligation Account pursuant to the ordinances and resolutions of the City Council authorizing the issuance and delivery of Reimbursable Obligations.

*"Required Deposits"* means, for any period, amounts required, if any, to be paid into the Common Reserve Account, each Separate Reserve Account, the Subordinate Obligation Account and Reimbursable Obligation Account; and to pay Support Facility Reimbursement Obligations.

*"Revenue Bond Index"* means the thirty (30) year Revenue Bond Index of *The Bond Buyer*, a publication in New York, New York, or any successor publication maintaining such Index or in the event *The Bond Buyer* or any successor publication does not maintain such Index, an equivalent index with the same or similar components as the Revenue Bond Index.

*"Revenues"* means the moneys, including any moneys collected from the City and County or any department thereof other than the Department, derived by the Department from the rates, rentals, fees and charges prescribed for the use and services of, and the facilities and commodities furnished by, the Wastewater System, including, without limiting the generality of the foregoing, (i) all income, receipts, profits, and other moneys derived from the furnishing or supplying of the services, facilities and commodities through the Wastewater System; (ii) all income from investments of moneys held under the First Resolution including investment income on the Improvement Account but not including any earnings on the Rebate Account, the Subordinate Obligation Account or the Reimbursable Obligation Account; (iii) all payments made by Counterparties pursuant to Interest Rate Exchange Agreements; and (iv) moneys and Investment Securities transferred from the Rate Stabilization Account to the Sewer Fund within ninety (90) days following the end of a Fiscal Year. "Revenues" do not include, (i) deposits subject to refund until such deposits have become the property of the City and County; (ii) contributions in-aid-of construction and assessment, impact and other similar fees imposed and collected by the City and County which are targeted to pay the Costs of specific Improvements; (iii) income, fees, charges, receipts, profits or other moneys derived by the Department from the ownership or operation

of any separate utility system; (iv) any gifts, grants, donations or other moneys received by the City and County for purposes of the Wastewater System from any State or Federal agency or other person if such gifts, grants, donations or other moneys are the subject of any limitation or reservation: (a) imposed by the donor or grantor; or (b) imposed by law or administrative regulation to which the donor or grantor is subject, limiting the application of such funds; (v) moneys and Investment Securities transferred from the Sewer Fund to the Rate Stabilization Account within ninety (90) days following the end of a Fiscal Year; or (vi) Wastewater System Facility Charges.

"*S&P*" means Standard & Poor's Rating Services, a division of The McGraw-Hill Companies, its successors and their assigns, and, if such corporation for any reason no longer performs the functions of a securities rating agency, S&P is deemed to refer to any other nationally recognized rating agency designated by the Director of Budget and Fiscal Services.

"*Serial Bonds*" means Bonds which mature serially and which are not Term Bonds.

"*Series of Bonds*" or "*Bonds of a Series*" means all Bonds designated as being of the same series issued and delivered on original issuance in a simultaneous transaction, and any Bonds thereafter delivered in lieu thereof or in substitution therefor pursuant to the First Resolution.

"*Sinking Fund Installment*" means an amount so designated which is established pursuant to the First Resolution. The portion of any such Sinking Fund Installment remaining after the deduction of any such amounts credited pursuant to the First Resolution toward the same (or the original amount of any such Sinking Fund Installment if no such amounts have been credited toward the same) constitutes the unsatisfied balance of such Sinking Fund Installment for the purpose of calculation of Sinking Fund Installments due on a future date.

"*Subordinate Obligations*" means any bonds, notes or other evidences of indebtedness of the City and County payable from the Net Revenues, other than the Bonds and the Reimbursable Obligations, issued in compliance with the provisions of the First Resolution.

"*Subordinate Obligation Requirement*" means with respect to any period of time, the amount required to be deposited in the Subordinate Obligation Account pursuant to the First Resolution, indenture or other instruments of the City and County adopted by or entered into by the City and County in accordance with the First Resolution and providing for all payments with respect to Subordinate Obligations.

"*Supplemental Resolution*" means any resolution adopted by the City Council and becoming effective pursuant to and in compliance with the provisions of the First Resolution which amends or supplements the provisions of the First Resolution, any Series Resolution or any other Supplemental Resolution.

"*Support Facility*" means an irrevocable letter of credit, surety bond, loan agreement, standby purchase agreement or other agreement, facility or insurance or guaranty arrangement issued or extended by one or more Support Facility Providers, pursuant to which the City and County is entitled to obtain moneys to pay the principal or Redemption Price of Bonds due in accordance with their terms or tendered for purchase or redemption, plus accrued interest thereon to the date of payment, purchase or redemption thereof in accordance with the First Resolution and with the Series Resolution authorizing such Bonds or a Series Certificate relating to such Bonds, whether or not the City and County is in default.

"*Support Facility Provider*" means a bank, a trust company, a national banking association, an organization subject to registration with the Board of Governors of the Federal Reserve System under the Bank Holding Company Act of 1956 or any successor provisions of law, a federal branch pursuant to the International Banking Act of 1978 or any successor provisions of law, a savings bank, a savings and loan association, an insurance company or association chartered or organized under the laws of any state of the United States of America, the Government National Mortgage Association or any successor thereto, the Federal National Mortgage Association or any successor thereto, or any other federal agency or instrumentality approved by the City and County or a Counterparty.

"*Support Facility Reimbursement Obligation*" means the obligation of the City and County to directly reimburse the Support Facility Provider of a Support Facility for amounts paid thereunder or a Counterparty under an Interest Rate Exchange Agreement for amounts paid thereunder, whether or not such obligation to reimburse is evidenced by a promissory note or other similar instrument.

"*Tax-exempt Bonds*" means Bonds the interest on which is intended by the City and County to be excluded from gross income of the holders of such Bonds for federal income taxation purposes pursuant to the Code.

*"Term Bonds"* means Bonds, the retirement or the redemption of which is to be provided for from moneys credited to the Debt Service Account pursuant to the First Resolution.

*"Variable Rate Bonds"* means any Bonds issued bearing interest at a rate per annum subject to adjustment from time to time based on the terms thereof, based upon an index, or otherwise calculated in a manner which precludes the actual rate for the entire term of such Bonds from being ascertainable in advance as provided for in the First Resolution.

*"Wastewater System"* means all plants and properties, both real and personal and tangible and intangible, now or hereafter existing, under the management, control or jurisdiction of the Department, used for, useful in, or pertaining to the collection, pretreatment, advanced primary treatment, primary treatment, secondary treatment, tertiary treatment, purification, conveyance, storage, drainage, discharge and disposal of sewage, water, wastewater, stormwater, influent, effluent, or other liquids or suspended solids, or incidental or necessary to the preservation of the City and County's or the Department's wastewater conveyance facilities, wastewater treatment plants, wastewater disposal facilities, storm drains and sewers, sewage pump stations, sewage treatment plants, sewers, interceptors, outfall and other related facilities and plants, and the integrity thereof. The terms used in the preceding sentence have the meanings as ascribed to them in the City Code. Without limiting the generality of the foregoing, the Wastewater System includes: (1) the existing plants and properties comprising the Wastewater System under the management, control or jurisdiction of the Department, as of the date of adoption of the Bond Resolution; and (2) all Improvements constructed or otherwise acquired, purchased or annexed after the date of adoption of the Bond Resolution.

#### SUMMARY OF CERTAIN PROVISIONS OF THE FIRST RESOLUTION

The First Resolution contains terms and conditions relating to the issuance of Bonds, including various covenants and security provisions, certain of which are summarized below. This summary does not purport to be comprehensive or definitive, and is subject to all of the provisions of the First Resolution, to which reference is hereby made. Copies of the First Resolution are available from the City and County. This summary uses various terms defined in the First Resolution. Summaries of certain of these definitions are set forth in CERTAIN DEFINITIONS.

#### Pledge Made in the First Resolution

The Bonds are payable solely from and secured by the funds pledged therefor pursuant to the First Resolution. The City and County has pledged as security for the payment of the principal of, Redemption Price, if any, and interest on the Bonds in accordance with their terms and the provisions of the First Resolution, subject only to the provisions of the First Resolution permitting the application thereof for the purposes and on the terms and conditions set forth in the First Resolution: (i) the proceeds of sale of the Bonds pending application thereof in accordance with the provisions of the First Resolution; (ii) the Net Revenues; and (iii) all Funds and Accounts established by the First Resolution other than the Rebate Account, the Subordinate Obligation Account, the Reimbursable Obligation Account, with respect to any Series of Bonds not entitled to the benefit of a Separate Series Reserve Account, such Separate Series Reserve Account, and with respect to any Series of Bonds not entitled to the benefit of the Common Reserve Account, the Common Reserve Account, including the investments, if any, in such pledged Funds and Accounts; and the Bondholders have a lien on, and a security interest in, such proceeds, Revenues and Funds and Accounts for such purpose and subject to such provisions of the First Resolution. Such lien and security interest for the payment of Bonds are prior and superior to the lien and security interest for the payment of Subordinate Obligations and Reimbursable Obligations.

The First Resolution provides that each of the obligations, duties, limitations and restraints imposed upon the City and County by the First Resolution is deemed to be a covenant between the City and County and every Holder of the Bonds, and the First Resolution and every provision and covenant set forth in the First Resolution is deemed to be and constitute a continuing contract and agreement between the City and County and the Holders from time to time of the Bonds issued under the First Resolution, to secure the full and final payment of the principal and redemption price of and interest on all Bonds which may from time to time be issued, executed, and delivered under the First Resolution. The covenants and agreements set forth in the First Resolution to be performed by the City and County are for the equal and proportionate benefit, security and protection of all Holders of the Bonds without preference, priority or distinction as to payment or security or otherwise of any of the Bonds over any of the others for any reason or cause whatsoever except as expressly provided in the First Resolution, in a Series Resolution, a Series Certificate or a Supplemental Resolution, or in the Bonds.

## Additional Bonds

*Basic Test.* One or more Series of Bonds (exclusive of refunding Bonds) may be issued at any time and from time to time for any lawful use or purpose relating to the Wastewater System, including, without limitation, payment of all or a portion of the Costs of Improvements, but only upon compliance as to each such Series with the provisions set forth in the First Resolution, including, among other things, delivery to the Director of Budget and Fiscal Services of the following documents or moneys or securities:

1. A written certificate of the City and County stating the amount required to be in the Common Reserve Account after issuance of the Bonds then to be issued, and that after deposit in the Common Reserve Account of the amount, if any, to be deposited therein in connection with the issuance of such Bonds, the amounts on deposit in the Common Reserve Account will not be less than the Common Reserve Account Requirement.

2. A written certificate of the City and County stating the amount required to be in the Separate Series Reserve Account created, if any, to provide additional security for the Bonds of such Series after issuance of the Bonds then to be issued, and that after deposit in such Separate Series Reserve Account of the amount to be deposited therein in connection with the issuance of such Bonds, the amounts on deposit in such Separate Series Reserve Account will not be less than the Separate Series Reserve Account Requirement for such Separate Series Reserve Account.

3. Either (I) a written certificate of the City and County based: (i) on audited figures or (ii) to the extent audited figures are not available, on figures taken by an independent certified public accountant from the Department's books and records, showing that the Net Revenues for: (a) the most recent Fiscal Year, or (b) any consecutive twelve (12) months' period out of twenty-four (24) months immediately preceding the month in which such Bonds are issued were not less than the greater of: (x) the sum of (1) the maximum Aggregate Debt Service on all Bonds then Outstanding and on the proposed Series of Bonds in any Fiscal Year and the twelve (12) month period selected and (2) the Required Deposits for such Fiscal Year or the twelve (12) month period selected; and (y) 1.20 times the maximum Aggregate Debt Service on all Bonds then Outstanding and on the proposed Series of Bonds in any Fiscal Year and the twelve (12) month period selected, plus 1.00 times the aggregate Support Facility Reimbursement Obligations outstanding as of the date of the written certificate of the City and County, or (II) a written certificate of the City and County or Certificate of the Consulting Engineer that the Net Revenues to be derived in each of the five (5) Fiscal Years following the earlier of: (i) the end of the period during which interest is capitalized or, if no interest is to be capitalized, the Fiscal Year in which the proposed Series of Bonds are issued, and (ii) the date on which substantially all Improvements to be financed with the proceeds of the proposed Series of Bonds are expected to commence operations, or, if the proceeds of such Series of Bonds will not be used to fund the Costs of Improvements, the Fiscal Year in which the proposed Series of Bonds are issued, are estimated to be not less than the greater of: (x) the sum of (1) the maximum Aggregate Debt Service on all Bonds then Outstanding and on the proposed Series of Bonds in any such Fiscal Year, and (2) the Required Deposits for any such Fiscal Year; and (y) 1.20 times the maximum Aggregate Debt Service on all Bonds then Outstanding and on the proposed Series of Bonds in any such Fiscal Year, plus 1.00 times the aggregate Support Facility Reimbursement Obligations outstanding as of the date of such written certificate of the City and County or certificate of the Consulting Engineer, as the case may be.

The provisions of the First Resolution described in item 3 above do not apply to the Series 1998 Bonds.

*Certain Adjustments.* The First Resolution permits and requires certain adjustments to be made in determining whether the *Basic Test* described above for the issuance of Bonds other than Refunding Bonds are met.

1. In determining Debt Service on Variable Rate Bonds then Outstanding and Variable Rate Bonds then proposed to be issued for purposes of the *Basic Test* described above, the interest rate is to be calculated as: (i) if any Variable Rate Bonds are then Outstanding and have been Outstanding for at least twenty-four months, the highest average interest rate borne by such Variable Rate Bonds for any 30-day period or if no such Variable Rate Bonds are then Outstanding, the Revenue Bond Index at the time of calculation.

2. Bond Anticipation Notes then Outstanding are to be treated as Bonds. In determining Debt Service on such Bond Anticipation Notes, such Bond Anticipation Notes are assumed to mature in thirty (30) years and bear interest equal to the Revenue Bond Index at the time of calculation.

3. Subordinate Obligations and Reimbursable Obligations originally issued with a maturity of five (5) years or less are assumed to mature in thirty (30) years and bear interest equal to the Revenue Bond Index at the time of calculation.

4. In preparing the certificate required by the Basic Test described above, the City and County or the Consulting Engineer, as applicable, may make adjustments to the Net Revenues as follows:

a. If any changes have been made in the schedule of rates and charges imposed by the City and County for commodities and services furnished by the Wastewater System which are in effect at the time of adoption of the Series Resolution providing for the issuance of the Bonds then being issued and were placed into effect subsequent to the start of the Fiscal Year or the twelve month period selected pursuant to item 3 of the *Basic Test* described above, the City and County, may, if such changes result in increases in such rates and charges, and must, if such changes result in reductions in such rates and charges, adjust the Net Revenues for such period to reflect any change in such Net Revenues which would have occurred if the schedule of rates and charges in effect at the time of the adoption of the Series Resolution providing for the issuance of such Bonds had been in effect during the portion of such period in which such schedule was not in effect.

b. If customers are being served by the Department at the time of adoption of the Series Resolution authorizing the issuance of the Bonds then being issued and who were added to the Wastewater System subsequent to the start of the Fiscal Year or the twelve month period selected pursuant to item 3 of the *Basic Test* described above, the City and County may adjust the Net Revenues for such period to reflect any change in such Net Revenues which would have occurred if the additional customers had been served during the portion of the period in which such customers were not served.

c. If residential, commercial, industrial or institutional customers which are in existence are not then served by the Wastewater System at the time of adoption of the Series Resolution authorizing the issuance of the Bonds then being issued, but are then expected to be served during the five (5) Fiscal Years covered by such certificate the City and County or the Consulting Engineer may estimate the effect which such new customers would have had on the Net Revenues for the period selected pursuant to item 3 of the *Basic Test* described above, if such new customers had been served during the entire period and may adjust the Net Revenues for such period to give effect to such new customers. Any such estimate is to be based upon the operating experience and records of the Department with respect to the Wastewater System and upon any available financial and quarterly statistics deemed pertinent by the City and County or the Consulting Engineer.

d. If any long-term, guaranteed contracts with customers of the Wastewater System are in effect at the time of adoption of the Series Resolution authorizing the issuance of the Bonds then being issued and which were entered into subsequent to the start of the Fiscal Year or twelve month period selected pursuant to item 3 of the *Basic Test* described above, the City and County may adjust the Net Revenues for such period to reflect any change in such Net Revenues which would have occurred if such contracts had been in effect for the entire period.

e. In rendering the certificate required pursuant to item 3 of the Basic Test, the City and County or the Consulting Engineer, as applicable, must deem the Operation and Maintenance Expenses for the Wastewater System for the first Fiscal Year of the five (5) year period to be equal to such Operation and Maintenance Expenses for the Fiscal Year immediately preceding the Fiscal Year in which the proposed Series of Bonds is to be delivered, and thereafter the City and County or the Consulting Engineer, as applicable, must adjust, if deemed necessary, for any increased Operation and Maintenance Expenses which are estimated to occur during any subsequent Fiscal Year during the five (5) year period and are, in the judgement of the City and County or the Consulting Engineer, as applicable, essential to maintaining and operating the Wastewater System.

f. In rendering any certificate, the City and County or the Consulting Engineer may rely upon estimates from other sources which the City and County or the Consulting Engineer, as applicable, considers reliable, making such adjustments and provisions for contingencies based on similar projects and other considerations as deemed appropriate by the City and County or the Consulting Engineer.

## Refunding Bonds

The City and County may issue a Series of refunding Bonds at any time for the purpose of refunding (including by purchase) all or any portion of Bonds Outstanding, including amounts to pay principal, redemption premium and interest to the date of maturity or redemption (or purchase) and the expense of issuing the refunding Bonds and of effecting such refunding if the conditions set forth in the First Resolution are complied with, including all of the conditions of the *Basic Test* described above, except that condition 3 need not be complied with if the maximum annual Debt Service in any Fiscal Year on the refunding Bonds proposed to be issued does not exceed maximum annual Debt Service in any Fiscal Year on the refunded Bonds by more than ten percent (10%). All adjustments described above in *Certain Adjustments* are applicable to the issuance of Refunding Bonds.

The City and County may also issue a Series of refunding Bonds at any time for the purpose of refunding (including by purchase) all or any portion of outstanding Subordinate Obligations or Reimbursable Obligations, including amounts to pay principal, redemption premium and interest to the date of maturity or redemption (or purchase) and the expense of issuing the refunding Bonds and of effecting such refunding if the conditions set forth in the First Resolution are complied with, including all of the conditions of the *Basic Test* described above.

## Bond Anticipation Notes

Bond Anticipation Notes may be issued by the City and County at such time as the City and County shall have by a Series Resolution duly adopted authorized the issuance of Bonds under the First Resolution. No Bond Anticipation Notes may be issued unless there has been filed with the Director of Budget and Fiscal Services on or prior to the date of issuance of such Bond Anticipation Notes, a written certificate of the City and County to the effect that, based on market conditions expected to be prevailing at the time of issuance of the Series of Bonds in anticipation of which such Bond Anticipation Notes are issued and on other reasonable assumptions set forth in such written certificate, the provisions of the First Resolution for the issuance of additional Bonds other than refunding Bonds are expected to be complied with at the time of issuance of such Series of Bonds. The maximum maturity of any Bond Anticipation Notes, including the renewals thereof, must not exceed five years from the date of the original Bond Anticipation Note. The principal of Bond Anticipation Notes may be paid from the proceeds of such Bond Anticipation Notes (or any renewal thereof) or from the proceeds of the Bonds in anticipation of which such Bond Anticipation Notes were issued. The interest on such Bond Anticipation Notes may be secured by a lien on and pledge of, and be paid from, the Net Revenues on a parity with the lien on and pledge of the Net Revenues created in the First Resolution for the payment and security of the Bonds. The principal of Bond Anticipation Notes are to be secured by a lien on and pledge of the proceeds of the Bonds in anticipation of which such Bond Anticipation Notes were issued and any such pledge will have priority over any other pledge of such proceeds created by the First Resolution. Bond Anticipation Notes issued under the First Resolution are to be treated as Bonds for all purposes of the First Resolution, and are to be payable from the Debt Service Account, except to the extent that the principal of any such Bond Anticipation Note is paid from the proceeds of other Bond Anticipation Note or from the proceeds of Bonds.

## Subordinate Obligations

The City and County may issue Subordinate Obligations which are payable out of, and which may be secured by a pledge of, such amounts in the Subordinate Obligation Account as may from time to time be available for the purpose of payment. The City and County may, by resolution, provide for various priorities in the liens and pledges securing Subordinate Obligations, and nothing in the First Resolution shall be construed so as to require that the payment of, or pledges securing, Subordinate Obligations be on a parity *inter se*.

The City and County may also issue Subordinate Obligations: (i) to refund any Subordinate Obligations issued as provided in the First Resolution; (ii) to refund Outstanding Bonds; or (iii) to refund any Reimbursable Obligations. Such Subordinate Obligations issued for refunding purposes may be payable out of, and may be secured by a pledge of, such amounts in the Subordinate Obligations Account or Wastewater General Account as may from time to time be available therefor.

The First Resolution requires that any resolution, indenture or other instrument securing or evidencing each issue of Subordinate Obligations must contain provisions (which shall be binding on all holders of such Subordinate Obligations) not more favorable to the holders of such Subordinate Obligations than as described below:

- (1) In the event of any insolvency or bankruptcy proceedings, and any receivership, liquidation, reorganization or other similar proceedings in connection therewith, relative to the City and County or the Department, or to the property of the City and County or the property operated by the Department, and in the

event of any proceedings for voluntary liquidation, dissolution or other winding up of the City and County or the Department, the Holders of all Bonds then Outstanding will be entitled to receive payment in full of all principal and interest on all such Bonds before the holders of the Subordinate Obligations are entitled to receive any payment from the trust estate under the First Resolution consisting of the Net Revenues and funds held under the First Resolution (the "Trust Estate" for these purposes) on account of principal (and premium, if any) or interest on the Subordinate Obligations.

(2) In the event that any issue of Subordinate Obligations is declared due and payable before its expressed maturity because of the occurrence of an event of default (under circumstances when the provisions of (1) above are not applicable), the Holders of all Bonds Outstanding at the time such Subordinate Obligations so become due and payable because of such occurrence of such an event of default will be entitled to receive payment in full of all principal and interest on all such Bonds before the holders of the Subordinate Obligations are entitled to receive any accelerated payment from the Trust Estate of principal (and premium, if any) or interest on the Subordinate Obligations.

(3) If any Event of Default with respect to the Bonds has occurred and be continuing (under circumstances when the provisions of (1) above are not applicable), the Holders of all Bonds then Outstanding will be entitled to receive payment in full of all principal and interest on all such Bonds before the holders of the Subordinate Obligations are entitled to receive any accelerated payment from the Trust Estate of principal (and premium, if any) or interest on the Subordinate Obligations.

(4) No Bondholder shall be prejudiced in his right to enforce subordination of the Subordinate Obligations by any act or failure to act on the part of the City and County.

(5) The Subordinate Obligations may provide that the provisions of (1), (2), (3) and (4) above are solely for the purpose of defining the relative rights of the Bondholders on the one hand, and the holders of Subordinate Obligations on the other hand, and nothing therein shall impair, as between the City and County and the owners of the Subordinate Obligations, the obligation of the City and County to pay to the owners thereof the principal thereof and premium, if any, and interest thereon in accordance with its terms, nor shall anything therein prevent the holders of the Subordinate Obligations from exercising all remedies otherwise permitted by applicable law or thereunder upon default thereunder, subject to the rights under (1), (2), (3) and (4) above of the Holders of Bonds to receive cash, property or securities otherwise payable or deliverable to the holders of the Subordinate Obligations; and the Subordinate Obligations may provide that, insofar as a trustee or paying agent for such Subordinate Obligations is concerned, the foregoing provisions shall not prevent the application by such trustee or paying agent of any moneys deposited with such trustee or paying agent for the purpose of the payment of or on account of the principal (and premium, if any) and interest on such Subordinate Obligations if such trustee or paying agent did not have knowledge at the time of such application that such payment was prohibited by the foregoing provisions.

Any issue of Subordinate Obligations may have such rank or priority with respect to any other issue of Subordinate Obligations as may be provided in the resolution, indenture or other instrument securing such issue of Subordinate Obligations and may contain such other provisions as are not in conflict with the provisions of the First Resolution.

#### **Reimbursable Obligations**

The obligation for the payment of Reimbursable Obligations shall be: (i) after and inferior to the lien and security interest for the payment of Bonds and those Subordinate Obligations which are payable from the Subordinate Obligation Account; and (ii) prior and superior to the lien and security interest for the payment of those Subordinate Obligations which are payable from the Wastewater General Account. Reimbursable Obligations are payable from the Reimbursable Obligation Account.

#### **Support Facilities and Interest Rate Exchange Agreements**

In connection with the issuance of any Series of Bonds and to the extent permitted by law, the City and County may obtain or cause to be obtained from one or more Support Facility Providers one or more Support Facilities providing for payment of all or a portion of the purchase price or principal, premium, if any, or interest due or to become due on specified Bonds of such Series, or providing for the purchase of such Bonds or a portion of such Bonds by such Support Facility Providers, or providing, in whole or in part, for the funding of the Common Reserve Account or a Separate Series Reserve Account pursuant to the First Resolution.

In connection with the issuance of any Series of Bonds or to better manage its assets and liabilities and, to the extent permitted by law, the City and County may enter into with one or more Counterparties one or more Interest Rate Exchange Agreements; *provided* that no such Interest Rate Exchange Agreement shall adversely affect the exclusion from gross income for purposes of federal income taxation of interest on the Tax-exempt Bonds of any Series.

The City and County may enter into agreements with one or more Support Facility Providers or Counterparties to provide for, among other things: (i) the payment of fees and expenses to such Support Facility Providers or Counterparties; (ii) the terms and conditions of such Support Facility or Interest Rate Exchange Agreement and the Series of Bonds affected thereby; and (iii) the security, if any, to be provided to such Support Facility Providers or Counterparties. The City and County may secure the Support Facility or Interest Rate Exchange Agreement by an agreement providing for the purchase of the Bonds secured thereby with such adjustments to the rate of interest, method of determining interest, maturity, or redemption provisions as specified in the Series Resolution or the Series Certificate. Debt Service with respect to any Bonds so secured is to be calculated for purposes of the definition of Common Reserve Account Requirement by using the Assumed Long-Term Fixed Rate.

The City and County may also agree in any agreement with the Support Facility Provider of such Support Facility or the Counterparty under an Interest Rate Exchange Agreement to reimburse directly such Support Facility Provider or Counterparty for any amounts paid under the terms of such Support Facility or Interest Rate Exchange Agreement, together with interest thereon (the "Support Facility Reimbursement Obligation"); *provided, however*, that no Support Facility Reimbursement Obligation is to be created, for purposes of the First Resolution, until amounts are paid under such Support Facility or Interest Rate Exchange Agreement, as the case may be. Any such Support Facility Reimbursement Obligation may be secured by a lien on and pledge of the Net Revenues on a parity with the lien on and pledge of the Net Revenues created by the First Resolution with respect to the Bonds (a "Parity Support Facility Reimbursement Obligation"). Any such Parity Support Facility Reimbursement Obligation will be deemed to be a part of the Series of Bonds to which the Support Facility which gave rise to such Parity Support Facility Reimbursement Obligation relates. Payment of Support Facility Reimbursement Obligation may be made out of the Sewer Fund as provided in the First Resolution.

Any Support Facility deposited in the Common Reserve Account or the long-term debt of the Support Facility Provider of such Support Facility must, in each case, be in the highest rating category each Rating Agency, and if rated by A.M. Best & Company, also be rated in the highest rating category by A.M. Best & Company or its successors. In the event any Support Facility deposited in the Common Reserve Account or the long-term debt of the issuer of any Support Facility deposited in the Common Reserve Account falls below the highest rating category of each Rating Agency, and A.M. Best & Company, if rated by A.M. Best & Company, the City and County must, within one hundred twenty (120) days, obtain a new Support Facility which is rated in the highest category of each Rating Agency or for which the long-term debt of the issuer of such new Support Facility is rated in the highest rating category of each Rating Agency and A.M. Best & Company, if rated by A.M. Best & Company; *provided, however*, that if the new Support Facility is not obtained within 120 days, the City and County must deposit in the Common Reserve Account Net Revenues in the amount provided in the First Resolution. If a disbursement is made pursuant to a Support Facility deposited in the Common Reserve Account, the City and County must: first, reinstate the full amount of such Support Facility; and second, if necessary deposit Net Revenues in the Common Reserve Account in the amount of the disbursement made under such Support Facility, in either case such that the amount in the Common Reserve Account is equal to the Common Reserve Account Requirement within a period of time not longer than would be required to restore the Common Reserve Account by application of moneys in the Sewer Fund. The City and County may at any time deposit cash or Investment Securities as replacement for one or more Support Facilities.

The City and County must obtain and maintain in effect one or more Support Facilities for Option Bonds. The City and County must obtain a replacement Support Facility to replace any Support Facility for Option Bonds that is expiring, not renewed or terminated. Procedures for such replacement, maintenance and notices to Bondholders, rating agencies or other persons are to be provided in the Series Resolution authorizing the Series of Bonds or the Series Certificate relating to such Bonds.

## Funds and Accounts

The City and County has established by ordinances the Sewer Fund and the Sewer Revenue Bond Improvement Fund (the "Improvement Fund"). The First Resolution establishes the following accounts in the Sewer Fund:

Wastewater System Facility Charge Account,  
Debt Service Account,  
Common Reserve Account,  
Rebate Account,  
Rate Stabilization Account,  
Subordinate Obligation Account,  
Reimbursable Obligation Account,  
Renewal and Replacement Account, and  
Wastewater General Account.

The First Resolution permits the establishment of one or more Separate Series Reserve Accounts in the Sewer Fund. The First Resolution also permits the establishment of one or more Series Improvement Subaccounts in the Improvement Account and requires the establishment of one or more Series Improvement Interest Subaccounts in the Improvement Account if interest on the Bonds of a Series is to be paid from the proceeds of such Bonds during the period of construction of any Improvements and for six months thereafter.

## Sewer Fund

Revenues and Wastewater System Facility Charges are to be collected by the Department and are to be deposited into the Sewer Fund. From the amounts deposited in the Sewer Fund, the Department will transfer all moneys collected as Wastewater System Facility Charges to the Wastewater System Facility Charge Account, pay the current Operation and Maintenance Expenses, transfer to the Rebate Account such amount as is necessary to pay the rebate amount due the United States Treasury Department under Section 148 of the Code or to set aside as a reserve for such payment; and make the transfers to other funds and accounts as provided in the First Resolution. In addition, all other amounts required by the City Charter and the First Resolution to be deposited in the Sewer Fund will be so deposited.

In each month, the Department will, make the transfer, if any, to the Wastewater System Facility Charge Account of all moneys received as Wastewater System Facility Charges, after paying or setting aside a sufficient amount to pay the Operating and Maintenance Expenses and making the transfer to the Rebate Account as described above, retain, apply or transfer on the 5th day preceding the end of each month a sufficient amount of moneys in the Sewer Fund, in the following order of priority:

*First*, to the Debt Service Account, if and to the extent required so that the balance in the Debt Service Account will be equal to the Accrued Debt Service for all Bonds Outstanding and the interest accrued on all Bond Anticipation Notes outstanding on said date;

*Second*, (a) to the Common Reserve Account, if and to the extent required either (i) an amount such that the balance in the Common Reserve Account will be equal to the Common Reserve Account Requirement on such date, or (ii) an amount such that if the same amount were deposited in each month the amount of any deficiency in the Common Reserve Account will be eliminated at the end of the sixth month following the first credit; and (b) to each Separate Series Reserve Account, if and to the extent required either (i) an amount such that the balance in each Separate Series Reserve Account will be equaled to the Separate Series Reserve Account Requirement for each Separate Series Reserve Account on such date, or (ii) an amount such that if the same amount were deposited in each month the amount of any deficiency in each Separate Series Common Reserve Account will be eliminated at the end of the sixth month following the first credit; provided, however, that such transfers shall be pro rata, based on the proportion of the Common Reserve Account Requirement and each Separate Series Reserve Account Requirement to the sum of the Common Reserve Account Requirement and all Separate Series Reserve Account Requirements;

*Third*, in the Sewer Fund, a reasonable and necessary amount for working capital and operating reserves;

*Fourth*, to the Subordinate Obligation Account, the amount, if any, equal to all Subordinate Obligation Requirements theretofore accrued and unpaid and not met from any other source and to accrue and become payable during the succeeding calendar month and not met from any other source;

*Fifth*, to the Reimbursable Obligation Account, the amount, if any, equal to all Reimbursable Obligation Requirements payable on such day and not met from any other source;

*Sixth*, to the Renewal and Replacement Account, an amount equal to one-twelfth (1/12th) of the amount provided in the Annual Budget of the City and County to be credited to such Account during such Fiscal Year; *provided, however*, that if any such monthly allocation to the Renewal and Replacement Account is less than the required amount, the amount of the next succeeding monthly payment must be increased by the amount of such deficiency;

*Seventh*, to the Wastewater System Facility Charge Account, such amount as is set forth in a written certificate to reimburse such Fund for the amount of any transfer to the Debt Service Account made pursuant to the First Resolution;

*Eighth*, to the Rate Stabilization Account, such amount as is provided in the Annual Budget to be transferred to the Rate Stabilization Account in such month or so much thereof as is available; *provided, however*, that if any such monthly allocation to the Rate Stabilization Account is less than the required amount, the amount of the next succeeding monthly payment must be increased by the amount of such deficiency; and

*Ninth*, to the Wastewater General Account, such amount as is forth in a written certificate of the City and County.

The First Resolution permits the Department to directly pay out of the Sewer Fund reimbursements to providers of Support Facilities which have been drawn upon in the same priority and order as payments from the Sewer Fund to the Debt Service Account, the Common Reserve Account, each Separate Series Reserve Account or other Funds and Accounts as provided in a Series Resolution as if such payments were part of such Funds and Accounts.

#### Purposes of the Various Funds and Account

*Sewer Fund - Debt Service Account.* The principal and Redemption Price of and interest on the Bonds and interest on Bond Anticipation Notes are to be paid out of the Debt Service Account in the Sewer Fund to each Paying Agent on or before the respective due dates.

Amounts accumulated in the Debt Service Account by reason of the payment of any Sinking Fund Installment may be applied by the City and County, on or prior to the sixtieth (60th) day preceding the due date of such Sinking Fund Installment, to: (i) the purchase of Bonds of the maturity for which such Sinking Fund Installment was established, or (ii) the redemption of such Bonds at the applicable Redemption Price, if then redeemable by their terms. All such purchases of Bonds are to: (i) be made at prices not exceeding the applicable Redemption Price of such Bonds plus accrued interest; (ii) be made as arranged by the City and County in such manner and from such sellers or brokers at such prices as the City and County may determine; and (iii) be made to insure that delivery of the Bonds so purchased will not occur later than the sixtieth (60th) day next preceding the redemption date to which the Sinking Fund Installment is to be applied. The applicable Redemption Price of any Bonds (or principal amount of maturing Bonds) so purchased or redeemed is deemed to constitute part of the Debt Service Account until such Sinking Fund Installment date, for the purpose of calculating the amount of such Account. As soon as practicable after the sixtieth (60th) day preceding the due date of any such Sinking Fund Installment, the City and County must proceed to call for redemption on such due date Bonds of the maturity for which such Sinking Fund Installment was established (except in the case of Bonds maturing on a Sinking Fund Installment date) in such amount as is necessary to complete the retirement of the unsatisfied balance of such Sinking Fund Installment after making allowance for any Bonds purchased or redeemed pursuant to the First Resolution which the City and County has applied as a credit against such Sinking Fund Installment as provided in the First Resolution.

Upon any purchase or redemption pursuant to the First Resolution of Bonds of any Series and maturity for which Sinking Fund Installments shall have been established: (i) if the principal amount of the Bonds so purchased is less than or equal to the next succeeding Sinking Fund Installment for such Series there is to be credited to the next such Sinking Fund Installment an amount equal to the principal amount of the Bonds of such Series so purchased; and (ii) if the principal amount of the Bonds so purchased is greater than the next succeeding Sinking Fund Installment, there is to be credited toward each such Sinking Fund Installment thereafter to become due an amount bearing the same ratio to such Sinking Fund Installment as the total principal amount of such Bonds so purchased or redeemed bears to the total principal amount of all such Sinking Fund Installments to be so credited or, at the option of the City and County, an amount equal to the next succeeding Sinking Fund Installment. The portion of any such Sinking Fund Installment remaining after the deduction of any such amounts credited toward the same (or the original amount of any such Sinking

Fund Installment if no such amounts have been credited toward the same) will constitute the unsatisfied balance of such Sinking Fund Installment for the purpose of calculation of Sinking Fund Installments due on a future date.

The amount, if any, credited to the Debt Service Account from a Series Improvement Interest Subaccount is to be applied to the payment of interest on the Bonds as the same becomes due and payable as provided in the First Resolution.

*Sewer Fund - Common Reserve Account.* If on the day preceding any principal or interest payment date, the amount in the Debt Service Account is less than the Accrued Debt Service for all Bonds then Outstanding which are entitled to the benefit of the Common Reserve Account, the City and County will pay out of the Common Reserve Account to each Paying Agent for such Bonds the amount necessary to satisfy the deficiency for payment to the holders of such Bonds. Amounts so applied are to be derived first, from cash or Investments Securities on credit to the Common Reserve Account and second, from draws or demands on Support Facilities held as a part of the Common Reserve Account, such draws or demands to be made *pro rata* among all such Support Facilities based on the respective available amounts under such Support Facilities and upon the terms and conditions set forth in such Support Facilities.

Whenever the amounts on deposit in the Common Reserve Account exceed the Common Reserve Account Requirement, the City and County is to withdraw the amount of such excess and deposit such excess to the credit of the Debt Service Account or the Sewer Fund, as the City and County may determine.

Whenever the amount (exclusive of Support Facilities) in the Common Reserve Account, together with the amount in the Debt Service Account attributable to Bonds entitled to the benefit of the Common Reserve Account, is sufficient to pay in full the principal or Redemption Price, if any, of and interest on all such Outstanding Bonds in accordance with their terms, the funds on credit to the Common Reserve Account are to be transferred to the Debt Service Account and applied to make such payment. Prior to such transfer, all Investment Securities held in the Common Reserve Account are to be liquidated by the City and County to the extent necessary to provide for timely payment of the principal or Redemption Price, if any, of and interest on such Bonds.

When a Series of Bonds entitled to the benefit of the Common Reserve Account is refunded in whole or in part or is otherwise deemed paid within the meaning of the First Resolution, moneys may be withdrawn from the Common Reserve Account to pay or provide for the payment of such Bonds or refunded Bonds, as the case may be; provided that immediately after such withdrawal or transfer there must be on credit to the Common Reserve Account for those Bonds of the Series of Bonds not refunded an amount equal to the Common Reserve Account Requirement for the Bonds entitled to the benefit of the Common Reserve Account then Outstanding after taking into account such refunding or payment.

The City and County may determine in the Series Resolution authorizing a Series of Bonds or a Series Certificate related to a Series of Bonds that such Series of Bonds will not be entitled to the benefit of the Common Reserve Account, in which case no amount will be required from the proceeds of such Series of Bonds for credit to the Common Reserve Account and no amount will be payable from the Common Reserve Account to pay amounts due or payable with respect to such Series of Bonds.

The Common Reserve Account Requirement is to be calculated or recalculated: (i) at the time of issuance of a Series of Bonds (or Bond Anticipation Notes); (ii) at the time a Series of Bonds is retired in its entirety; (iii) at such other time as in the Opinion of Counsel is required to maintain the exclusion of interest on the Tax-exempt Bonds from gross income for federal income taxation purposes.

*Sewer Fund - Separate Series Reserve Accounts.* If on the day preceding any principal or interest payment date, the amount in the Debt Service Account is less than Accrued Debt Service for the Bonds of a Series then Outstanding which are entitled to the benefit of a Separate Series Reserve Account, the City and County will pay out of such Separate Series Reserve Account to the Paying Agent for such Bonds the amount necessary to satisfy the deficiency for payment to the holders of such Bonds. Amounts so applied shall be derived first, from cash or Investments Securities on credit to such Separate Series Reserve Account and second, from draws or demands on Support Facilities held as a part thereof, such draws or demands to be made *pro rata* among all such Support Facilities based on the respective available amounts under such Support Facilities and upon the terms and conditions set forth in such Support Facilities.

Whenever the amounts on deposit in any Separate Series Reserve Account exceed the applicable Separate Series Reserve Account Requirement, the City and County is to withdraw the amount of such excess and deposit such excess to the credit of the Debt Service Account or the Sewer Fund, as the City and County may determine.

Whenever the amount (exclusive of Support Facilities) in any Separate Series Reserve Account, together with the amount in the Debt Service Account attributable to Bonds entitled to the benefit of such Separate Series Reserve Account, is sufficient to pay in full the principal or Redemption Price, if any, of and interest all such Outstanding Bonds in accordance with their terms, the funds on credit to such Separate Series Reserve Account are to be transferred to the Debt Service Account and applied to make such payment. Prior to such transfer, all Investment Securities held in such Separate Series Reserve Account are to be liquidated by the City and County to the extent necessary to provide for timely payment of the principal or Redemption Price of and interest on such Bonds.

When a Series of Bonds entitled to the benefit of the Separate Series Reserve Account is refunded in whole or in part or are otherwise deemed paid within the meaning of the First Resolution, moneys may be withdrawn from such Separate Series Reserve Account to pay or provide for the payment of such Bonds or refunded Bonds, as the case may be; *provided* that immediately after such withdrawal or transfer there must be on credit to such Separate Series Reserve Account an amount equal to the Separate Series Reserve Account Requirement for the Bonds then Outstanding which are entitled to the benefit of such Separate Series Reserve Account after taking into account such refunding or payment.

Each Separate Series Reserve Account Requirement is to be calculated or recalculated: (i) at the time of issuance of a Series of Bonds (or Bond Anticipation Notes); (ii) at the time a Series of Bonds is retired in its entirety; (iii) at such other time as in the Opinion of Counsel is required to maintain the exclusion of interest on the Tax-exempt Bonds from gross income for federal income taxation purposes.

Certain provisions of the First Resolution relating to Separate Series Reserve Account may be modified in whole or in part with respect to any Series of Bonds entitled to the benefits of a Separate Series Reserve Account.

*Sewer Fund - Rebate Account.* If and to the extent required by the Code, an Authorized Officer must periodically, at such times as may be required to comply with the Code, determine the amount required to be rebated or otherwise paid to the Department of the Treasury of the United States of America with respect to each Series of Tax-exempt Bonds and thereafter (i) transfer from any of the Funds and Accounts pledged or held under the First Resolution, other than the Debt Service Account, the Subordinate Obligation Account and the Reimbursable Obligation Account and credit to the Rebate Account, an amount equal to all or a portion of such amount to be rebated with respect to such Series of Bonds and (ii) pay out of the Rebate Account to the Department of the Treasury of the United States of America the amount, if any, required by the Code to be rebated or otherwise paid. Moneys in the Rebate Account and the subaccounts therein are not available for the benefit of the Holders of the Bonds and are not pledged to payment of the Bonds or the interest thereon.

If and to the extent necessary to comply with any covenant established in a Series Resolution authorizing a Series of Bonds or in a Series Certificate relating to such Series of Bonds regarding maintaining the exclusion of interest on Tax-exempt Bonds from gross income for Federal income taxation purposes, the City and County may establish a subaccount in the Rebate Account with respect to such Series of Bonds or provide for the establishment such subaccount in such Series Resolution or in such Series Certificate.

*Sewer Fund - Rate Stabilization Account.* The amount of moneys and Investment Securities to be maintained from time to time in the Rate Stabilization Account is to be provided for in the Annual Budget. Moneys and Investment Securities may be transferred to the Rate Stabilization Account as provided in the Annual Budget from (i) the Sewer Fund in the order of priority provided in the First Resolution, or (ii) the Wastewater General Account as provided in the First Resolution. Moneys and Investment Securities credited to the Rate Stabilization Account are to be transferred to the Sewer Fund at the times and in the amounts as may be provided in the Annual Budget for the purposes of stabilizing the rates and charges of the Wastewater System.

*Sewer Fund - Renewal and Replacement Account.* Moneys to the credit of the Renewal and Replacement Account may be applied to the cost of the construction of improvements to or reconstruction of the Wastewater System, emergency repairs of the Wastewater System, and major or extraordinary repairs, renewals or replacements of the Wastewater System, in each case to be set forth in the Annual Budget; (i) to restore or prevent physical damage to the Wastewater System or any part thereof; (ii) for the safe and efficient operation of the Wastewater System; or (iii) to prevent loss of Revenues.

If on the day preceding any interest payment date the moneys in the Debt Service Account, after making the transfer from the Common Reserve Account as provided for in the First Resolution and from the Wastewater General Account as provided for in the First Resolution, are insufficient to pay the interest, principal and redemption price becoming due on the Bonds, the City and County must transfer from the Renewal and Replacement Account for credit

to the Debt Service Account the amount necessary (or all the moneys in such Fund if less than the amount necessary) to satisfy such deficiency.

If on each January 1 and July 1 the moneys, Investment Securities and the amount of all Support Facilities in the Common Reserve Account are less than the Common Reserve Account Requirement, and the transfer referred to in the preceding paragraph have been made, the City and County must transfer from the Renewal and Replacement Account for credit to the Common Reserve Account the amount necessary (or all the moneys in such Account if less than the amount necessary) to satisfy such deficiency.

If the moneys on credit to the Subordinate Obligation Account are less than the Subordinate Obligation Requirement, and the transfers referred to in the preceding two paragraphs have been made, the City and County will transfer from the Renewal and Replacement Account to the Subordinate Obligation Account the amount necessary (or all the moneys in such Account if less than the amount necessary) to satisfy such deficiency.

If the moneys on deposit in the Reimbursable Obligation Account are less than the Reimbursable Obligation Requirement, and the transfers referred to in the preceding three paragraphs have been made, the City and County must transfer from the Renewal and Replacement Account to the Reimbursable Obligation Account the amount necessary (or all the moneys in such Account if less than the amount necessary) to satisfy such deficiency.

*Sewer Fund - Subordinate Obligation Account.* The City and County must at all times maintain in the Subordinate Obligation Account an amount equal to the Subordinate Obligation Requirement. Moneys on deposit in the Subordinate Obligation Account will be applied by the City and County solely in accordance with the provisions of, and subject to the priorities and limitations and restrictions provided in the First Resolution, indenture or other instrument of the City and County securing or evidencing such Subordinate Obligations. Any moneys credited to the Subordinate Obligation Account are immediately free and clear of the lien and pledge created by the First Resolution.

*Sewer Fund - Reimbursable Obligation Account.* The City and County must at all times maintain in the Reimbursable Obligation Account an amount equal to the Reimbursable Obligation Requirement. Moneys on deposit in the Reimbursable Obligation Account will be applied by the City and County solely to reimburse the General Fund of the City and County for payment of debt service due on Reimbursable Obligation issued or to be issued by the City and County with respect to the Wastewater System. Any moneys deposited in the Reimbursable Obligation Account are immediately free and clear of the lien and pledge created by the First Resolution.

*Sewer Fund - Wastewater General Account.* The City and County will transfer from the Wastewater General Account: (i) to the Debt Service Account, the Common Reserve Account and each Separate Series Reserve Account the amount necessary (or all the moneys in the Wastewater General Account if less than the amount necessary) to satisfy any deficiencies in payments to such Accounts required by the First Resolution; (ii) in the event of any transfer of moneys from the Common Reserve Account or any Separate Series Reserve Account to the Debt Service Account, to the Common Reserve Account or such Separate Series Reserve Account the amount of any resulting deficiency in such Account; (iii) provided that all transfers referred to in clauses (i) and (ii) above have been made, to the Renewal and Replacement Account the amount, if any, necessary to satisfy the deficiency in such Fund; (iv) such amount as the City and County may, in its discretion, determine to set aside in reserve for meeting the deficiencies referred to in clauses (i) through (iii) above; (v) provided that all transfers and reserves therefor referred to in clauses (i) through (iv) above have been made, to the Subordinate Obligation Account the amount, if any, necessary to satisfy any deficiency in meeting the Subordinate Obligation Requirement; and (vi) provided that all transfers and reserves therefor referred to in clauses (i) through (v) above have been made, to the Reimbursable Obligation Account, the amount, if any, necessary to eliminate any deficiency in meeting the Reimbursable Obligation Requirement.

Amounts in the Wastewater General Account not required to meet a deficiency referred to in the preceding paragraph may be applied to the following purposes in the following order of priority:

- (1) the Costs of Improvements, or the provision of one or more reserves therefor;
- (2) for transfer to the Rate Stabilization Account in the Sewer Fund such amounts as may be provided in the Annual Budget for the purpose of stabilizing rates and charges;
- (3) the purchase at such price or prices as the City and County may deem advisable or redemption of any Bonds and expenses of such purchase or redemption at any time; and
- (4) for any other lawful purpose of the City and County.

*Sewer Revenue Bond Improvement Fund - Improvement Account.* As soon as practicable on the date of delivery of the Bonds of a Series, the amount required pursuant to the Series Resolution or Series Certificate will be deposited in the Improvement Fund for credit to the Improvement Account. In addition, the City and County will deposit in the Improvement Fund for credit to the Improvement Account such moneys other than proceeds of the Bonds as the City and County may determine to be proper or appropriate to pay the Costs of Improvements.

The Series Resolution authorizing the issuance of any Series of Bonds (exclusive of Refunding Bonds) may create and establish one or more separate special series improvement subaccounts (a "Series Improvement Subaccount") in the Improvement Account, with such designation as may be appropriate. In the event any interest on such Bonds is to be capitalized from the proceeds of such Bonds, a special series subaccount must be created in the Improvement Account (a "Series Improvement Interest Subaccount") with such designation as may be appropriate.

Moneys, including proceeds of the Bonds of a Series, which are credited to a Series Improvement Subaccount are to be applied to the payment of the Costs as are specified in the applicable Series Resolution or Series Certificate. Any balance remaining in such Series Improvement Subaccount upon completion of payment of such Costs may be used for any lawful purpose of the City and County; *provided* that the City and County has obtained an Opinion of Counsel that any such application will not impair the exemption from Federal income taxation of interest on any of the Tax-exempt Bonds.

Moneys credited to a Series Improvement Interest Subaccount are to be used for the purpose of paying interest on the Bonds of designated Series. On or before the fifth (5th) day preceding the end of the month next preceding the maturity of an installment of interest on the Bonds for the payment of which moneys have been credited to such Series Improvement Interest Subaccount, the City and County must transfer from a Series Improvement Interest Subaccount to the Debt Service Account an amount which, together with any moneys theretofore held in the Debt Service Account, are sufficient to pay such next maturing installment of interest on such Bonds.

Payments from the Improvement Account are to be made as specified in the Series Resolution authorizing the issuance of a Series of Bonds or a Series Certificate related to a Series of Bonds.

Moneys, including proceeds of the Bonds, in the Improvement Account, pending their application as provided in the First Resolution and Series Resolution and Series Certificate, are subject to a prior and paramount lien and charge in favor of the Holders of the Bonds, and the Holders of the Bonds have a valid claim on such moneys for the further security of the Bonds until paid out or transferred as provided in the First Resolution. In the event that there is an insufficiency in the Debt Service Account to pay Debt Service after all transfers, other than a transfer from the Wastewater System Facility Charge Account, have been made pursuant to and in accordance with the First Resolution, the City and County must transfer from the Improvement Account such amount (or all remaining amounts in such Improvement Account) as is deemed necessary by the Director of Budget and Fiscal Services for deposit in the Debt Service Account, which, together with the amounts then on credit to the Debt Service Account, is sufficient to pay Debt Service.

*Sewer Fund - Wastewater System Facility Charge Account.* Amounts in the Wastewater System Facility Charge Account and any account therein, pending their application, are subject to a prior and paramount lien and charge in favor of the Holders of the Bonds, and the Holders of the Bonds have a valid claim on such moneys for the further security of the Bonds until paid out or transferred as provided in the First Resolution. In the event that there is an insufficiency in the Debt Service Account to pay Debt Service after all transfers have been made pursuant to and in accordance with the First Resolution, the City and County must transfer from the Wastewater System Facility Charge Account such amount (or all remaining amounts in the Wastewater System Facility Charge Account) as is deemed necessary by the Director of Budget and Fiscal Services for deposit in the Debt Service Account, which, together with the amounts then on deposit in the Debt Service Account, is sufficient to pay Debt Service. The amount of any such transfer must at the earliest practicable date be reimbursed to the Wastewater System Facility Charge Account as provided in the First Resolution.

Amounts held in the Wastewater System Facility Charge Account are to be expended for the purposes specified in Section 6-47.1 of the City Code.

#### Investment of Funds

Moneys in the Debt Service Account may, to the fullest extent practicable and reasonable, be invested and reinvested solely in noncallable Investment Securities which are Government Obligations, FNMA's or FHLMC's (as such terms are defined in the definition of Investment Securities) and which mature or are subject to redemption at the option

of the holder thereof on or prior to the respective dates when the moneys in Debt Service Accounts will be required for the purposes intended. Moneys in the Common Reserve Account or any Separate Series Reserve Account not required for immediate disbursement for the purpose for which the Common Reserve Account or such Separate Series Reserve Account is created may, to the fullest extent practicable and reasonable, be invested and reinvested solely in, and obligations credited to the Common Reserve Account or such Separate Series Reserve Account must be, investments specified in items (i) to (vi), inclusive, of the definition of Investment Securities and which mature or are available at par at or prior to five (5) years from the date of investment thereof.

Moneys in the Sewer Fund not required for immediate disbursement for the purpose for which such Fund is created may, to the fullest extent practicable and reasonable, be invested and reinvested by the Department, to the extent allowed by law, solely in, and obligations deposited in such Fund will be, Investment Securities which mature or are subject to redemption or payment at par at the option of the holder thereof, not later than such times as will be necessary to provide moneys when needed to provide payments from such Fund.

Moneys in the Improvement Account, other than a Series Improvement Interest Subaccount therein, not required for immediate disbursement for the purposes for which such Account is created may, to the fullest extent practicable and reasonable, be invested and reinvested to the extent allowed by law, solely in, and obligations deposited in such Account will be, Investment Securities which mature or are subject to redemption or payment at par at the option of the holder thereof not later than such times as shall be necessary to provide moneys when needed to provide payments from such Account.

Moneys in a Series Improvement Interest Subaccount in the Improvement Account is created may, to the fullest extent practicable and reasonable, be invested and reinvested to the extent allowed by law, solely in, and obligations deposited in such Account shall be, noncallable Investment Securities which are Government Obligations, FNMAs or FHLMCs (as such terms are defined in the definition of Investment Securities) that mature or are subject to redemption at the option of the holder thereof not later than such times as shall be necessary to provide moneys when needed to provide payments from such Account.

To the extent permitted in the First Resolution, all income received from the investment or reinvestment of moneys in the Funds and Accounts established under the First Resolution will be deposited in the respective Fund or Account from which such investments are made and applied as a credit against the next succeeding deposit or credit required to be made pursuant to the First Resolution; provided however, that except as to the Subordinate Obligation Account and the Reimbursable Obligation Account, all or a portion of the income received from the investment or reinvestment of moneys in any such Fund and Account may be deposited in the Sewer Fund or the Improvement Account, including a Series Improvement Interest Subaccount therein; and *provided, further, however*, that all income received from the investment or reinvestment of moneys in any Series Improvement Interest Subaccount must be deposited in the Debt Service Account.

Neither the Director of Budget and Fiscal Services nor any Paying Agent shall be liable for any depreciation in value of any investments made by the City and County.

#### Valuation of Investment Securities

In computing the amount in any Fund or Account, Investment Securities therein are to be valued at cost or accreted value, whichever is lower, exclusive of accrued interest. The City and County is to determine the value of Investment Securities held in any Fund or Account as frequently as it deems necessary, but not less often than annually.

#### Depositaries

All moneys held by the City and County or any Depositary under the provisions of the First Resolution are to be held in trust and applied only in accordance with the provisions of the First Resolution, and each of the Funds and Accounts established by the First Resolution shall be a trust fund.

Each Depositary must be a bank or trust company organized under the laws of any state of the United States or a national banking association having capital stock, surplus and undivided earnings of \$5,000,000 or more and willing and able to accept such office on reasonable and customary terms and authorized by law to act in accordance with the provisions of the First Resolution.

## Concerning Depositories and Paying Agents

*Qualifications and Appointment.* The Director of Budget and Fiscal Services may appoint one or more Paying Agents and Depositories as of the date of issuance and delivery of the first Series of Bonds and may at any time or from time to time appoint one or more other Paying Agents or other Depositories having the qualifications of a depository, as described in the First Resolution; provided however, the Director of Budget and Fiscal Services may be designated Paying Agent and/or Depository. Each Paying Agent, other than the Director of Budget and Fiscal Services, and each Depository, other than the Director of Budget and Fiscal Services, shall signify its acceptance of the duties and obligations imposed upon it by the First Resolution by executing and delivering to the City and County and the Director of Budget and Fiscal Services a written acceptance thereof.

*Paying Agents and Depositories May Buy, Hold, Sell or Deal in Bonds and Other Indebtedness of the City and County.* Each Paying Agent and each Depository and its respective directors, officers, employees or agents, may in good faith buy, sell, own, hold and deal in any of the Bonds issued under the provisions of the First Resolution and may join any action which any Holder of a Bond may be entitled to take, with like effect as if such Paying Agent or Depository were not a Paying Agent or any Depository, as the case may be, under the First Resolution. Any Paying Agent or any Depository may in good faith hold any other form of indebtedness of the City and County; own, accept or negotiate any drafts, bills of exchange, acceptances or obligations of the City and County, and make disbursements for the City and County and enter into any commercial or business arrangement therewith.

*Reimbursement of Paying Agents and Depositories for Fees, Expenses and Charges.* Each Paying Agent and each Depository shall be entitled to reasonable fees and to reimbursement by the City and County for all expenses and charges reasonably incurred by it in the performance of its duties. No Paying Agent at any time held by it, prior to the lien or claim of the Holders of the Bonds on all such moneys.

## Covenants

The City and County has covenanted and agreed in the First Resolution with the Holders of all Bonds issued pursuant to the First Resolution as follows:

*Maintenance of the Properties of the Wastewater System; Keeping the System in Good Repair.* The Department will: (i) maintain, preserve and keep, or cause to be maintained, preserved and kept, the properties of the Wastewater System and all additions and betterments thereto and extensions thereof, and every part and parcel thereof in good repair, working order and condition, (ii) from time to time make, or cause to be made, all necessary and proper repairs, renewals, replacements, additions, extensions and betterments thereto, so that at all times the business carried on in connection therewith shall properly and advantageously be conducted, and (iii) comply, or cause to be complied with the terms and conditions of any permit or license for the Wastewater System or any part thereof issued by any federal or state governmental agency or body and with any federal or state law or regulation applicable to the construction, operation, maintenance and repair of the Wastewater System or requiring a license, permit or approval therefor.

*Rates and Charges.* The City and County will at all times fix, charge and collect such rates and other charges as shall be required in order that in each Fiscal Year the Net Revenues will be not less than the Net Revenue Requirement for such Fiscal Year ("Rate Covenant"). The failure in any Fiscal Year to comply with the foregoing rate covenant does not constitute an Event of Default if the City and County complies with requirements described in the next paragraph.

Prior to the end of each Fiscal Year the Director of Environmental Services or the Director of Budget and Fiscal Services if requested by the Director of Environmental Services must complete a review of the financial condition of the Department for the purpose of estimating whether the Net Revenues for such Fiscal Year and for the next succeeding Fiscal Year will be sufficient to comply with the *Rate Covenant* and must by a written certificate make a determination with respect to such compliance. Such review may take into consideration the completion of any uncompleted Improvements and the issuance of future Series of Bonds if necessary to finance the completion of such Improvements. Such written certificate must set forth a reasonably detailed statement of the actual and estimated Revenues, Operation and Maintenance Expenses, Aggregate Debt Service, and any other estimates or assumptions upon which such determination was based, and must be filed with the City Clerk on or before July 1 in each year. If it is determined in such written certificate that the Revenues may not be so sufficient, the Director of Environmental Services or the Director of Budget and Fiscal Services if requested by the Director of Environmental Services must forthwith make a study for the purpose of determining a schedule of fees, rates and charges which, in the opinion of the Director of Environmental Services or the Director of Budget and Fiscal Services, will cause sufficient Revenues to be collected in the following Fiscal Year to comply with the *Rate Covenant* and will cause additional Revenues to be collected in such

following and later Fiscal Years sufficient to eliminate the amount of any deficiency at the earliest practicable time, or the Director of Environmental Services or the Director of Budget and Fiscal Services may elect to cause the Consulting Engineer to make such a study and render such opinion. The City Council shall as promptly as practicable but no later than the one hundred twenty (120) days following such determination by the Director of Environmental Services or the Director of Budget and Fiscal Services, or receipt of the Consulting Engineer's recommendation, adopt and place in effect a schedule of fees, rates and charges as so determined or recommended pursuant to the First Resolution.

*Sale, Lease or Other Disposition of Properties of the Wastewater System.* The properties of the Wastewater System may not be sold, mortgaged, leased or otherwise disposed of except as described below.

The properties of the Wastewater System may be sold, leased, or otherwise disposed of in their entirety if simultaneously with such sale, lease or other disposition thereof provision is made for the payment of all Bonds then Outstanding and such Bonds are no longer deemed Outstanding within the meaning of the First Resolution.

Any portion of the properties of the Wastewater System may be sold, leased, or otherwise disposed of on such terms and conditions as may be determined by the City and County if the value of such portion of the properties as of the date of such sale, lease or disposition does not exceed five percent (5%) of the net book assets of the Wastewater System as of the last day of the preceding Fiscal Year as shown in the most recent audited financial statements of the Department. Any part of the properties of the Wastewater System having a value as of the date of the sale, lease or disposition which exceeds five percent (5%) of the net book assets of the Wastewater System as of the last day of the preceding Fiscal Year as shown in the most recent audited financial statements of the Department may be sold, leased, or otherwise disposed of if the Consulting Engineer certifies to the City and County in writing that the terms and conditions of the proposed sale, lease or other disposition of any such properties are fair and reasonable, and that the estimated Revenues to be derived from the remaining properties of the Wastewater System, after taking into consideration the use by the Department of the proceeds of such proposed sale, lease or other disposition of such properties, will be sufficient to enable the City and County to comply with all covenants and conditions of the First Resolution. Proceeds of any sale, lease or other disposition of any portion of the properties of the Wastewater System pursuant to this provision are to be paid into the Debt Service Account and applied to the purchase or redemption of Bonds or into the Sewer Fund and applied by the City and County for the purpose of constructing extensions, betterments or improvements to the Wastewater System as the City and County may determine.

Surplus lands, crops, timber, buildings and any other portion of the works, plant and facilities of the Wastewater System and real and personal property comprising a part thereof, which, in the opinion of the Director of Environmental Services, have become unserviceable, inadequate, obsolete, worn out, or unfit to be used in the operation of the Wastewater System, or no longer necessary, material to, or useful in such operation may be sold, leased, or otherwise disposed of. Proceeds of any such sale, lease or other disposition of any portion of the properties of the Wastewater System pursuant to this provision are to be paid into the Sewer Fund.

If permitted by the laws of the State, the City and County may transfer without consideration the properties comprising the Wastewater System to a public corporation or political subdivision of the State, *provided* such corporation or subdivision assumes all of the City and County's or the Department's obligations and duties under the First Resolution.

In the event that any part of the properties of the Wastewater System is transferred from the City and County through the operation of law (including condemnation), any moneys received by the City and County as a result of such transfer are to be paid: (i) if such proceeds are not in excess of \$250,000, into the Sewer Fund; or (ii) if such proceeds are in excess of \$250,000: (a) into the Debt Service Account and applied to the purchase or redemption of Bonds; or (b) into the Renewal and Replacement Account and applied by the City and County for the purpose of constructing replacements, extensions, betterments or improvements to the Wastewater System, as the City and County shall determine.

*Insurance.* Except as provided for in the next paragraph, the Department must keep, or cause to be kept, the works, plants and facilities comprising the properties of the Wastewater System and the operations thereof insured to the extent available at reasonable cost with responsible insurers, with policies payable to the City and County or the Department, against risks of direct physical loss, damage to or destruction of the above-ground structures, and the equipment and contents therein, of the Wastewater System arising from accidents, casualties or negligence, and other causes customarily insured against, at least to the extent that similar insurance is usually carried by utilities operating like properties, including liability insurance and workman's compensation insurance; provided, however, that any time while any contractor engaged in constructing any part of the Wastewater System is fully responsible for such insurance, the Department is not required to keep such part of the Wastewater System insured. All policies of insurance

shall be for the benefit of the Holders of the Bonds and the City and County or the Department as their respective interests may appear.

In the event of any loss or damage to the properties of the Wastewater System covered by insurance, the Department will: (i) with respect to each such loss, promptly repair and reconstruct to the extent necessary to the proper conduct of the operations of the Wastewater System the lost or damaged portion thereof and shall apply the proceeds of any insurance policy or policies covering such loss or damage for that purpose to the extent required therefor, unless, in case of loss or damage involving \$250,000 or more, the Department determines that such repair and reconstruction will not be undertaken; and (ii) if the Department does not use the entire proceeds of such insurance to repair or reconstruct such lost or damaged property, the proceeds of such insurance policy or policies or any portion thereof not used for such repair or reconstruction, as the case may be, are to be paid into the Sewer Fund. If the Department does not obtain insurance from responsible insurers as provided for in the First Resolution, the City and County or the Department must self-insure; provided, however, that if the Department fails to carry insurance against any of the risks normally insured against by operators of facilities similar to the Wastewater System, it must secure the concurrence of an independent insurance consultant. In making its decision whether to concur in such self-insurance, the independent insurance consultant must (i) make an estimate of the added financial risks, if any, assumed by the Department as a result of the self-insurance; (ii) consider the availability of commercial insurance, the terms upon which such insurance is available and the costs of such available insurance, and the effect of such terms and costs upon the Department's costs and charges for its services; and (iii) determine whether the added financial risk, if any, being assumed by the Department is prudent in light of the savings to be realized from such self-insurance or in light of the general availability of insurance.

The Department may include insurance required by the First Resolution as part of a blanket insurance policy of the City and County.

*Consulting Engineer.* The City Council, the Director of Environmental Services or the Director of Budget and Fiscal Services may from time to time retain and appoint, as Consulting Engineer, an independent consulting engineer or engineering firm or corporation having special skill, knowledge and experience in analyzing the operations of wastewater systems, preparing rate analyses, forecasting the loads and revenues of wastewater systems, preparing feasibility reports respecting the financing of wastewater systems and advising on the operation of wastewater facilities, who shall be available to advise the Department, upon request, and to make such investigations and determinations as may be necessary from time to time under the provisions of the First Resolution.

*Books of Account; Annual Audit.* The Department will maintain and keep proper books of account relating to the Wastewater System and in accordance with generally accepted accounting principles. Within one hundred eighty (180) days after the end of each Fiscal Year commencing with the Fiscal Year ending June 30, 2000, the Department will cause such books of account to be audited by an independent certified public accountant. The audit required by the First Resolution may be part of a comprehensive audit of the City and County, *provided* that the Wastewater System in such audit is treated as an "enterprise fund" and the revenues and expenses of the Wastewater System are stated in a manner which permits identification by category of the sources and uses of the Revenues. A copy of each audit report prepared in conformity with generally accepted accounting principles must be filed promptly with the City and County and sent to any Bondholder filing with the Director of Environmental Services a written request for a copy thereof, and to any Rating Agency which has rated any Bonds.

*To Pay Bonds Punctually.* The City and County will duly and punctually pay, or cause to be paid, but only from the Revenues, income and other funds specified in the First Resolution, the principal and Redemption Price (if any) of, and interest on, each and every Bond on the dates and at the places, and in the manner provided in the Bonds according to the true intent and meaning thereof, and the City and County will faithfully do and perform and at all times fully observe and keep any and all of its covenants, undertakings, stipulations and provisions contained in the Bonds and in the First Resolution.

*Payment of Taxes and Other Claims.* The Department must from time to time duly pay and discharge, or cause to be paid and discharged, all taxes, assessments and other governmental charges, or payments in lieu thereof, lawfully imposed upon the properties of the Wastewater System (or any part thereof) or upon the Net Revenues or income received therefrom when the same become due, as well as all lawful claims for labor, material and supplies, which, if not paid, might become a lien or charge upon said properties or any part thereof, or upon the Revenues derived from the ownership or operation of the Wastewater System, or which might in any way impair the security of the Bonds, except any such assessments, charges or claims which the Department in good faith contests as to validity.

*Extension of Payment of Bonds.* The City and County will not, directly or indirectly, extend or assent to the extension of the maturity of any of the Bonds or the time of payment of any claims for interest by the purchase of such Bonds, coupons, if any, or claims for interest or by any other arrangement and in case the maturity of any of the Bonds or the time for payment of any such claims for interest is extended, such Bonds or claims for interest will not be entitled, in case of any default under the First Resolution, to the benefit of the First Resolution or to any payment out of any assets of the City and County or the funds (except funds held in trust for the payment of particular Bonds or claims for interest pursuant to the First Resolution) held by the Paying Agents, except subject to the prior payment of the principal of all Bonds issued and Outstanding the maturity of which has not been extended and of such portion of the accrued interest on the Bonds as shall not be represented by such extended claims for interest.

*Sound Improvements and Extensions.* The Department will not expend any of the income, revenues, receipts, profits and other moneys derived by it from the ownership or operation of the Wastewater System for any renewals, replacements, additions, betterments and improvements to, or extensions of, the Wastewater System which, in the sole opinion of the Director of Environmental Services, will not properly and advantageously contribute to the conduct of the business of the Wastewater System in an efficient and economical manner unless required to do so to permit the continued operation of the Wastewater System or to preserve or protect the Wastewater System.

*Annual Budget.* Not later than May 31 before the beginning of any Fiscal Year the City and County or the Department will prepare a preliminary budget of Operation and Maintenance Expenses of the Wastewater System and reserves therefor for the ensuing Fiscal Year. Each such budget and each Annual Budget will include, in addition to provisions for all anticipated Operation and Maintenance Expenses, provision for the payments required to be made to the Renewal and Replacement Account, provided that such payments shall in the aggregate at least equal the amount described below. Such preliminary budget and any Annual Budget may set forth such additional material as the City and County or the Department may determine.

Except as described below, on or before the 15th day of each such Fiscal Year, the City and County must finally adopt the Annual Budget for such year. The City and County may at any time adopt an amended Annual Budget for the remainder of the then current Fiscal Year. Copies of the Annual Budget and of any amended Annual Budget are to be made available for inspection by the Bondholders and are to be sent to each Rating Agency.

If for any reason the City and County does not adopt the Annual Budget before the 15th day of any Fiscal Year, the budget for the preceding Fiscal Year is deemed to be in effect for such Fiscal Year until the Annual Budget for such Fiscal Year is adopted. For any purpose of computation under the provisions of the First Resolution, the budget for the preceding year is deemed to have been adopted for any Fiscal Year until the Annual Budget for such year is adopted.

Every preliminary budget, Annual Budget and amended Annual Budget must: (i) set forth in reasonable detail amounts required for repair, replacement or reconstruction of the Wastewater System and major or extraordinary repairs, renewals or replacements of the Wastewater System, if any, for the period to be covered by such budget; (ii) specify the amounts to be deposited in the Renewal and Replacement Account, the Subordinate Obligation Account, the Reimbursable Obligation Account and the Wastewater General Account, and the amounts to be maintained in the Sewer Fund for working capital and operating reserves and in the Rate Stabilization Account for rate stabilization purposes, if any, for such purposes for such period, (iii) specify the amounts to be transferred from the Wastewater General Account to the Rate Stabilization Account and to other Funds and Accounts; and (iv) project the amounts required for such purposes for the next five Fiscal Years in such format as the Director of Environmental Services may determine. A copy of each such report is to be filed and maintained in the records of the City and County.

#### **Events of Default**

Each of the following events constitutes an Event of Default under the First Resolution:

- (a) if payment of the principal and Redemption Price, if any, of any Bond, is not punctually made when due and payable, whether at the stated maturity thereof or upon proceedings for the redemption thereof (whether by voluntary redemption or a mandatory sinking fund redemption or otherwise);
- (b) if payment of the interest on any Bond is not punctually made when due;
- (c) if the provisions of any Series Resolution with respect to mandatory Sinking Fund Installment payments or the redemption of Term Bonds therefrom, as the case may be, are not punctually complied with at the time and in the manner specified in such Series Resolution;

(d) if the City and County or the Department fails to duly and punctually perform or observe any other of the covenants, agreements or conditions contained in the First Resolution or in the Bonds, on the part of the City and County or the Department to be performed, and such failure continues for ninety (90) days after written notice thereof from the Holders of not less than twenty percent (20%) of the Bonds then Outstanding; provided that, if such failure is such that it cannot be corrected within such ninety (90) day period, it will not constitute an Event of Default if corrective action is instituted within such period and diligently pursued until the failure is corrected; and

(e) if the City and County: (i) admits in writing its inability to pay its debts generally as they become due; or (ii) files a petition in bankruptcy or seeking a composition of indebtedness under the provisions of any Federal or state bankruptcy or similar law; or (iii) makes an assignment for the benefit of its creditors; or (iv) files a petition or any answer seeking relief under the provisions of any Federal or state bankruptcy or similar law; or (v) consents to the appointment of a receiver of the whole or any substantial part of the Wastewater System; or (vi) consents to the assumption by any court of competent jurisdiction under the provisions of any other law for the relief or aid of debtors of custody or control of the City and County or the Department, or of the whole or any substantial part of the Wastewater System.

#### **Notice to Bondholders of Event of Default**

Immediately after the occurrence of an Event of Default or within thirty (30) days after any Paying Agent knows of any other Event of Default, the Paying Agent or Paying Agents shall give notice of all such Events of Default to the Bondholders, all other Paying Agents and Support Facility Providers, and each Rating Agency, in the manner as provided for in the First Resolution, unless such Events of Default shall have been cured before the giving of such notice.

#### **Acceleration of Bonds**

If an Event of Default shall happen and shall not have been remedied, then and in every such case the Holders of not less than twenty-five percent (25%) in principal amount of the Bonds then Outstanding, by notice in writing to the City and County and the Director of Budget and Fiscal Services, may declare the principal of all the Bonds then Outstanding, and the interest accrued thereon, to be due and payable immediately, and upon any such declaration the same shall become and be immediately due and payable. The right of the Holders of not less than twenty-five percent (25%) in principal amount of the Bonds then Outstanding to make any such declaration, however, shall be subject to the condition that if, at any time after such declaration, but before the Bonds shall have matured by their terms, all overdue installments of interest upon the Bonds, together with interest on such overdue installments of interest to the extent permitted by law and all other sums then payable by the City and County under the First Resolution (except the principal of, and interest accrued since the next preceding interest date on, the Bonds due and payable solely by virtue of such declaration) shall either be paid by or for the account of the City and County or provision satisfactory to the Holders of a majority in principal amount of the Bonds then Outstanding shall be made for such payment, and all defaults under the Bonds or under the First Resolution (other than the payment of principal and interest due and payable solely by reason of such declaration) shall be cured or be secured to the satisfaction of the Holders of a majority in principal amount of the Bonds then Outstanding or provision deemed by such Holders of the Bonds to be adequate shall be made therefor, then and in every such case the Holders of at least a majority in principal amount of the Bonds then Outstanding, by written notice to the City and County, may rescind such declaration and annul such default in its entirety, but no such rescission shall extend to or affect any subsequent default or impair or exhaust any resulting right or power.

#### **Inspection of Books and Records; the City and County to Account as Trustee for Express Trust**

The City and County covenants that if an Event of Default shall have happened and shall not have been remedied, the books of record and account of the Department relating to the Wastewater System and all other records relating thereto shall at all times be subject to the inspection and use of the Holders of a at least twenty-five percent (25%) in principal amount of the Bonds then Outstanding and of their respective agents and attorneys or of any committee therefor.

The City and County covenants that if an Event of Default shall have happened and shall not have been remedied, the City and County will continue to account, as a trustee of an express trust, for all Revenues and other moneys, securities and funds pledged under the First Resolution.

## Application of Revenues in an Event of Default

During the continuance of an Event of Default as described in items (a) through (c) of the Events of Default described above or of any other Event of Default resulting in an Event of Default described in items (a) through (c) of the Events of Default described above, the Revenues received by a receiver appointed pursuant to the First Resolution as the result of the taking of possession of the business and properties of the Wastewater System, are to be applied by the receiver: first, to the payment of all necessary and proper Operation and Maintenance Expenses of the Wastewater System and all other proper disbursements or liabilities made or incurred by the receiver; second, to the then due and overdue payments into the Debt Service Account, including the making up of deficiencies therein; and last, for any lawful purpose in connection with the Wastewater System.

In the event that at any time the funds held by the receiver are insufficient for the payment of the principal and Redemption Price (if any) of, and interest then due on, the Bonds, such funds (other than funds held for the payment or redemption of particular Bonds) and all Revenues of the Department and other of its moneys received or collected for the benefit or for the account of Holders of the Bonds by the receiver are to be applied as follows:

- (1) Unless the principal of all of the Bonds shall have become due and payable,

First, to the payment of all necessary and proper Operation and Maintenance Expenses of the Wastewater System and all other proper disbursements or liabilities made or incurred by the receiver;

Second, to the payment to the persons entitled thereto of all installments of interest then due (including any interest on overdue principal) in the order of the maturity of such installments, earliest maturities first, and if the amounts available shall not be sufficient to pay in full any installment or installments of interest maturing on the same date, then to the payment thereof ratably, according to the amount due thereon, to the persons entitled thereto, without any discrimination or preference; and

Third, to the payment to the persons entitled thereto of the principal and premium, if any, due and unpaid upon the Bonds at the time of such payment without preference or priority of any Bond over any other Bonds, ratably, according to the amounts due respectively for principal and redemption premium, without any discrimination or preference.

- (2) If the principal of all of the Bonds shall have become due and payable,

First, to the payment of all necessary and proper Operation and Maintenance Expenses of the Wastewater System and all other proper disbursements or liabilities made or incurred by the receiver;

Second, to the payment of the principal and interest then due and unpaid upon the Bonds without preference or priority of principal over interest or of interest over principal, or of any installment of interest over any other installment of interest, or of any Bond over any other Bonds, ratably, according to the amounts due respectively for principal and interest, to the persons entitled thereto without any discrimination or preference.

Whenever moneys are to be applied as described in the foregoing paragraphs, such moneys shall be applied by the receiver at such times, and from time to time, as it in its sole discretion shall determine, having due regard to the amount of such moneys available for application and the likelihood of additional moneys becoming available for such application in the future.

If and whenever all overdue installments of interest on all Bonds, together with the reasonable and proper charges, expenses, and liabilities of the Holders of the Bonds, their respective agents and attorneys, and all other sums payable by the City and County under the First Resolution including the principal and Redemption Price (if any) of all Bonds which shall then be payable, shall either be paid in full by or for the account of the City and County or provision satisfactory to the receiver shall be made for such payment, and all defaults under the First Resolution or the Bonds shall be made good and secured to the satisfaction of the receiver or provision deemed by the receiver to be adequate therefor, the receiver shall pay over to the Department all of its moneys, securities, funds and Revenues then remaining unexpended in the hands of the Bondholders' Committee (except moneys, securities, funds or Revenues deposited or pledged, or required by the terms of the First Resolution to be deposited or pledged, with the Director of Budget and Fiscal Services), control of the business and possession of the property of the Department shall be restored to the Department, and thereupon the City and County shall be restored to its former positions and rights under the First Resolution, and all Revenues shall thereafter be applied as provided for in the First Resolution. No such payment over

to the Department by the receiver or resumption of this application of Revenues as provided in the First Resolution, shall extend to or affect any subsequent default under the First Resolution or impair any right consequent thereon.

#### **Suits at Law or Equity and Mandamus and Appointment of a Receiver**

If an Event of Default shall happen and shall not have been remedied, then and in every such case, but subject to the provisions, limitations and conditions as set forth in the First Resolution, the Holder of any Bond at the time Outstanding shall be entitled, for the equal benefit and protection of all Holders of the Bonds similarly situated to proceed, protect and enforce the rights vested in such Holder by the First Resolution by such appropriate judicial proceeding as such Holder shall deem most effectual to protect and enforce any such right, either by suit in equity or by action of law, whether for the specific performance of any covenant or agreement contained in the First Resolution, or in aid of the exercise of any power granted in the First Resolution, or to enforce any other legal or equitable right vested in the Holders of Bonds by the First Resolution or by law; provided, however, that no judicial proceeding shall be brought seeking the appointment of a receiver to take possession of the Wastewater System or to manage, receive and apply the Revenues unless the Holders of not less than a majority in principal amount of the Bonds then Outstanding or a Bondholders' Committee representing the Holders of not less than a majority in principal amount of the Bonds then Outstanding shall have joined in or consented to such proceeding.

#### **Bondholders' Committee**

If an Event of Default shall happen and shall not have been remedied, the Holders of not less than twenty-five percent (25%) in principal amount of the Bonds then Outstanding may call a meeting of the Holders of Bonds for the purpose of electing a Bondholders' Committee. Such meeting shall be called and proceedings thereat shall be conducted as provided for other meetings of Bondholders pursuant to the First Resolution. At such meeting the Holders of not less than a majority of the principal amount of the Bonds then Outstanding must be present in person or by proxy in order to constitute a quorum for the transaction of business, less than a quorum, however, having power to adjourn from time to time without any notice other than that required by the First Resolution. A quorum being present at such meeting, the Bondholders present in person or by proxy may, by the votes cast by the Holders of a majority in principal amount of the Bonds so present in person or by proxy, elect one or more persons who may or may not be Bondholders to the Bondholders' Committee which shall act as trustee for all Bondholders. The Bondholders present in person or by proxy at said meeting, or at any adjourned meeting thereof, shall prescribe the manner in which the successors of the persons elected to the Bondholders' Committee at such Bondholders' meeting shall be elected or appointed, and may prescribe rules and regulations governing the exercise by the Bondholders' Committee of the power conferred upon it, and may provide for the termination of the existence of the Bondholders' Committee.

#### **Bondholders May Direct Proceedings**

The Holders of not less than a majority in principal amount of the Bonds at the time outstanding are authorized and empowered: (1) to direct the time, method, and place of conducting any proceeding for any remedy available to the holders of the Bonds; or (2) on behalf of the holders of the Bonds then outstanding, to consent to the waiver of any Event of Default or its consequences. No waiver or rescission shall extend to any subsequent or other default, or impair any right consequent thereon.

#### **Abandonment of Proceedings; Adverse Determination**

No delay or omission of any Holder of Bonds to exercise any right or power arising upon the occurrence of a default under the First Resolution, including an Event of Default, shall impair any right or power or shall be construed to be a waiver of any such default or to be an acquiescence therein. Every power and remedy given by the First Resolution to the Holders of Bonds may be exercised from time to time and as often as may be deemed expedient by such Holders.

In case the Holders of the Bonds or a Bondholders' Committee formed pursuant to the First Resolution shall have proceeded to enforce any right under the First Resolution and such proceedings shall have been discontinued or abandoned for any reason, or shall have been determined adversely to the Holders of the Bonds or such Bondholders' Committee, then and in every such case the City and County, and the Holders of the Bonds shall be restored to their former positions and rights under the First Resolution, and all rights, remedies and powers of the Holders of the Bonds shall continue as if no such proceedings had been taken.

## Amending and Supplementing of Resolution

*Amending and Supplementing of Resolution Without Consent of Holders of Bonds.* The City and County, from time to time and at any time and without the consent or concurrence of any Holder of any Bond, may adopt (i) a Series Resolution for the purpose of providing for the issuance of Bonds pursuant to the provisions as set forth in the First Resolution; (ii) to make any changes, modifications, amendments or deletions to the First Resolution which may be required to permit the First Resolution to be qualified under the Trust Indenture Act of 1939 of the United States of America; or (iii) if the rights of the Holders of the Bonds then Outstanding shall not be materially adversely affected thereby, a Supplemental Resolution (herein defined and referred to as a "Supplemental Resolution") for any one or more of the following purposes:

1. to make any changes or corrections in the First Resolution as to which the City and County shall have been advised by counsel that the same are verbal corrections or changes or are required for the purpose of curing or correcting any ambiguity or defective or inconsistent provision or omission or mistake or manifest error contained in the First Resolution, or to insert in the First Resolution such provisions clarifying matters or questions arising under the First Resolution as are necessary or desirable;
2. to add additional covenants and agreements of the City and County for the purpose of further securing the payment of the Bonds;
3. to surrender any right, power or privilege reserved to or conferred upon the City and County by the terms of the First Resolution;
4. to confirm as further assurance any lien, pledge or charge, or the subjection to any lien, pledge, or charge, created or to be created by the provisions of the First Resolution;
5. to grant to or to confer upon the Holders of the Bonds any additional rights, remedies, powers, authority or security that lawfully may be granted to or conferred upon them; and
6. to modify in any other respect any of the provisions of the First Resolution.

Except for Series Resolutions authorizing the issuance of Bonds pursuant to the First Resolution, the City and County shall not adopt any Supplemental Resolution authorized by the foregoing provisions of the First Resolution unless in the Opinion of Counsel the adoption of such Supplemental Resolution is permitted by the First Resolution and the provisions of such Supplemental Resolution do not materially adversely affect the rights of the Holders of the Bonds then Outstanding.

*Amendment of Resolution With Consent of Holders of the Bonds.* With the consent of the Holders of not less than a majority of the Bonds then Outstanding, the City and County from time to time and at any time may adopt a resolution amendatory of or supplemental to the First Resolution for the purpose of adding any provisions to, or changing in any manner or eliminating any of the provisions of, the First Resolution, or modifying or amending the rights and obligations of the City and County thereunder, or modifying or amending in any manner the rights of the Holders of the Bonds then Outstanding; provided, however, that without the specific consent of the Holder of each such Bond which would be affected thereby, no Supplemental Resolution amending or supplementing the provisions of the First Resolution shall: (1) change the fixed maturity date for the payment of the principal of any Bond or the dates for the payment of interest thereon or the terms of the redemption thereof, or reduce the principal amount of any Bond or the rate of interest thereon or the Redemption Price (or the redemption premium) payable upon the redemption or prepayment thereof; or (2) reduce the aforesaid percentage of Bonds, the Holders of which are required to consent to any Supplemental Resolution amending or supplementing the provisions of the First Resolution; or (3) give to any Bond or Bonds any preference over any other Bond or Bonds secured by the First Resolution; or (4) authorize the creation of any pledge of the Revenues and other moneys pledged under the First Resolution, prior, superior or equal to the pledge of and lien and charge thereon created in the First Resolution for the payment of the Bonds except to the extent provided in the First Resolution; or (5) deprive any Holder of the Bonds in any material respect of the security afforded by the First Resolution; provided further, however, that without the specific consents of the Holders of not less than a majority in principal amount of the Term Bonds then Outstanding and affected thereby, no Supplemental Resolution amending or supplementing the provisions of the First Resolution shall (a) change the amount of any Sinking Fund Installments for the retirement of Term Bonds or the due dates of such installments or the terms for the purchase or redemption thereof from such installments, or (b) reduce the aforesaid percentage of Term Bonds, the Holders of which are required to consent to any such Supplemental Resolution. (Nothing in this paragraph contained, however, shall be construed as making necessary the approval of the Holders of the Bonds of the adoption of any Supplemental Resolution). A

modification or amendment with respect to the Sewer Fund or the Debt Service Account or Common Reserve Account therein shall not be deemed a change in the terms of payments; provided that no such modification or amendment shall, except upon the consent of the Holders of all Bonds then outstanding affected thereby, reduce the amount or amounts required to be credited to the Debt Service Account or Common Reserve Account.

The proof of the giving of any consent required and of the holding of Bonds for the purpose of giving consents shall be made in accordance with the First Resolution. It shall not be necessary that the consents of the Holders of the Bonds approve the particular form of wording of the proposed amendment or supplement or of the Supplemental Resolution affecting such amendment or supplement, but it shall be sufficient if such consents approve the substance of the proposed amendment or supplement. After the Holders of the required percentage of Bonds shall have filed their consents to the amending or supplementing of the First Resolution pursuant to the First Resolution, the City and County shall publish at least once a notice of such amending or supplementing of the First Resolution, in *The Bond Buyer*, published in New York, New York, or in lieu of publication in *The Bond Buyer*, in some other newspaper specializing in financial matters as provided for in the First Resolution and shall mail a copy of such notice, postage prepaid to each registered Holder of Bonds then Outstanding, at his address, if any, appearing upon the registry books, but failure to mail copies of said notice to any of said Holders shall not affect the validity of the Supplemental Resolution effecting such amendments or supplements or the consent thereto. A record, consisting of the papers required by the First Resolution, shall be proof of the matters therein stated until the contrary is proved. No action or proceeding to set aside or invalidate such Supplemental Resolution or any of the proceedings for its adoption shall be instituted or maintained unless such action or proceeding is commenced within sixty (60) days after the publication and mailing of the notice required by the First Resolution.

The City and County shall furnish a notice of each amendment or supplement and a copy of the Supplemental Resolution effecting such amendment or supplement to each rating agency which has rated the Bonds at least fifteen (15) days prior to the effective day of the Supplemental Resolution.

#### Discharge of Liens and Pledges; Bonds No Longer Outstanding and Deemed to be Paid

Except as otherwise provided in the First Resolution with regard to Option Bonds, the obligations of the City and County under the First Resolution and the liens, pledges, charges, trusts, covenants and agreements of the City and County made or provided for in the First Resolution, shall be fully discharged and satisfied as to any Bond and such Bond shall no longer be deemed to be Outstanding under the First Resolution:

(i) when such Bond shall have been canceled, or shall have been surrendered for cancellation or is subject to cancellation, or shall have been purchased by or behalf of the City and County from moneys held under the First Resolution; or

(ii) as to any Bond not canceled or surrendered for cancellation or subject to cancellation or so purchased, when payment of the principal and redemption price (if any) of such Bond, plus interest on such principal to the due date thereof (whether such due date be by reason of maturity or upon redemption or prepayment, or otherwise) either (a) shall have been made or caused to be made in accordance with the terms thereof, or (b) shall have been provided for by irrevocably depositing with the Paying Agent for such Bond, in trust, and irrevocably appropriating and setting aside exclusively for such payment, either (1) moneys sufficient to make such payment or (2) noncallable Refunded Municipal Obligations or noncallable Investment Securities described in item (i) of the definition of Investment Securities as set forth in the First Resolution, maturing as to principal and interest in such amount and at such times as will insure, together with any cash deposit, the availability of sufficient moneys to make such payment, whichever the City and County deems to be in its best interest and as verified by an independent nationally recognized firm of certified public accountants in a report delivered to the City and County and the Director of Budget and Fiscal Services, and all necessary and proper fees, compensation and expenses of the Director of Budget and Fiscal Services and the Paying Agents pertaining to the Bond with respect to which such deposit is made shall have been paid or the payment thereof provided for to the satisfaction of the Director of Budget and Fiscal Services and said Paying Agents.

At such time as a Bond shall be deemed to be no longer Outstanding under the First Resolution, as aforesaid, such Bond, except for the purposes of any payment from such moneys, Refunded Municipal Obligations or Investment Securities, shall no longer be secured by or entitled to the benefits of the First Resolution.

Notwithstanding the foregoing, in the case of a Bond which is to be redeemed or otherwise prepaid prior to its stated maturity, no deposit under clause (b) of subparagraph (ii) of the second preceding paragraph above shall constitute such payment, discharge and satisfaction as aforesaid until such Bond shall have been irrevocably designated for

redemption or prepayment and proper notice of such redemption or prepayment shall have been previously given in accordance with the First Resolution or provision shall have been irrevocably made for the giving of such notice.

Any such moneys so deposited with the Paying Agents for the Bonds as provided in the First Resolution may at the direction of the City and County also be invested and reinvested in Investment Securities, maturing in the amounts and times as set forth in the First Resolution. All income from all Refunded Municipal Obligations and Investment Securities in the hands of the Paying Agents which is not required for the payment of the Bonds and interest and premium thereon with respect to which such moneys shall have been so deposited, shall be paid to the City and County for deposit in the Sewer Fund free and clear of any trust, lien, security interest, pledge or assignment securing any Bonds or otherwise existing under the First Resolution.

All moneys, Refunded Municipal Obligations or Investment Securities set aside and held in trust pursuant to the provisions of the First Resolution for the payment of Bonds (including interest and premium thereof, if any) shall be applied to and used solely for the payment of the particular Bond (including interest and premium thereof, if any) with respect to which such moneys and Investment Securities have been so set aside in trust.

If moneys, Refunded Municipal Obligations or Investment Securities have been deposited or set aside with a Paying Agent pursuant to the First Resolution for the payment of a specific Bond and such Bond is deemed to have been paid and to be no longer Outstanding under the First Resolution as provided in the defeasance provisions of the First Resolution, but such Bond has not in fact been actually paid in full, no amendment to the defeasance provisions of the First Resolution may be made without the consent of the Holder of each Bond affected thereby.

The City and County may at any time surrender to a Paying Agent for a Series of Bonds for cancellation by it any Bonds of such Series previously executed and delivered, which the City and County may have acquired in any manner whatever, and such Bonds upon such surrender for cancellation shall be deemed to be paid and no longer Outstanding under the First Resolution.

#### PENDING LITIGATION

In the normal course of business, claims and lawsuits are filed against the City and County and the Department and their respective officers and employees. The City and County and the Department generally are self-insured with respect to general liability claims. Claims against the City and County which are related to the Wastewater System are chargeable against the Department. In the Fiscal Years ended June 30, 1996, June 30, 1997 and June 30, 1998, and the first four months of the Fiscal Year ending June 30, 1999, the Department has reached lawsuit settlements with claimants totaling \$1,561,732. There were no judgments chargeable against the Department during such period. The City and County's Corporation Counsel is of the opinion that no pending litigation will be determined so as to result individually or in the aggregate in a final judgment against the Department which would constitute a material impairment of the Department's financial position.

The Corporation Counsel reports that there is no controversy or litigation now pending or, to the best of the City and County's and the Department's knowledge, threatened, which seeks to restrain or enjoin the execution, issuance, sale or delivery of the Series 1998 Bonds or that in any way contests the validity of the Series 1998 Bonds; or any proceedings of the City and County taken with respect to the authorization, sale, or issuance of the Series 1998 Bonds, the pledge or application of any moneys provided for the payment of or security for the Series 1998 Bonds.

#### RATINGS

Moody's Investors Service, Inc. and Fitch IBCA, Inc. have assigned ratings of "Aaa" and "AAA", respectively, to the Series 1998 Bonds with the understanding that upon delivery of the Series 1998 Bonds, the Policy insuring the payment of the principal of and interest on the Series 1998 Bonds will be issued by Financial Guaranty Insurance Company. Such ratings reflect only the respective views of such organizations, and an explanation of the significance of such ratings may be obtained from the rating agency furnishing the same, at the following addresses: Moody's Investors Service, Inc., 99 Church Street, New York, New York 10007 and Fitch IBCA, Inc., One State Street Plaza, New York, New York 10004. There is no assurance that such ratings will continue for any given period of time or that they will not be revised or withdrawn entirely by such rating agencies, if in the judgment of such rating agencies, circumstances so warrant. Any such downward revision or withdrawal of such ratings may have an effect on the market price of the Series 1998 Bonds.

## UNDERWRITING

The Series 1998 Bonds are being purchased for reoffering by the Underwriters. The Underwriters have agreed to purchase the Series 1998 Bonds at an aggregate purchase price of \$53,674,556.15 plus accrued interest. The contract of purchase with respect to the Series 1998 Bonds provides that the Underwriters will purchase all the Series 1998 Bonds if any are purchased and that the purchase of the Series 1998 Bonds is conditioned on the purchase under a separate contract of purchase of the Junior Series 1998 Bonds by the underwriters named therein (which include the Underwriters). The initial public offering prices are set forth on the cover page of this Official Statement. The Underwriters may offer and sell the Series 1998 Bonds to certain dealers (including depositing the Series 1998 Bonds into investment trusts) and others at prices lower than the initial public offering prices stated on the cover page hereof. The public offering prices may be changed from time to time by the Underwriters.

## TAX MATTERS

### General

In the opinion of Bond Counsel, (i) under existing statutes and court decisions, interest on the Series 1998 Bonds is not included in gross income for Federal income tax purposes pursuant to Section 103 of the Internal Revenue Code of 1986, as amended (the "Code"), and (ii) under the Code, interest on the Series 1998 Bonds is not treated as a preference item in calculating alternative minimum taxable income for purposes of the alternative minimum tax applicable to individuals and corporations; such interest, however, is includable in the adjusted current earnings of certain corporations for purposes of computing the alternative minimum tax imposed on corporations by the Code. In rendering the foregoing opinions, Bond Counsel has assumed continuing compliance by the Department with the tax covenants set forth in the proceedings authorizing the issuance of the Series 1998 Bonds.

In the further opinion of Bond Counsel, under the existing laws of the State of Hawaii, the Series 1998 Bonds, and the income therefrom, are exempt from all taxation by the State or any county or any political subdivision thereof, except inheritance, transfer and estate taxes, and except to the extent such income may be included in the measure of the franchise tax imposed on banks and other financial corporations pursuant to the laws of the State of Hawaii.

The Code establishes certain requirements that must be met subsequent to the issuance and delivery of the Series 1998 Bonds in order that interest on the Series 1998 Bonds be and remain not includable in gross income under Section 103 of the Code. These requirements include provisions which prescribe yield and other limits relative to the investment and expenditure of the proceeds of the Series 1998 Bonds and other amounts and require that certain earnings be rebated to the Federal government. The City and County acting through the Director of Budget and Fiscal Services and the Department acting through the Director of Environmental Services Management will covenant to comply with certain provisions and procedures, pursuant to which such requirements can be satisfied. Noncompliance with such requirements may cause interest on the Series 1998 Bonds to become includable in gross income for Federal income tax purposes retroactive to the date of issuance thereof, irrespective of the date on which such noncompliance occurs or is ascertained.

The form of opinion Bond Counsel proposes to render is set forth in Appendix D hereto.

### Certain Additional Federal Tax Consequences

The following is a brief discussion of certain Federal income tax matters with respect to the Series 1998 Bonds under existing statutes. It does not purport to deal with all aspects of Federal taxation that may be relevant to a particular owner of a Series 1998 Bond. Prospective investors, particularly those who may be subject to special rules, are advised to consult their own tax advisors regarding the Federal tax consequences of owning and disposing of the Series 1998 Bonds.

As noted above, interest on the Series 1998 Bonds must be taken into account in determining the tax liability of corporations subject to the Federal alternative minimum tax imposed by Section 55 of the Code. Interest on the Series 1998 Bonds must also be taken into account in determining the tax liability of foreign corporations subject to the branch profits tax imposed by Section 884 of the Code.

Owners of Series 1998 Bonds should be aware that the ownership of such obligations may result in collateral Federal income tax consequences to various categories of persons, such as corporations (including S Corporations and

certain foreign corporations), financial institutions, property and casualty insurance companies, individual recipients of Social Security or Railroad Retirement benefits and individuals otherwise eligible for the earned income tax credit, and to taxpayers deemed to have incurred or continued indebtedness to purchase or carry obligations the interest on which is not included in gross income for Federal income tax purposes.

Legislation affecting municipal bonds is constantly being considered by the United States Congress. For example, several bills were introduced (but not enacted) during the 104th Congress to extend the environmental tax imposed by Section 59A of the Code with respect to taxable years beginning before January 1, 1996. There can be no assurance that legislation enacted or proposed after the date of issuance of the Series 1998 Bonds will not have an adverse effect on the tax-exempt status or market price of the Series 1998 Bonds.

#### **Original Issue Discount**

Bond Counsel is of the opinion that the excess, if any, of the principal amount payable when a maturity of Series 1998 Bonds is scheduled to come due over the initial public offering price of such maturity constitutes original issue discount that is not includable in gross income for Federal tax purposes to the same extent as interest on the Series 1998 Bonds. For purposes of the preceding sentence, the "initial public offering price" refers to the initial offering price to the public (excluding bond houses, brokers or similar persons acting in the capacity of underwriters or wholesalers) at which a substantial amount of the Series 1998 Bonds comprising a maturity was sold.

Original issue discount accrues in accordance with a constant interest method based on the compounding of interest, and an owner's adjusted basis in a Series 1998 Bond having original issue discount (a "Discount Bond") for purposes of determining gain or loss on disposition will be increased by the amount of any such accrual. A portion of the original issue discount that accrues in each year to an owner of a Discount Bond that is a corporation will be included in the calculation of the corporation's Federal alternative minimum tax liability. Consequently, corporate owners of a Discount Bond should be aware that the accrual of original issue discount in each year may result in an alternative minimum tax liability even though such owners have not received a corresponding cash payment.

Owners of Discount Bonds should consult their own tax advisors with respect to the determination for Federal income tax purposes of original issue discount accrued upon sale or redemption of Discount Bonds, and with respect to the state and local tax consequences of owning Discount Bonds.

#### **Original Issue Premium**

The excess, if any, of the price (excluding accrued interest) paid by the first owner of a Series 1998 Bond over the principal amount due to be repaid at the maturity of such bond (an "OIP Bond") is original issue premium. Under certain circumstances, as a result of the tax cost reduction requirements of the Code relating to the amortization of bond premium, the owner of an OIP Bond may realize a taxable gain upon its disposition even though the OIP Bond is sold or redeemed for an amount less than or equal to the owner's original acquisition cost. Owners of OIP Bonds are advised to consult with their tax advisors with respect to the Federal, state and local tax consequences of owning such bonds.

### **APPROVAL OF LEGAL PROCEEDINGS**

All legal matters incident to the authorization, issuance and sale of the Series 1998 Bonds are subject to the approval of Hawkins, Delafield & Wood of New York, New York, Bond Counsel to the City and County. The form of the opinion Bond Counsel proposes to render is set forth in Appendix D hereto. Copies of the approving opinion of Bond Counsel will be available at the time of delivery of the Series 1998 Bonds. Certain legal matters will be passed upon for the Underwriters by their counsel, Orrick, Herrington & Sutcliffe LLP, San Francisco, California, and McCarriston Miho Miller Mukai, Honolulu, Hawaii.

### **CONTINUING DISCLOSURE**

In order to assist the Underwriters in complying with Rule 15c2-12 promulgated by the Securities and Exchange Commission ("Rule 15c2-12"), the City and County will, on behalf of the Department, undertake in a Continuing Disclosure Certificate of the Controller of the City and County, as supplemented, constituting a written agreement for the benefit of the holders of the Series 1998 Bonds (the "Continuing Disclosure Certificate"), to provide to each Nationally Recognized Municipal Securities Information Repository (as referred to in Rule 15c2-12), if and when one is established, the State of Hawaii Information Depository and others, on an annual basis, certain financial and operating

data concerning the Department, financial statements, notice of certain events if material, and certain other notices, all as described in the Continuing Disclosure Certificate. The undertaking is an obligation of the Department that is enforceable as described in the Continuing Disclosure Certificate. Beneficial Owners of the Series 1998 Bonds are third party beneficiaries of the Continuing Disclosure Certificate. The execution of the Continuing Disclosure Certificate is a condition precedent to the obligation of the Underwriters to purchase the Series 1998 Bonds. The proposed form of the Continuing Disclosure Certificate is contained in Appendix C.

#### MISCELLANEOUS

Additional information may be obtained, upon request, from either the Department of Budget and Fiscal Services or the Department of Environmental Services of the City and County.

Reference in this Official Statement to the Act, the City Charter, the First Resolution and the Series 1998 Resolution do not purport to be complete. Refer to the Act, the City Charter, the First Resolution and the Series 1998 Resolutions for full and complete details of their provisions. Copies of the City Charter, the First Resolution and the Series 1998 Resolution are on file with the City Clerk of the City and County.

The agreements of the City and County with holders of the Series 1998 Bonds are fully set forth in the First Resolution and the Series 1998 Resolution. Neither any advertisement of the Series 1998 Bonds nor this Official Statement is to be construed as a contract with purchasers of the Series 1998 Bonds.

Any statements in this Official Statement involving matters of opinion or of estimates, whether or not expressly stated, are intended merely as expressions of opinion or estimates, and not as representations of fact, and no representation is made that any of the estimates will be realized.

The City and County's use of certain information included in this Official Statement has been furnished or reviewed and authorized by the sources described below. While the City and County believes that these sources are reliable, the City and County has not independently verified this information and does not guarantee the accuracy or completeness of the information furnished by the respective sources. The City and County is relying on certificates from certain sources, to be delivered at or prior to the time of delivery of the Series 1998 Bonds, as to the accuracy of such information provided or authorized by such sources.

The information regarding DTC and DTC's book-entry system has been furnished by DTC.

The information contained in this Official Statement under the captions CERTAIN DEFINITIONS, SUMMARY OF CERTAIN PROVISIONS OF THE FIRST RESOLUTION, TAX MATTERS, and APPENDIX D - PROPOSED FORM OF APPROVING OPINION OF BOND COUNSEL, have been prepared by Hawkins, Delafield & Wood, New York, New York, Bond Counsel to the City and County.

APPENDIX B - ENGINEER'S REPORT has been prepared by Carollo Engineers, P.C., Consulting Engineer.

The execution and delivery of this Official Statement by the Director of Environmental Services and the Director of the Department of Budget and Fiscal Services have been duly authorized by the City and County.

s/ Roy K. Amemiya, Jr.  
Director of Budget and Fiscal Services  
City and County of Honolulu, Hawaii

s/ Kenneth E. Sprague  
Director of Environmental Services  
City and County of Honolulu, Hawaii

[THIS PAGE INTENTIONALLY LEFT BLANK]

EXTRACTS FROM AUDITED FINANCIAL STATEMENTS OF  
OF THE CITY AND COUNTY OF HONOLULU, HAWAII  
RELATING TO  
THE SEWER FUND  
AND  
THE WASTEWATER SYSTEM FACILITY CHARGE FUND  
FOR FISCAL YEAR ENDED JUNE 30, 1997

**[THIS PAGE INTENTIONALLY LEFT BLANK]**

CITY AND COUNTY OF HONOLULU  
**FEDERAL REVENUE SHARING FUND**  
 SCHEDULE OF REVENUES, EXPENDITURES AND CHANGES IN FUND BALANCE -  
 BUDGET AND ACTUAL  
 FOR THE FISCAL YEAR ENDED JUNE 30, 1997  
 (Amounts in thousands)

	Budget	Actual on Budgetary Basis	Variance Favorable (Unfavorable)
Expenditure:			
Current:			
Miscellaneous:			
Other:			
Provisional .....	\$ 521	\$ 521	\$ --
Unreserved - Undesignated Fund Balance - July 1 .....	521	522	1
Unreserved - Undesignated Fund Balance - June 30 (Budgetary Basis) .....	\$ --	1	\$ 1
Adjustments to conform with generally accepted accounting principles:			
Encumbrances included above .....		--	
Expenditures - prior year encumbrances .....		(9)	
Decrease in reserved for encumbrances .....		44	
Unreserved - Undesignated Fund Balance - June 30 (GAAP Basis) .....		36	
Reserved for Encumbrances - June 30 .....		11	
Fund Balance - June 30 (GAAP Basis) .....		\$ 47	

CITY AND COUNTY OF HONOLULU  
**SEWER FUND**  
 BALANCE SHEET  
 JUNE 30, 1997  
 WITH COMPARATIVE AMOUNTS FOR JUNE 30, 1996  
 (Amounts in thousands)

	1997	1996
<b><u>ASSETS</u></b>		
Cash and securities:		
With Treasury .....	\$ 44,527	\$ 60,118
Receivable:		
Sewer service charges .....	18,204	18,788
Due from other funds:		
General Fund .....	2,919	--
Highway Fund .....	4,000	--
Wastewater System Facility Charge Fund .....	2,663	--
	<u>\$ 72,313</u>	<u>\$ 78,906</u>
<b><u>LIABILITIES AND FUND BALANCE</u></b>		
Liabilities:		
Warrants payable .....	\$ 344	\$ 922
Due to other fund:		
General Fund .....	--	8
Accrued payroll and fringes .....	611	--
Deferred revenue .....	12,278	14,335
	<u>13,233</u>	<u>15,265</u>
Fund Balance:		
Reserved for encumbrances .....	16,097	19,782
Unreserved - undesignated .....	42,983	43,859
	<u>59,080</u>	<u>63,641</u>
	<u>\$ 72,313</u>	<u>\$ 78,906</u>

CITY AND COUNTY OF HONOLULU  
**SEWER FUND**  
 SCHEDULE OF REVENUES, EXPENDITURES AND CHANGES IN FUND BALANCE -  
 BUDGET AND ACTUAL  
 FOR THE FISCAL YEAR ENDED JUNE 30, 1997  
 (Amounts in thousands)

(Page 1 of 2)

	Budget	Actual on Budgetary Basis	Variance Favorable (Unfavorable)
<b>Revenues:</b>			
Charges for services .....	\$ 106,767	\$ 110,988	\$ 4,221
Fines and forfeits .....	--	12	12
<b>Miscellaneous:</b>			
Reimbursements and recoveries .....	146	81	(65)
Other .....	--	88	88
<b>Total Revenues .....</b>	<b>106,913</b>	<b>111,169</b>	<b>4,256</b>
<b>Expenditures:</b>			
<b>Current:</b>			
<b>General government:</b>			
City Council .....	150	--	150
Corporation Counsel .....	500	374	126
Data Systems .....	37	37	--
Finance .....	254	212	42
Land Utilization .....	128	125	3
Public Works .....	1,671	1,671	--
<b>Total General government .....</b>	<b>2,740</b>	<b>2,419</b>	<b>321</b>
<b>Highways and streets:</b>			
Public Works .....	137	137	--
Wastewater Management .....	118	63	55
<b>Total Highways and streets .....</b>	<b>255</b>	<b>200</b>	<b>55</b>
<b>Sanitation:</b>			
Public Works .....	27	27	--
Wastewater Management .....	58,491	51,327	7,164
<b>Total Sanitation .....</b>	<b>58,518</b>	<b>51,354</b>	<b>7,164</b>
<b>Miscellaneous:</b>			
<b>Retirement and health benefits:</b>			
Provisional .....	9,303	9,303	--
<b>Other:</b>			
Provisional .....	964	390	574
<b>Total Miscellaneous .....</b>	<b>10,267</b>	<b>9,693</b>	<b>574</b>
<b>Total Expenditures .....</b>	<b>71,780</b>	<b>63,666</b>	<b>8,114</b>
<b>Revenues over Expenditures .....</b>	<b>35,133</b>	<b>47,503</b>	<b>12,370</b>

CITY AND COUNTY OF HONOLULU  
**SEWER FUND**  
 SCHEDULE OF REVENUES, EXPENDITURES AND CHANGES IN FUND BALANCE -  
 BUDGET AND ACTUAL  
 FOR THE FISCAL YEAR ENDED JUNE 30, 1997  
 (Amounts in thousands)

(Page 2 of 2)

	Budget	Actual on Budgetary Basis	Variance Favorable (Unfavorable)
Other Financing Source (Uses):			
Operating transfers In .....	--	2,919	2,919
Operating transfers out:			
Debt service - Finance .....	(32,180)	(32,180)	--
Reimbursement for central administrative service expenses - Finance .....	(5,293)	(5,293)	--
Prior years' expenditures - Finance .....	(13,224)	(13,224)	--
Rental costs - Finance .....	(675)	(675)	--
Other - Finance .....	(175)	(175)	--
Total Other Financing Source (Uses) .....	(51,547)	(48,628)	2,919
Revenues and Other Source under Expenditures and Other Uses .....	(16,414)	(1,125)	15,289
Unreserved - Undesignated Fund Balance - July 1 .....	35,600	43,859	8,259
Unreserved - Undesignated Fund Balance - June 30 (Budgetary Basis) .....	\$ 19,186	42,734	\$ 23,548
Adjustments to conform with generally accepted accounting principles:			
Encumbrances included above .....		6,281	
Expenditures - prior year encumbrances .....		(9,672)	
Accrued retroactive payroll .....		(45)	
Decrease in reserved for encumbrances .....		3,685	
Unreserved - Undesignated Fund Balance - June 30 (GAAP Basis) .....		42,983	
Reserved for Encumbrances - June 30 .....		16,097	
Fund Balance - June 30 (GAAP Basis) .....		\$ 59,080	

CITY AND COUNTY OF HONOLULU  
**SEWER FUND**  
 SCHEDULE OF REVENUES - BUDGET AND ACTUAL  
 FOR THE FISCAL YEAR ENDED JUNE 30, 1997  
 (Amounts in thousands)

<u>Source of Revenues</u>	<u>Budget</u>	<u>Actual</u>	<u>Variance Favorable (Unfavorable)</u>
<b><u>CHARGES FOR SERVICES</u></b>			
<b>SANITATION:</b>			
Sewer Service Charges .....	\$ 106,719	\$ 110,891	\$ 4,172
Other Sewerage Charges .....	48	97	49
<b>TOTAL CHARGES FOR SERVICES .....</b>	<b>106,767</b>	<b>110,988</b>	<b>4,221</b>
<b><u>FINES AND FORFEITS</u></b>			
<b>FINES:</b>			
Liquidated Contract Damages .....	--	12	12
<b>TOTAL FINES AND FORFEITS .....</b>	<b>--</b>	<b>12</b>	<b>12</b>
<b><u>MISCELLANEOUS</u></b>			
<b>REIMBURSEMENTS AND RECOVERIES:</b>			
Recovery of Overhead Charges .....	68	49	(19)
Recovery of Overtime Inspection .....	78	32	(46)
<b>Total Reimbursements and Recoveries .....</b>	<b>146</b>	<b>81</b>	<b>(65)</b>
<b>OTHER MISCELLANEOUS:</b>			
<b>Other:</b>			
Vacation Accumulation Deposits .....	--	82	82
Miscellaneous Sales .....	--	1	1
Sundry Refunds .....	--	5	5
<b>Total Other Miscellaneous .....</b>	<b>--</b>	<b>88</b>	<b>88</b>
<b>TOTAL MISCELLANEOUS .....</b>	<b>146</b>	<b>169</b>	<b>23</b>
<b>TOTAL REVENUES .....</b>	<b>106,913</b>	<b>111,169</b>	<b>4,256</b>
<b><u>OTHER FINANCING SOURCE</u></b>			
<b>TRANSFER FROM OTHER FUND:</b>			
<b>Other Transfer -</b>			
Federal Grants Capital Projects Fund .....	--	2,919	2,919
<b>TOTAL OTHER FINANCING SOURCE .....</b>	<b>--</b>	<b>2,919</b>	<b>2,919</b>
<b>TOTAL SEWER FUND REVENUES .....</b>	<b>\$ 106,913</b>	<b>\$ 114,088</b>	<b>\$ 7,175</b>

CITY AND COUNTY OF HONOLULU  
WASTEWATER SYSTEM FACILITY CHARGE FUND  
BALANCE SHEET  
JUNE 30, 1997  
WITH COMPARATIVE AMOUNTS FOR JUNE 30, 1996  
(Amounts in thousands)

	1997	1996
<u>ASSET</u>		
Cash and securities:		
With Treasury .....	\$       --	\$       252
Total Asset .....	\$       --	\$       252
<u>LIABILITY AND FUND BALANCE</u>		
Liability:		
Due to other fund:		
Sewer Fund .....	\$    2,663	\$           --
Total Liability .....	2,663	--
Fund Balance:		
Unreserved - undesignated .....	(2,663)	252
Total Fund Balance .....	(2,663)	252
Total Liability and Fund Balance .....	\$       --	\$       252

CITY AND COUNTY OF HONOLULU  
**WASTEWATER SYSTEM FACILITY CHARGE FUND**  
 SCHEDULE OF REVENUES, EXPENDITURES AND CHANGES IN FUND BALANCE -  
**BUDGET AND ACTUAL**  
 FOR THE FISCAL YEAR ENDED JUNE 30, 1997  
 (Amounts in thousands)

	Budget	Actual on Budgetary Basis	Variance Favorable (Unfavorable)
Revenue:			
Charges for services .....	\$ 2,800	\$ 1,166	\$ (1,634)
Total Revenue .....	2,800	1,166	(1,634)
Other Financing Uses:			
Operating transfers out:			
Debt service - Finance .....	(3,889)	(3,887)	2
Reimbursement for central administrative service expenses - Finance .....	(194)	(194)	--
Total Other Financing Uses .....	(4,083)	(4,081)	2
Revenue under Other Uses .....	(1,283)	(2,915)	(1,632)
Unreserved - Undesignated Fund Balance - July 1 .....	1,283	252	(1,031)
Unreserved - Undesignated Fund Balance - June 30 (Budgetary Basis) .....	\$ --	(2,663)	\$ (2,663)
Adjustments to conform with generally accepted accounting principles:			
Encumbrances included above .....		--	
Expenditures - prior year encumbrances .....		--	
Increase in reserved for encumbrances .....		--	
Unreserved - Undesignated Fund Balance - June 30 (GAAP Basis) .....		(2,663)	
Reserved for Encumbrances - June 30 .....		--	
Fund Balance - June 30 (GAAP Basis) .....		\$ (2,663)	

CITY AND COUNTY OF HONOLULU  
**WASTEWATER SYSTEM FACILITY CHARGE FUND**  
 SCHEDULE OF REVENUES - BUDGET AND ACTUAL  
 FOR THE FISCAL YEAR ENDED JUNE 30, 1997  
 (Amounts in thousands)

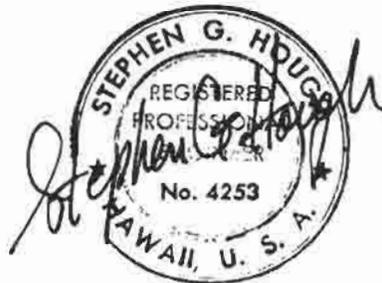
<u>Source of Revenue</u>	<u>Budget</u>	<u>Actual</u>	<u>Variance Favorable (Unfavorable)</u>
<b><u>CHARGES FOR SERVICES</u></b>			
<b>SANITATION:</b>			
Wastewater System Facility Charges .....	\$ 2,800	\$ 1,166	\$ (1,634)
 TOTAL WASTEWATER SYSTEM FACILITY CHARGE FUND REVENUE .....	 <u>\$ 2,800</u>	 <u>\$ 1,166</u>	 <u>\$ (1,634)</u>

City and County of Honolulu

**1998 WASTEWATER SYSTEM REVENUE BONDS  
ENGINEER'S REPORT**

Final

November 25, 1998



**[THIS PAGE INTENTIONALLY LEFT BLANK]**



*Dedicated to creative,  
responsive, quality solutions  
for those we serve.*

November 25, 1998  
4635A.00 T01

City and County of Honolulu  
Mr. Timothy Houghton  
Department of Environmental Services  
650 South King Street, 3<sup>rd</sup> Floor  
Honolulu, HI 96813

PaineWebber Incorporated  
Mr. Anthony H. Fisher  
Managing Director  
725 South Figueroa Street, 41<sup>st</sup> Floor  
Los Angeles, CA 90017

Subject: Engineer's Report for the City and County of Honolulu  
1998 Wastewater System Revenue Bonds

Gentlemen:

We have been retained to provide the enclosed Engineer's Report for inclusion in the Official Statement relating to the issuance of the 1998 Wastewater System Revenue Bonds, which are to fund a number of capital improvement projects for the wastewater systems and facilities of the Department of Environmental Services.

The scope of this report includes: 1) a review of the City and County's existing wastewater facilities and the need for the 1998 Senior Bonds; 2) a review of the need for wastewater facility improvements, and of the reasonableness of the cost estimates and construction schedules, and 3) a review of the Department of Environmental Services' financial projections, including the reasonableness of the assumptions, the adequacy of future revenues to cover operation and maintenance expenses, debt service, required coverage and future capital costs and contingencies.

We have reviewed the Official Statement to which this report is appended. In our opinion, the information represented therein, which is taken from this report, is accurately presented.

Very truly yours,

CAROLLO ENGINEERS, P.C.

A handwritten signature in black ink, appearing to read 'H. Stephen McDonald', written over the typed name.

H. Stephen McDonald  
Principal

HSM:JPP:arc  
Enclosure: Engineer's Report

[THIS PAGE INTENTIONALLY LEFT BLANK]

**CITY AND COUNTY OF HONOLULU  
DEPARTMENT OF ENVIRONMENTAL SERVICES  
1998 WASTEWATER SYSTEM REVENUE BONDS  
ENGINEER'S REPORT**

**TABLE OF CONTENTS**

		<u>Page No.</u>
<b>CHAPTER 1 - EXECUTIVE SUMMARY</b> .....		1-1
1.1	Introduction and Background .....	1-1
	Overview of Existing Wastewater Facilities .....	1-1
	Compliance with Discharge Requirements .....	1-3
	Organization of the City and County of Honolulu Wastewater Enterprise .....	1-3
	Capital Program Planning and Future Direction .....	1-4
	Wastewater Flow Projections .....	1-4
1.2	1998-2002 CIP Projects .....	1-4
	Need for the Projects .....	1-4
	Collection System Improvement Projects .....	1-4
	Wastewater Treatment Plant Improvement Projects .....	1-5
	Effluent Reuse/Disposal Projects .....	1-5
	Project Management .....	1-5
	Summary of Estimated Project Costs .....	1-5
1.3	Future Projects .....	1-6
	Long-Term Expansion and Rehabilitation Needs .....	1-6
	Cost of CIP Projects .....	1-6
	Timing of CIP Projects .....	1-6
	Growth Rate Considerations .....	1-6
1.4	Current and Future Sewer Service and System Facility Charges .....	1-9
	Sources and Uses of Funds .....	1-9
	Existing Rates and Charges .....	1-9
	Projected Rates and Charges .....	1-9
1.5	Summary of Projected Revenues and Expenses .....	1-9
1.6	Conclusions .....	1-9
	Compliance with Discharge Requirements .....	1-11
	20-Year CIP .....	1-11
	1998-2002 CIP Projects .....	1-11
	Department Management .....	1-12
	Financial Projections .....	1-12
<b>CHAPTER 2 - INTRODUCTION AND BACKGROUND</b> .....		2-1
2.1	Scope of Report .....	2-1
2.2	Engineer's Qualifications .....	2-2
2.3	Overview of the Department of Environmental Services .....	2-3
2.4	Overview of Existing Wastewater Facilities .....	2-5
	General Description of Existing System .....	2-5
2.5	Compliance with Discharge Requirements and Consent Decrees .....	2-10
2.6	Capital Program Planning and Future Direction .....	2-12
2.7	Wastewater Flow Projections .....	2-14

**CITY AND COUNTY OF HONOLULU  
DEPARTMENT OF ENVIRONMENTAL SERVICES  
1998 WASTEWATER SYSTEM REVENUE BONDS  
ENGINEER'S REPORT**

**TABLE OF CONTENTS**

(Continued)

	<u>Page No.</u>
<b>CHAPTER 3 - CIP PROJECTS FOR FISCAL YEARS ENDING 1998-2002</b> .....	3-1
3.1 Need for the Projects .....	3-1
3.2 Collection System Projects .....	3-2
3.3 Wastewater Treatment Plant Improvement Projects .....	3-4
3.4 Effluent Reuse Projects .....	3-4
3.5 Ongoing Capital Program .....	3-5
3.6 Project Management .....	3-6
Waianae WWTP Secondary Treatment Upgrade .....	3-6
Spill Prevention/Spill Containment Plan .....	3-6
Wastewater Information Management System (WIMS) .....	3-7
3.7 Summary of Estimated Project Costs .....	3-7
 <b>CHAPTER 4 - FUTURE PROJECTS</b> .....	 4-1
4.1 Long-Term Expansion and Rehabilitation Needs .....	4-1
Collection System Improvements .....	4-1
Wastewater Treatment Plants Improvements and Reuse .....	4-5
4.2 Cost of Future Projects .....	4-9
4.3 Timing of Future Projects .....	4-9
4.4 Growth Rate Considerations .....	4-9
 <b>CHAPTER 5 - CURRENT AND FUTURE SEWER SERVICE AND SYSTEM</b>	
<b>FACILITY CHARGES</b> .....	5-1
5.1 Sources and Uses of Funds .....	5-1
5.2 Historical Revenues and Expenditures .....	5-2
5.3 Existing Rates and Charges .....	5-2
5.4 Comparison With Rates Charged by Other Agencies .....	5-2
5.5 Projected Rates and Charges .....	5-5
 <b>CHAPTER 6 - SUMMARY OF PROJECTED REVENUES AND EXPENSES</b> .....	 6-1
 <b>CHAPTER 7 - CONCLUSIONS</b> .....	 7-1
7.1 Compliance with Discharge Requirements .....	7-1
7.2 20-Year CIP .....	7-1
7.3 1998 - 2002 CIP Projects .....	7-2
7.4 Department Management .....	7-2
7.5 Financial Projections .....	7-2

**GLOSSARY OF ABBREVIATIONS  
REFERENCES**

**CITY AND COUNTY OF HONOLULU  
DEPARTMENT OF ENVIRONMENTAL SERVICES**

**1998 WASTEWATER SYSTEM REVENUE BONDS  
ENGINEER'S REPORT**

**LIST OF TABLES**

<u>Table No.</u>		<u>Page No.</u>
ES-1	Wastewater Drainage Basins and Major Facilities .....	1-1
ES-2	Summary of Estimated CIP Project Expenditures, 1998-2002 .....	1-7
ES-3	Projected Cash Flow Summary .....	1-10
1	Listing of Divisions of the Department of Environmental Services .....	2-4
2	Wastewater Drainage Basins and Major Facilities .....	2-7
3	Wastewater Flows by Treatment Facility .....	2-7
4	Discharge Requirements and Compliance History .....	2-11
5	Summary of Consent Decree Objectives .....	2-14
6	Historical and Projected Resident Population by Basin .....	2-15
7	Prioritization Criteria .....	3-1
8	Summary of Estimated CIP Project Expenditures, 1998-2002 .....	3-8
9	Summary of 20-Year Expenditure Allocations .....	4-3
10	Summary of 20-Year Projects Expenditure Schedule .....	4-10
11	Major Categories of Revenue Sources and Uses .....	5-1
12	Historical Wastewater Revenues and Expenditures .....	5-3
13	Summary of Current Sewer Rate Ordinance .....	5-4
14	Projected Cash Flow Summary .....	6-2

**CITY AND COUNTY OF HONOLULU  
DEPARTMENT OF ENVIRONMENTAL SERVICES**

**1998 WASTEWATER SYSTEM REVENUE BONDS  
ENGINEER'S REPORT**

**LIST OF FIGURES**

<b>Figure No.</b>		<b>Page No.</b>
ES-1	Service Areas and Major Facilities .....	1-2
ES-2	20-Year CIP by Project Category .....	1-8
ES-3	20-Year CIP by Project Main Purpose .....	1-8
1	Service Areas and Major Facilities .....	2-6
2	Summary of Existing Wastewater Treatment Facilities and Flows .....	2-8
3	Consent Decree Milestones Schedule .....	2-13
4	Historical and Projected Population .....	2-16
5	Wastewater Flow Projections .....	2-16
6	ESDU Growth Projections .....	2-17
7	Location of 1998-2000 CIP Projects .....	3-3
8	20-Year CIP by Project Category .....	4-2
9	20-Year CIP by Project Main Purpose .....	4-2
10	20-Year Capital Improvement Plan Projects .....	4-4
11	Sand Island WWTP Facilities Layout .....	4-6
12	Honouliuli WWTP Facilities Layout .....	4-7
13	Kailua WWTP Facilities Layout .....	4-8
14	Historical and Projected Capital Project Expenditures .....	4-11
15	20-Year Project Implementation Schedule .....	4-12
16	Comparison of Residential Sewer Service Charges .....	5-6
17	Comparison of Residential System Facility Charges .....	5-6
18	Historical and Projected Sewer Service and System Facility Charges .....	5-7
19	Total Revenues From Sewer Service and System Facility Charges .....	5-7
20	Revenue Sources Fiscal Year 1996 - 1997 .....	6-3

## 1.1 INTRODUCTION AND BACKGROUND

### Overview of Existing Wastewater Facilities

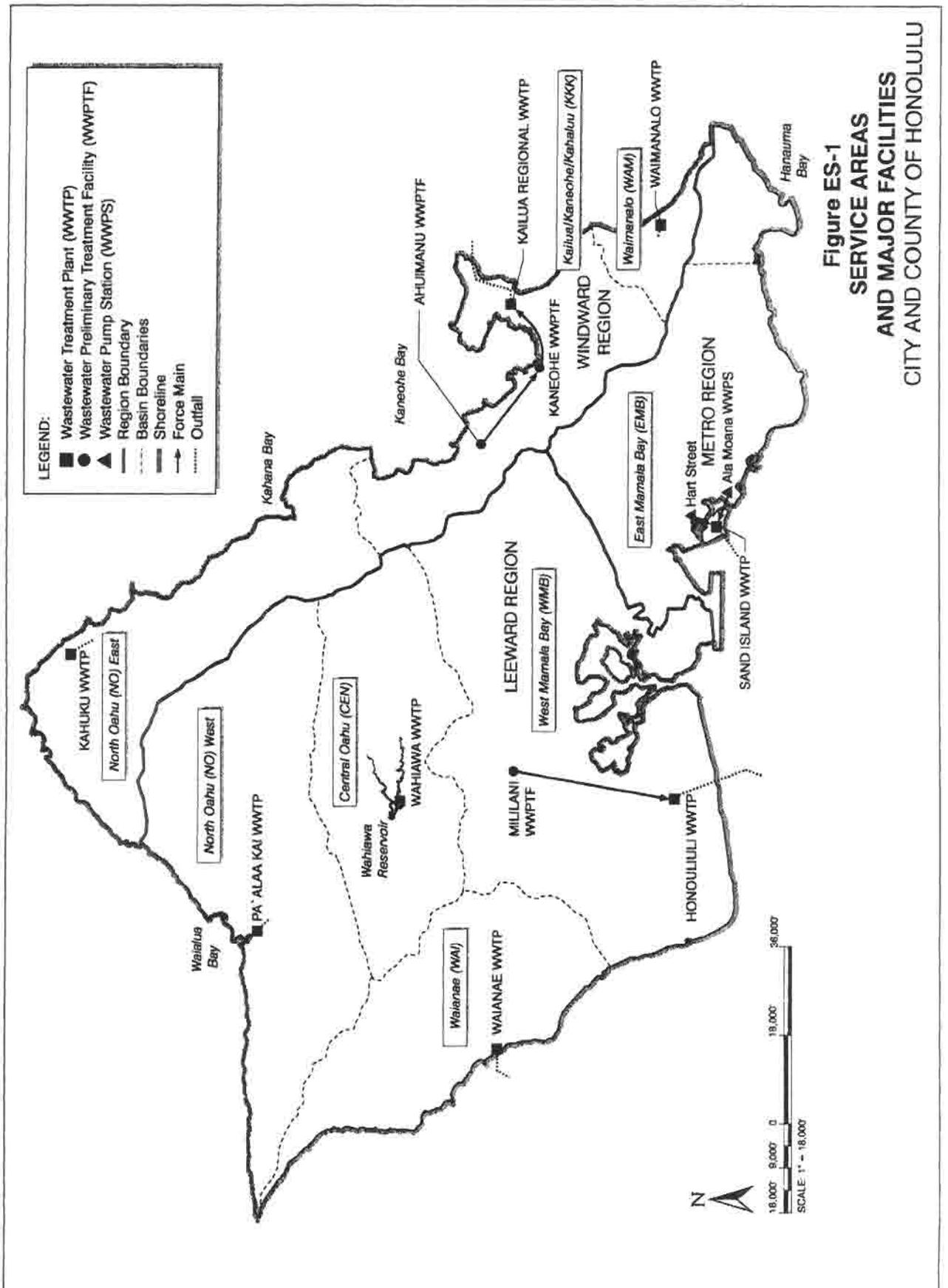
The City and County of Honolulu's Department of Environmental Services ("Department") is responsible for the operation, maintenance, compliance monitoring, and fiscal planning and execution for the City's wastewater system.

The wastewater systems service approximately 125,000 separate accounts and a population of approximately 600,000 of the island's total population of 850,000. The customer base includes the residential population, businesses and industries, and other users located in the 500-square-mile service area. Out of 125,000 accounts, approximately 120,000 are residential and represent approximately 71 percent of the total revenue from sewer service charges. The remaining 5,000 are non-residential and represent approximately 29 percent of the total revenue from sewer service charges.

The island of Oahu, which constitutes the City and County of Honolulu, is divided into eight wastewater basins: Central Oahu, East Mamala Bay, Kailua/Kaneohe/Kahaluu, North Oahu (East), North Oahu (West), Waianae, Waimanalo, and West Mamala Bay. Each basin is served by a major wastewater treatment plant (WWTP). The basins and the associated WWTP's are shown in Figure ES-1 and listed in Table ES-1.

Region	Basin	WWTP	Discharge Location
Metro	• East Mamala Bay	• Sand Island	• Ocean
Leeward	• West Mamala Bay	• Honouliuli	• Ocean
	• North Oahu (West)	• Pa'ālaa Kai	• Injection Wells
	• Waianae	• Waianae	• Ocean
	• Central Oahu	• Wahiawa	• Reservoir
Windward	• Kailua/Kaneohe/Kahaluu	• Kailua Regional <sup>(1)</sup>	• Ocean
	• North Oahu (East)	• Kahuku	• Injection Wells
	• Waimanalo	• Waimanalo	• Injection Wells

Notes:  
 (1) Includes Ahuimanu and Kaneohe Wastewater Preliminary Treatment Facilities.  
 WWTP = Wastewater Treatment Plant



Over 90 percent of the wastewater flows are treated by the three largest facilities: the Sand Island WWTP, which treats 70.5 million gallons per day (mgd) of average dry weather flow (ADWF) from Honolulu, the Honouliuli WWTP, which treats 25.8 mgd ADWF from the Pearl Harbor area, and the Kailua Regional WWTP, which treats 12.5 mgd ADWF from the eastern populated areas of the island.

### **Compliance with Discharge Requirements**

Seven out of the eight WWTPs are owned by the City and County of Honolulu, and operated by the Department. These WWTPs currently meet national and state discharge requirements. The eighth WWTP, the Waimanalo WWTP, which accounted for only 0.5 percent of the total 1997 wastewater flow, is owned by the State of Hawaii and operated by the Department. The Waimanalo WWTP has not consistently met discharge requirements.

The community of Honolulu highly values a clean environment and has raised concerns about improving wastewater treatment at several of the City and County of Honolulu's wastewater treatment facilities. To address these concerns, the Department has worked with the community, the EPA, and the State of Hawaii Department of Health to develop several consent decrees. The consent decrees reflect agreed upon actions to meet the objectives of the City and County of Honolulu, the EPA, and other major participants for improvements to the existing wastewater systems. The consent decrees confirm the overall direction and schedule for the wastewater management program.

### **Organization of the City and County of Honolulu Wastewater Enterprise**

The City and County of Honolulu's Department of Environmental Services is responsible for the operation, maintenance, compliance monitoring, and fiscal planning and execution for the City's wastewater system.

The Department is composed of nearly 630 employees in support of the wastewater program. The Office of Administrative Support provides fiscal control, personnel support, and Capital Improvement Plan ("CIP") program development activities. The Division of Wastewater Treatment and Disposal and the Division of Collection System Maintenance provide operation and maintenance of the treatment plants, pump stations, and the collection system. The Division of Environmental Quality provides performance monitoring, source control, and laboratory services. An additional 400 employees support the solid waste collection and disposal program.

The Department of Environmental Services was created July 1, 1998 as part of a City-wide reorganization to streamline operations. Previously, the Department of Wastewater Management, created by a City Charter change effective July 1, 1993, provided operation, maintenance, planning, design and construction of City wastewater facilities. Prior to that time, wastewater management was a division under the Department of Public Works.

Wastewater facility planning, design and construction activities have been consolidated in the City's Department of Design and Construction to better leverage the talents of the City-wide resources. Similarly, wastewater permitting has been consolidated in the City's Department of

Planning and Permitting to provide one-stop permitting service to customers and better relate approval of development plans with City-wide planning. These changes should positively benefit and improve the already quality wastewater program.

### **Capital Program Planning and Future Direction**

The Department has developed a comprehensive long-term planning program for wastewater management which has led to the completion of facility plans and preliminary designs for most of the major wastewater facilities on the island. The facility plans for the individual WWTPs are incorporated in the 20-year CIP.

The Department retains the responsibility for insuring that appropriate planning for the future continues as the program is executed, modified and planned beyond the 20-year period.

### **Wastewater Flow Projections**

The wastewater flow and strength projections are based on the anticipated growth rates included in the City and County of Honolulu's General Plan. Growth is not a significant factor in driving the overall need for 20-year CIP projects. Only 17 percent of the 20-year CIP costs are associated with projects that are required to accommodate growth.

## **1.2 1998-2002 CIP PROJECTS**

### **Need for the 1998-2002 Projects**

The 1998-2002 CIP projects fall into three general categories: collection system, wastewater treatment plant, and effluent reuse/disposal. The need for projects in each category is outlined below.

### **Collection System Improvement Projects**

The collection system improvement projects are needed to replace or rehabilitate severely corroded pipe and to reduce major infiltration/inflow conditions. Replacement of severely corroded pipe will reduce infiltration/inflow during wet weather events, and will result in lower operation and maintenance costs for both the collection systems and associated WWTPs.

The Department has planned for the design or construction of 35 collection system improvement projects between fiscal years ending 1998-2002. The total expenditures for these projects through the year 2002 is approximately \$163 million, with an expected \$61 million to be expended within the first three years and approximately \$102 million to be expended in the remaining two years.

Collection system improvement projects are the highest priority projects due to extremely deteriorated and corroded pipe conditions that have resulted in excessive infiltration, inflow, and overflows during wet weather conditions. These projects will help to reduce the use of cesspools, which contribute to potential public health concerns.

## **Wastewater Treatment Plant Improvement Projects**

The WWTP improvement projects are needed to upgrade existing facilities to satisfy regulatory requirements, to improve the ability of the facilities to handle peak wet weather flows, and in some cases to accommodate growth. The Department has planned for the design and/or construction of 22 WWTP improvement projects totaling approximately \$78 million between fiscal years ending 1998-2002. Projects between fiscal years ending 1998-2002 include the Sand Island WWTP Unit 1 Phase 2A Headworks Project, the Honouliuli WWTP 1A Solids Project, and the Kaneohe WWTP Modifications Phase 3 Project.

## **Effluent Reuse/Disposal Projects**

The effluent reuse/disposal projects are needed to meet consent decree requirements to provide effluent reuse/disposal as a component of the overall community's water supply, and to meet development needs.

The Department has planned for the design and/or construction of 3 major effluent reuse/disposal projects during fiscal years ending 1998-2002, and total approximately \$16 million. As discussed previously, effluent reuse projects are planned to meet consent decree requirements, to meet development requirements, and to improve the water quality of the Wahiawa Reservoir. The major effluent reuse projects are the Honouliuli Wastewater Treatment Plant Effluent Reuse Project, the Wahiawa Wastewater Treatment Plant Conversion and Reuse Project, and the potential Mililani Water Reuse Project.

## **Project Management**

The Department uses a combination of professional engineering staff and specialty subcontractors to provide construction management services. The Department leverages in-house permanent staff by hiring outside project staff only on an as-needed basis for construction management activities.

## **Summary of Estimated Project Costs**

The summary of costs for 1998-2002 CIP projects by project category is presented in Table ES-2. These costs include planning, design, and construction costs as well as all engineering, administrative, and legal expenses. As shown in Table ES-2, the City and County of Honolulu Wastewater System Revenue Bonds (First Bond Resolution), 1998 Senior Series (the "1998 Senior Bonds"), totaling approximately \$50 million, will partially finance the 1998-2002 CIP projects, with the balance to be primarily met from existing funds of the Department, annual revenues, and from the proceeds of future revenue bond issues.

## **1.3 FUTURE PROJECTS**

### **Long-Term Expansion and Rehabilitation Needs**

A summary of the 20-year CIP total costs by project category is provided in Figure ES-2. Approximately 71 percent of the total project costs are associated with collection system improvements, 27 percent with WWTP improvements, and 2 percent with effluent reuse projects.

A summary of the 20-year CIP total cost by primary project purpose is presented in Figure ES-3. As shown in Figure ES-3, approximately 84 percent of the total costs are associated with non-discretionary projects that must be completed in order to satisfy consent decree, permit/regulatory, expansion, and safety/public health requirements. The remaining 16 percent of the total costs are associated with discretionary projects that have been identified to improve wastewater treatment and collection systems. The Department has identified these discretionary projects in order to address reliability, improvement, and preventive maintenance concerns.

### **Cost of CIP Projects**

Estimated capital project costs for future facilities have been developed for each of the eight wastewater basins. The capital cost estimates include land acquisition, planning, design, construction, construction management, and all other costs required to deliver a completed project.

### **Timing of CIP Projects**

An implementation schedule for the 20-year CIP projects has been developed, which includes the timing of major CIP projects necessary to accommodate increased wastewater flows and loadings due to anticipated growth, to meet consent decree scheduled activities, and for replacement and rehabilitation needs. Some of the 1998-2002 CIP projects are already funded through planning and design. Others will be funded from the proceeds of the 1998 Senior Bonds, the existing capital reserves, and future bond issues.

### **Growth Rate Considerations**

The cost of projects that are required to accommodate growth is projected to be only 17 percent of the 20-year CIP total costs. Most of the projects in the CIP are driven by factors other than growth such as consent decree requirements, rehabilitation and replacement of existing aging infrastructure, and public safety.

**Table ES-2 Summary of Estimated CIP Project Expenditures, 1998-2002**  
**City and County of Honolulu Department of Environmental Services**

Project	( Thousands of Dollars (1) )						
	Fiscal Year					Total Expenditures	
	97/98	98/99	99/00	00/01	01/02	97/98 - 99/00	97/98 - 01/02
<b>Expenditure Schedule</b>							
<b>Collection System Projects</b>							
Consent Decree Projects	\$75	\$469	\$551	\$900	\$1,269	\$1,096	\$3,265
Other Non-Discretionary Projects	1,285	14,739	32,359	29,853	27,088	48,383	105,324
Other Discretionary Projects	30	1,770	9,729	16,135	27,240	11,529	54,904
Subtotal : Collection System	\$1,390	\$16,978	\$42,639	\$46,888	\$55,598	\$61,007	\$163,493
<b>Treatment Plant Projects</b>							
Consent Decree Projects	\$90	\$1,680	\$6,240	\$3,215	\$110	\$8,010	\$11,335
Other Non-Discretionary Projects	0	30	2,228	12,368	22,684	2,258	37,310
Other Discretionary Projects	190	3,990	6,597	6,232	12,012	10,777	29,021
Subtotal : Treatment Plant	\$280	\$5,700	\$15,065	\$21,815	\$34,807	\$21,045	\$77,666
<b>Reuse Projects</b>							
Consent Decree Projects	\$0	\$1,710	\$3,675	\$3,022	\$2,434	\$5,385	\$10,841
Expansion Projects	0	100	290	1,076	3,662	390	5,128
Subtotal : Reuse	\$0	\$1,810	\$3,965	\$4,097	\$6,096	\$5,775	\$15,968
Ongoing G.O. Bond Funded Projects	\$36,230	\$30,660	\$14,830	\$2,700	\$0	\$81,720	\$84,420
<b>Total CIP</b>	<b>\$37,900</b>	<b>\$55,148</b>	<b>\$76,499</b>	<b>\$75,500</b>	<b>\$96,500</b>	<b>\$169,548</b>	<b>\$341,547</b>
<b>Anticipated Funding Sources for CIP Projects</b>							
G.O. Bond Proceeds (previously issued)						\$81,720	\$84,420
SRF Loan Proceeds (new)						10,000	20,000
Sewer Facility Charges (connection fees)						5,174	8,876
Sewer Service Charges (pay as you go)						14,100	37,900
1998 Senior Series Revenue Bonds						50,000	50,000
Revenue Bonds (future)						30,000	165,000
<b>Total Sources of Funds Available (2)</b>						<b>\$190,994</b>	<b>\$366,196</b>
<b>Notes:</b>							
(1) All costs are presented in inflated dollars, assuming 3% inflation per year, beginning in Fiscal Year 1999/00.							
(2) Excess revenues available will be applied towards CIP project expenditures in future years.							

20-year expenditure total = \$1.7 Billion

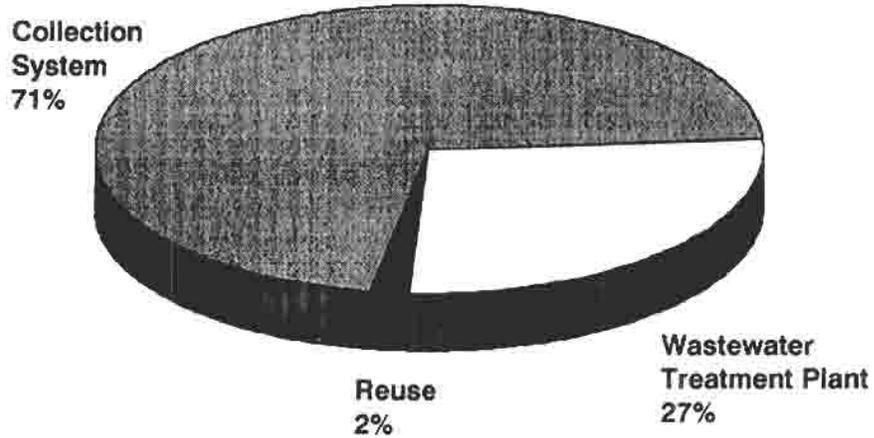


Figure ES-2  
20-YEAR CIP BY PROJECT CATEGORY  
CITY AND COUNTY OF HONOLULU

20-year expenditure total = \$1.7 Billion

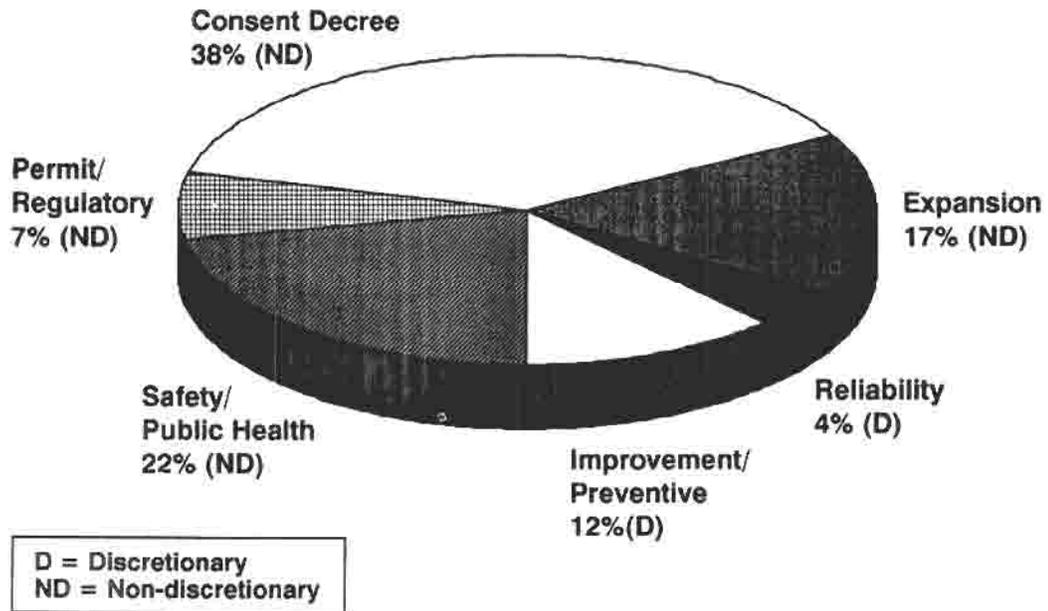


Figure ES-3  
20-YEAR CIP BY PROJECT MAIN PURPOSE  
CITY AND COUNTY OF HONOLULU

## **1.4 CURRENT AND FUTURE SEWER SERVICE AND SYSTEM FACILITY CHARGES**

### **Sources and Uses of Funds**

The Department's revenues are currently derived from three major sources: monthly sewer service charges, system facility charges, and interest earned on fund balances. Of these sources, sewer service charges provide the major source of revenue.

### **Existing Rates and Charges**

The current sewer service charge for single-family residences is approximately \$33.65 per month. Sewer service charges have been held constant since September 1, 1993. New connections have averaged approximately 2,500 equivalent single-family dwelling units (ESDU) per year over the past five years. System facility charges have been held constant at \$1,146 per ESDU since 1991-1992.

### **Projected Rates and Charges**

Sewer service charges and system facility charges are projected to increase beginning in fiscal year ending 1999-2000 to accommodate the needs of the capital improvement program.

## **1.5 SUMMARY OF PROJECTED REVENUES AND EXPENSES**

A ten-year projection through fiscal year ending 2006-2007 for the Department's operations has been prepared and is presented in Table ES-3. As shown in Table ES-3, sewer service charges are projected to continue to be the major source of revenues to cover debt service.

The City Council has adopted a set of Debt and Financial Policies for its wastewater system that target, among other things, the City to maintain a 1.60 times coverage for its Senior Revenue Bonds and 1.25 times coverage for all Revenue Bonds (Senior and Junior). It is expected that the City will adopt annual increases in sewer services charges necessary to meet the debt service coverage requirements prescribed in its Debt and Financial Policies. Current projections show that the debt service coverage requirements will be achieved by: 1) increasing sewer service charges between 3.0 and 5.4 percent annually beginning in fiscal year ending 1999/2000, and 2) increasing system facility charges 3.0 percent annually beginning in fiscal year ending 1999/2000.

## **1.6 CONCLUSIONS**

Based upon our studies, the assumptions discussed in this report, and our review of the data and analysis provided by the City and County of Honolulu and its consultants, we conclude the following:

**Table ES-3 Projected Cash Flow Summary**  
City and County of Honolulu Department of Environmental Services

(Revenue and Expense Numbers in Millions)		(FY Ending June 30)									
Fiscal Year	1998 (7)	1999	2000	2001	2002	2003	2004	2005	2006	2007	TOTAL
<b>Growth Assumptions</b>											
Total ESDUs at Start of Year	275,691	277,351	278,661	280,161	281,661	283,161	284,661	286,161	287,661	289,161	
Total New ESDUs Added	1,660	1,310	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	14,970
<b>Revenues</b>											
Sewer Service Charges	111.5	111.5	116.2	120.3	125.6	131.0	137.8	144.9	153.5	162.6	1,315.0
System Facility Charges (SFC)	1.9	1.5	1.8	1.8	1.9	1.9	2.0	2.1	2.1	2.2	19.1
Interest on Unrestricted Reserves (1)	0.0	2.5	2.8	2.5	2.9	3.0	3.0	2.8	2.5	2.3	24.3
Other Revenues (2)	1.6	0.9	1.0	1.1	1.1	1.2	1.3	1.3	1.4	1.5	12.3
<b>TOTAL REVENUES</b>	<b>115.0</b>	<b>116.4</b>	<b>121.8</b>	<b>125.7</b>	<b>131.5</b>	<b>137.2</b>	<b>144.0</b>	<b>151.1</b>	<b>159.6</b>	<b>168.6</b>	<b>1,370.8</b>
<b>Expenses</b>											
O&M Costs (3)	74.1	68.6	71.5	73.7	76.0	78.3	80.8	83.4	86.0	88.8	781.1
<b>TOTAL EXPENSES</b>	<b>74.1</b>	<b>68.6</b>	<b>71.5</b>	<b>73.7</b>	<b>76.0</b>	<b>78.3</b>	<b>80.8</b>	<b>83.4</b>	<b>86.0</b>	<b>88.8</b>	<b>781.1</b>
<b>TOTAL NET REVENUES</b>	<b>40.9</b>	<b>47.9</b>	<b>50.3</b>	<b>52.0</b>	<b>55.5</b>	<b>58.9</b>	<b>63.2</b>	<b>67.7</b>	<b>73.6</b>	<b>79.8</b>	<b>589.7</b>
<b>Debt Service</b>											
Sr. Revenue Bond Debt Service (4)	0.0	0.0	3.2	5.3	10.1	15.2	20.8	27.0	33.3	39.6	154.6
Jr. Revenue Bond Debt Service (4)(5)	0.0	0.0	10.7	10.2	10.2	10.2	10.2	10.2	10.2	10.2	82.1
Reimbursable G.O. Debt Service (6)	34.3	19.4	12.6	12.5	12.8	13.1	13.0	12.4	11.9	11.6	153.5
SRF Loans (Existing and Future)	4.5	5.1	5.2	5.6	5.9	6.3	6.7	7.0	7.4	7.8	61.4
<b>Total Debt Service</b>	<b>38.8</b>	<b>24.4</b>	<b>31.6</b>	<b>33.6</b>	<b>39.0</b>	<b>44.8</b>	<b>50.7</b>	<b>56.7</b>	<b>62.7</b>	<b>69.1</b>	<b>451.6</b>
<b>TOTAL NET REVENUES AVAILABLE FOR OTHER REQUIREMENTS</b>	<b>2.1</b>	<b>23.5</b>	<b>18.7</b>	<b>18.4</b>	<b>16.5</b>	<b>14.1</b>	<b>12.5</b>	<b>10.9</b>	<b>10.8</b>	<b>10.6</b>	<b>138.1</b>
Sr. Revenue Bond Coverage Ratio (8)	-	-	15.11	9.38	5.33	3.74	2.94	2.43	2.15	1.96	
Total Revenue Bond Coverage Ratio	-	-	3.50	3.22	2.65	2.24	1.97	1.76	1.64	1.56	
Fixed Charge Coverage Ratio:	-	1.90	1.53	1.49	1.38	1.27	1.21	1.16	1.14	1.12	
<b>Capital Project Financing</b>											
Capital Expenditures	37.9	55.1	76.5	75.5	96.5	112.1	114.5	112.5	112.2	109.8	902.5
SRF Loan Proceeds	0.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	45.0
Net Revenue Bond Proceeds	0.0	50.0	30.0	50.0	85.0	85.0	90.0	90.0	90.0	90.0	660.0
<b>Major Reserves (end of year)</b>											
Unrestricted Reserve Balance	42.1	56.8	49.0	58.6	60.1	59.2	55.8	50.8	45.7	40.5	
G.O. Bond Proceeds Fund	47.8	17.1	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Improvement Account Excess/(Shortfall)	-1.7	37.6	18.1	9.6	18.7	12.5	9.5	8.4	7.6	9.1	
<b>Total Ending Balance</b>	<b>88.2</b>	<b>111.5</b>	<b>69.5</b>	<b>68.2</b>	<b>78.8</b>	<b>71.7</b>	<b>65.3</b>	<b>59.2</b>	<b>53.3</b>	<b>49.5</b>	
<b>Projected Charges Required</b>											
Monthly Sewer Service Charge (5)	\$33.65	\$33.65	\$34.66	\$35.70	\$37.06	\$38.46	\$40.23	\$42.08	\$44.36	\$46.75	
Increase Over Prior Year	0.0%	0.0%	3.0%	3.0%	3.8%	3.8%	4.6%	4.6%	5.4%	5.4%	
System Facility Charge (5)	\$1,146	\$1,146	\$1,180	\$1,216	\$1,252	\$1,290	\$1,329	\$1,368	\$1,409	\$1,452	
Increase Over Prior Year	0.0%	0.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	
notes:											
(1) Unrestricted Reserves are all reserves except Revenue Bond Improvement Account and G.O. Bond balance. Interest on G.O. Bond balance remains in City General Fund.											
(2) Includes cesspool services, connections, laterals, and other miscellaneous revenues.											
(3) Note that FYE 98 O&M expenses include one-time only \$3.8 million reimbursement to City General Fund.											
(4) Assumes December 1998 issues of Revenue Bonds, with interest payments beginning in FY 99/00.											
(5) Junior Series 1998 proceeds used to advance refund approximately \$220 million of reimbursable G.O. Bonds.											
(6) Debt service on reimbursable G.O. Bonds is paid from the City's General Fund. However, reimbursement to the General Fund is required for these payments from sewer service charges.											
(7) Values for FYE 1998 are projected actual, but unaudited.											
(8) Revenues for coverage calculations do not include system facility charges.											
FYE = Fiscal Year Ending											

## **Compliance with Discharge Requirements**

Except for periodic events at the State-owned Waimanalo WWTP, which accounts for only 0.5 percent of total 1997 flow, the wastewater treatment facilities are meeting current regulatory requirements and are operated and maintained in accordance with standard utility practices.

The City and County of Honolulu's Wastewater System collection and pumping facilities do not meet all of the current and anticipated federal and state regulatory requirements, and will require additional capacity necessary to serve the projected growth in the service area. These collection and pumping facilities constitute much of the need for capital facility improvements.

Completion of the CIP projects described in this report will permit the City and County of Honolulu to attain and to remain in compliance with all federal, state, and local regulations regarding treatment and discharge as described in the current NPDES permit and consent decrees.

## **20-Year CIP**

An estimated \$1.4 billion of non-discretionary CIP projects for various treatment, collection and other facilities are required to be constructed over the next 20 years to eliminate the current and projected critical deficiencies, to meet consent decree milestones, and to provide a wastewater system in a satisfactory operating condition based on projected wastewater usage and environmental and other regulatory requirements. The remaining approximately \$0.3 billion of CIP projects are discretionary and have been identified to improve wastewater treatment and collection systems. These CIP projects are to be funded from proceeds of bonds, including the 1998 Wastewater Revenue Bonds and from net revenues and other charges.

The \$1.7 billion CIP is technically sound and conforms with good engineering practice and the estimated total costs of the CIP have been realistically assessed.

The cost-effectiveness of the wastewater system operations and maintenance activities is anticipated to improve after the CIP projects are accomplished.

## **1998-2002 CIP Projects**

The projects to be financed by the 1998 Senior Bonds are the highest priority projects required to meet consent decree requirements and protect public health. They are included in recently completed facility plans, which identify the need for projects through the year 2017, and provide the most cost effective facilities evaluated in those plans.

The estimated project costs and construction schedules that have been developed for the 1998-2002 projects are reasonable and achievable.

## **Department Management**

The operations of the wastewater system are directed by a professional staff for the disciplines of operations specialists, maintenance (including electrical, instrumentation and mechanical), laboratory personnel and other technical support personnel.

## **Financial Projections**

The financial projections with respect to the wastewater system are based on reasonable and conservative assumptions and should fairly reflect the financial performance of the wastewater system.

Historical, current, and projected customer rates and charges for the City and County of Honolulu are relatively high compared to the rates and charges of other agencies, but are reasonable considering a number of site specific factors.

In the opinion of Carollo Engineers, projected sewer service and system facility charges will provide revenue sufficient to:

- Meet all projected costs of operation, maintenance and routine replacement of sewer system facilities.
- Meet the existing debt service obligations and the projected requirements for the 1998 Senior Bonds, the City and County of Honolulu Wastewater System Revenue Bonds (Second Bond Resolution), Junior Series 1998 (the "1998 Junior Bonds") and future bond issues.
- Provide sufficient revenue to pay the costs of the City and County of Honolulu's CIP through the end of the forecast period.
- Meet reserve requirements of bond resolution.

The funds obtained from the sale of the 1998 Senior Bonds, current cash reserves, fees collected over the next few years, and future bond issues will be adequate to fund the current projects. The funds obtained from the sale of the 1998 Junior Bonds will be used to refund certain reimbursable General Obligation bonds of the City and County issued to finance previously identified projects for the wastewater system.

The rate at which growth occurs will not affect the ability of the City and County of Honolulu to meet its debt obligations because the growth is a small component of the overall costs and revenues associated with the financial projections. In general, many of the CIP projects are necessary and must proceed based on consent decree requirements and public safety and health concerns with or without any additional connections.

This report has been prepared at the request of the City and County of Honolulu for appending to the Official Statements relating to the issuance of the 1998 Senior Bonds and the 1998 Junior Bonds. The conclusions, observations, and recommendations contained herein constitute only the

opinions of Carollo Engineers. The various background documents, statements and other information supplied by the City and County of Honolulu, its employees, and other consultants have been relied upon as being accurate in the performance of these analyses. However, no assurances are given nor warranties implied by Carollo as to the accuracy of such information. Carollo makes no certification and gives no assurances except as explicitly set forth in this report.

**[THIS PAGE INTENTIONALLY LEFT BLANK]**

**INTRODUCTION AND BACKGROUND**

This report has been prepared in support of the Official Statements prepared for the issuance of approximately \$50,000,000 in principal amount of 1998 Senior Bonds and approximately \$250,000,000 of 1998 Junior Bonds. Proceeds from the Wastewater System Revenue Bonds, 1998 Senior Series, will be used to fund the design and construction of a number of capital improvement projects throughout the City and County of Honolulu's wastewater system. Net funding available for projects is anticipated to be approximately \$50 million. The capital improvement projects are part of an overall, comprehensive Capital Improvement Plan (CIP) spanning approximately 20 years through the year 2017.

Proceeds from the Wastewater System Revenue Bonds, Junior Series 1998 will be used to refund approximately \$220 million of reimbursable G.O. Bonds of the City. The refunding of certain Reimbursable G.O. Bonds will allow the City to achieve a more level, overall debt service profile for its existing debt. The resulting debt structure will also allow the City to match more closely the average life of its existing debt with the useful life of the previously financed wastewater projects.

**2.1 SCOPE OF REPORT**

The scope of this report includes:

- A brief history of the City and County of Honolulu's Wastewater Facilities, the adequacy and condition of the existing facilities, and a summary of the major planning activities that have recently been completed.
- A description of the program and projects to be funded with the 1998 Wastewater System Revenue Bonds, Senior Series 1998 and the associated costs and implementation schedules.
- A summary of the timing and costs of ongoing and future projects as developed for the City and County of Honolulu's wastewater management system.
- A description of the wastewater sewer service charges and system facility charges over the forecast period.
- A summary of projected revenues and expenditures over the forecast period.
- The opinions of Carollo Engineers as to 1) the adequacy and condition of the existing facilities and the need for the 1998-2002 CIP Projects; 2) the reasonableness of the capital improvement program project cost estimates and schedules; 3) the reasonableness of the assumptions for the financial projections; 4) the adequacy and competitiveness of the City

and County of Honolulu's wastewater rate structure, and the adequacy of future revenues to cover operation and maintenance costs, expenses, debt service, coverage, future capital costs, and contingencies.

## **2.2 ENGINEER'S QUALIFICATIONS**

Carollo Engineers, P.C. (Carollo) in association with R.M. Towill Corporation (RMTC) was selected to prepare this report as a result of their familiarity and knowledge of the City and County of Honolulu's wastewater treatment and conveyance facilities and operation and maintenance practices. Carollo Engineers was responsible for the overall report and financial analysis, while RMTC was responsible for analysis of treatment plant flows, performance and evaluation of treatment plant needs.

Carollo Engineers is a professional services engineering firm specializing in water and wastewater environmental engineering with 15 main offices and several project offices throughout the west. These offices are located in Walnut Creek, Sacramento, Fresno, Bakersfield, Santa Ana, San Diego, San Jose, and San Bernardino, California; Phoenix, Arizona; Salt Lake City, Utah; Las Vegas, Nevada; Portland, Oregon; El Paso, Texas; Boise, Idaho; and Milwaukee, Wisconsin. Since its founding in 1933, Carollo has successfully completed more than 6,000 water, wastewater, energy, solid waste, storm drain, and other related infrastructure projects for public agencies, governmental agencies, and industry. Carollo is currently ranked number 148 in the top 500 engineering firms in the United States by Engineering News Record.

Carollo has a total staff of over 400 professional employees including registered engineers in such disciplines as civil, structural, environmental, mechanical, chemical, sanitary, and corrosion engineering along with architects, planners, hydrologists and specialists in other areas. Subconsultants are retained as needed in specialized fields.

Carollo is familiar with the City and County of Honolulu's wastewater facilities and has completed several projects for the City and County of Honolulu in conjunction with RMTC, including Sand Island Wastewater Treatment Plant Modifications, Sand Island Wastewater Treatment Plant Predesign, Honolulu Spill Prevention Plan, Department of Defense (DOD) Central Oahu Water Quality Study, and the Central Oahu Wastewater Planning Study. Carollo Engineers has developed award-winning master plans for major wastewater facilities in the west in recent years, including the development of the Sacramento Regional Wastewater Treatment Plant (SRWTP) Master Plan in 1992. This Master Plan was awarded the American Academy of Environmental Engineers (AAEE) 1993 Excellence Honor Award, and the 1992 California Water Environment Association (CWEA) Engineering Achievement Award. Carollo has also completed master planning for \$6.4 billion in new wastewater facilities in the last five years for major wastewater agencies including the County Sanitation Districts of Orange County, Reno-Sparks Washoe County Nevada, the City of Fresno, California, and several other wastewater agencies.

R.M. Towill Corporation began and has been in operation in Hawaii since 1930 and was incorporated in 1954. RMTC is very familiar with the City and County of Honolulu's wastewater treatment and conveyance systems. Major areas of services performed by the firm include:

- Environmental Engineering
- Civil Engineering
- Surveying and Photogrammetry
- Planning
- Construction Management

RMTC's portfolio of environmental engineering work accelerated in the 1970s coinciding with the passage of the Clean Water Act. Two major projects in recent years illustrate their qualifications and knowledge especially of wastewater systems located on Oahu. The City and County of Honolulu's "Spill Prevention/Spill Containment" project required RMTC to assess and develop spill reduction recommendations for all of the City's WWTP's and pump stations and recommend programs for management of the collection system. The Corps of Engineers "Wastewater Planning Study, Oahu, Hawaii" required RMTC to assess the future of all military facilities on the Island of Oahu including potential synergistic relations with the City and other non-military entities.

In addition to the above projects, RMTC has done major design work on many of the City and County's WWTP's and pump stations including current work on their largest facility, the Sand Island WWTP.

### **2.3 OVERVIEW OF THE DEPARTMENT OF ENVIRONMENTAL SERVICES**

The City and County of Honolulu's Department of Environmental Services is responsible for the operation, maintenance, compliance monitoring and fiscal planning and execution for the City's wastewater system.

The Department is composed of nearly 630 employees in support of the wastewater program. The Office of Administrative Support provides fiscal control, personnel support and Capital Improvement Plan (CIP) program development activities. The Division of Wastewater Treatment and Disposal and the Division of Collection System Maintenance provide operation and maintenance of the treatment plants, pump stations and the collection system. The Division of Environmental Quality provides performance monitoring, source control and laboratory services. An additional 400 employees support the solid waste collection and disposal program. The Department consists of four divisions and an Office of Administrative Support as presented in Table 1.

<b>Table 1 Listing of Divisions of the Department of Environmental Services City and County of Honolulu Department of Environmental Services</b>	
<b>Division</b>	<b>Responsibility</b>
Wastewater Treatment and Disposal	Operation of Wastewater Treatment Plants and Pump Stations
Collection System Maintenance	Maintenance of Collection System Sewer Lines
Environmental Quality	Pretreatment Program, WWTP Permit Compliance, Storm Water Permit Compliance
Refuse Collection and Disposal	Collection and Disposal of Solids Waste
Office of Administrative Support	Fiscal Control, Personnel Support, and Capital Improvement Plan (CIP) Program Development

The Department of Environmental Services was created July 1, 1998 as part of a City-wide reorganization to streamline operations. Previously, the Department of Wastewater Management created by a City Charter change effective July 1, 1993, provided operation, maintenance, planning, design and construction of City wastewater facilities. Prior to that time, wastewater management was a division under the Department of Public Works.

Wastewater facility planning, design and construction activities have been consolidated in the City's Department of Design and Construction to better leverage the talents of the City-wide resources. Similarly, wastewater permitting has been consolidated in the City's Department of Planning and Permitting to provide one-stop permitting service to customer and better relate approval of development plans with City-wide planning. These changes should positively benefit and improve the already quality wastewater program.

In recent years, the Department has received national recognition for excellence, including the following awards:

- 1986 Operation and Maintenance Excellence Award – USEPA
  - Maunawili Park WWTP (plant no longer in existence)
  - Pa'alaa Kai WWTP
- 1993 Gold Award – Association of Metropolitan Sewerage Agencies
  - Wahiawa WWTP
  - NPDES Permit Compliance for Honouliuli WWTP
- 1995 Gold Award – Association of Metropolitan Sewerage Agencies
  - Wahiawa WWTP
- AMSA Gold Award for 1993, 1994, 1995, 1996
  - Kahuku WWTP

- 1996 Gold Award – Association of Metropolitan Sewerage Agencies
  - Waianae WWTP
- 1997 Gold Award – Association of Metropolitan Sewerage Agencies
  - Waianae WWTP
  - Wahiawa WWTP
  - Kailua Regional WWTP
  - Honouliuli WWTP
- AMSA Platinum Award for 1997
  - Kahuku WWTP
- EPA 1998 First-Place Award for exceptional operations and maintenance, Small Non-Discharging Facility
  - Kahuku WWTP

The Department uses a combination of professional engineering staff and specialty subcontractors to provide construction management services. The Department leverages in-house permanent staff by hiring outside project staff only on an as-needed basis for construction management activities. During construction, detailed up-to-date critical path method (CPM) project schedules are maintained. The professional staff provide overall project management and onsite construction inspection.

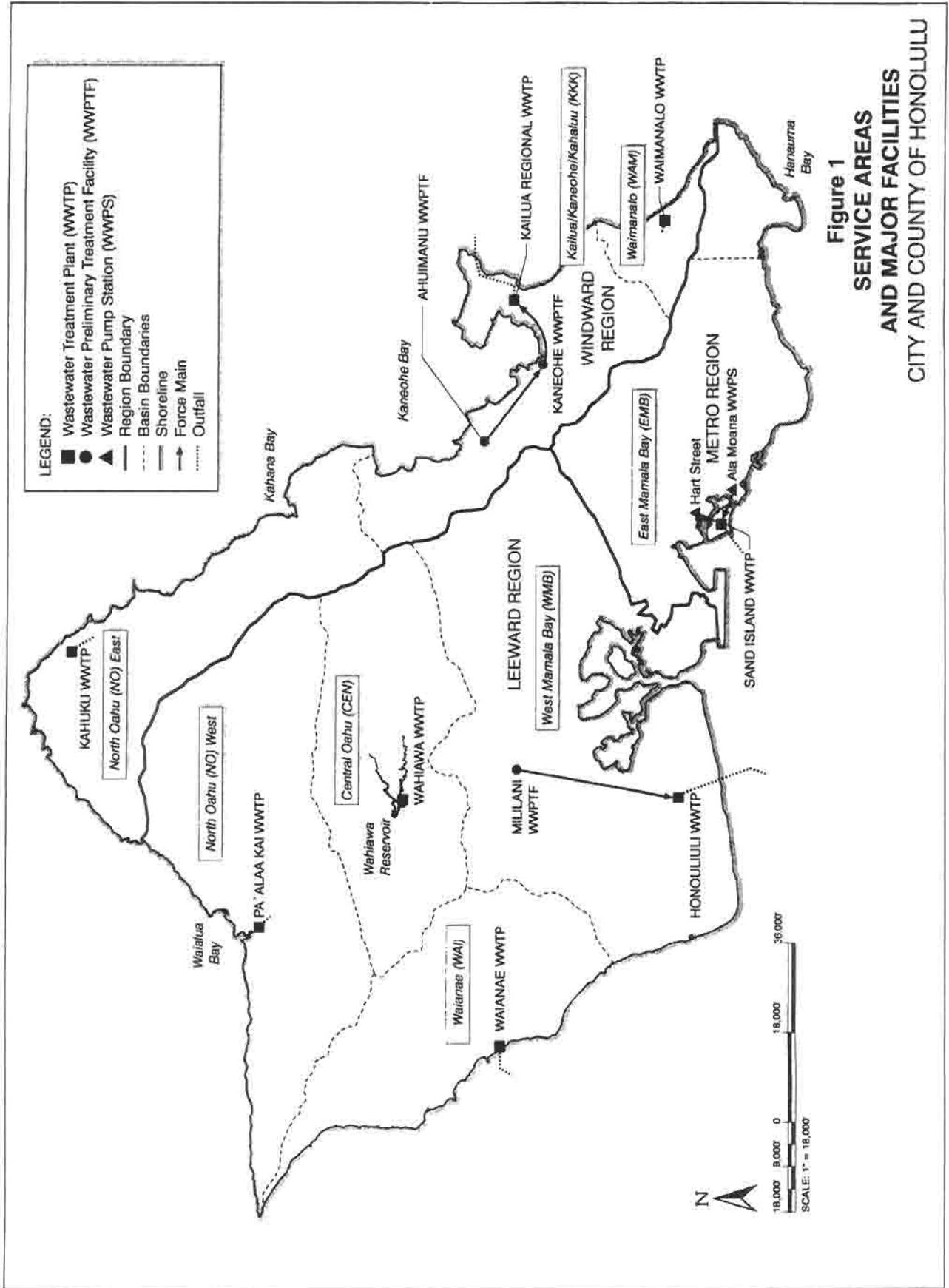
The City and County of Honolulu provides project management training sessions for staff engineers who are involved in construction management. The purpose of these sessions is to enhance project management skills for engineers and managers administering capital projects.

## **2.4 OVERVIEW OF EXISTING WASTEWATER FACILITIES**

The wastewater systems service approximately 125,000 separate accounts and a population of approximately 600,000 of the Island's total population of 850,000. The customer base includes the residential population, businesses and industries, and other users located in the 500-square-mile service area. Out of 125,000 accounts, 120,000 are residential and represent approximately 71 percent of the total revenue from sewer service charges. The remaining 5,000 are non-residential and represent approximately 29 percent of the total revenue from sewer service charges.

### **General Description of Existing System**

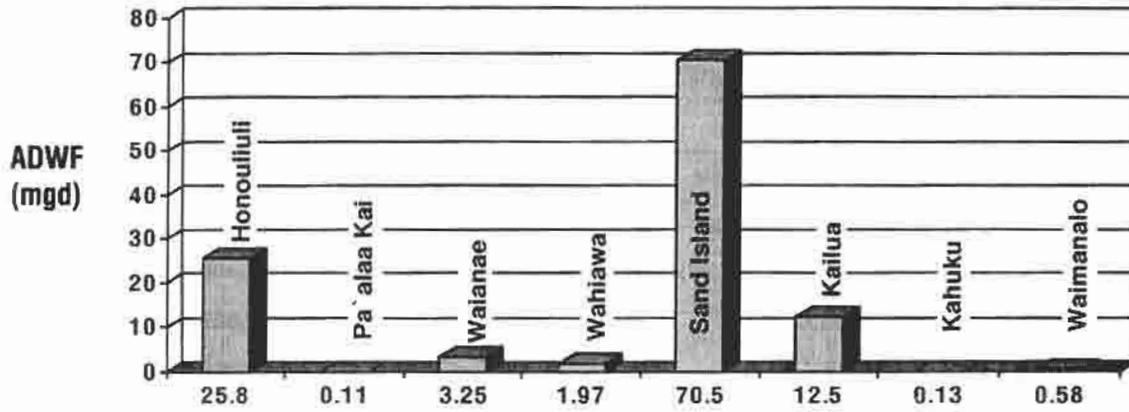
The island of Oahu, which constitutes the City and County of Honolulu, is divided into eight wastewater basins: Central Oahu, East Mamala Bay, Kailua/Kaneohe/Kahaluu, North Oahu (East), North Oahu (West), Waianae, Waimanalo, and West Mamala Bay. Each basin is served by a major WWTP. The basins and the associated WWTP's are shown in Figure 1 and listed in Table 2.



<b>Table 2 Wastewater Drainage Basins and Major Facilities City and County of Honolulu Department of Environmental Services</b>			
<b>Region</b>	<b>Basin</b>	<b>WWTP</b>	<b>Discharge Location</b>
Metro	• East Mamala Bay	• Sand Island	• Ocean
Leeward	• West Mamala Bay	• Honouliuli	• Ocean
	• North Oahu (West)	• Pa'alaa Kai	• Injection Wells
	• Waianae	• Waianae	• Ocean
	• Central Oahu	• Wahiawa	• Reservoir
Windward	• Kailua/Kaneohe/Kahaluu	• Kailua Regional <sup>(1)</sup>	• Ocean
	• North Oahu (East)	• Kahuku	• Injection Wells
	• Waimanalo	• Waimanalo	• Injection Wells
Notes: (1) Includes Ahuimanu and Kaneohe Wastewater Preliminary Treatment Facilities.			

Over 90 percent of the wastewater flows are treated by the three largest facilities: the Sand Island WWTP, which treats 70.5 million gallons per day (mgd) of average dry weather flow (ADWF) from Honolulu, the Honouliuli WWTP, which treats 25.8 mgd ADWF from the Pearl Harbor area, and the Kailua Regional WWTP, which treats 12.5 mgd ADWF from the eastern populated areas of the island. Flows for each wastewater facility are presented in Figure 2 and summarized in Table 3. Descriptions of the wastewater basins and major facilities are provided below.

<b>Table 3 Wastewater Flows by Treatment Facility<sup>(1)</sup> City and County of Honolulu Department of Environmental Services</b>			
<b>Treatment Facility</b>	<b>Design Capacity (mgd)</b>	<b>1997 Flow (mgd)</b>	<b>Projected 2020 Flow (mgd)</b>
Sand Island WWTP	82	70.5	92.6
Honouliuli WWTP	38	25.8	34.7
Pa'alaa Kai WWTP	0.14	0.11	0.11
Waianae WWTP	5.2	3.25	5.2
Wahiawa WWTP	2.5	1.97	2.0
Kailua Regional WWTP	15.25	12.5	12.8
Kahuku WWTP	0.4	0.13	0.38
Waimanalo WWTP	0.7	0.58	1.1
<b>Total</b>	<b>144.19</b>	<b>114.8</b>	<b>148.9</b>
Notes: (1) Average dry weather flow, millions of gallons per day.			



**Total = 115 mgd**

ADWF = Average Dry Weather Flow

**Figure 2**  
**SUMMARY OF EXISTING WASTEWATER**  
**TREATMENT FACILITIES AND FLOWS**  
**CITY AND COUNTY OF HONOLULU**

**East Mamala Bay.** The largest and most densely-populated wastewater basin has a population of approximately 374,000 and is served by the Sand Island WWTP. Built in the 1970's, the Sand Island WWTP currently treats 70.5 mgd of wastewater flow and has a primary treatment capacity of 82 mgd. The wastewater facility serves the City of Honolulu and surrounding areas.

**West Mamala Bay.** The second largest basin has a population of approximately 245,000 and is served by the Honouliuli WWTP. Built in 1981, the Honouliuli WWTP currently treats 25.8 mgd of wastewater flow and has a primary treatment capacity of 38 mgd. A secondary treatment capacity of 13 mgd was added in 1997. The wastewater facility serves Ewa, Central Oahu as far north as Mililani, and the Halawa to Pearl City area of the Primary Urban Center.

**Kailua/Kaneohe/Kahaluu.** The third largest basin has a population of approximately 110,000 and is served by the Kailua Regional WWTP, which serves the communities of Kailua, Kaneohe, Kahaluu, and surrounding areas. The Kailua Regional WWTP was built in the 1950's and was upgraded to secondary treatment in 1995. It currently treats 12 mgd of wastewater flow and has a secondary treatment capacity of 15.25 mgd.

**North Oahu (East).** The North Oahu (East) basin is largely unsewered and is served by the Kahuku WWTP. Built in the early 1980's, the Kahuku WWTP currently treats 0.13 mgd of wastewater flow and has a secondary treatment capacity of 0.4 mgd.

**North Oahu (West).** The North Oahu (West) basin is also largely unsewered and is served by the Pa'alaai Kai WWTP. Built in the mid-1980s, the Pa'alaai Kai WWTP currently treats 0.11 mgd of wastewater flow and has a secondary treatment capacity of 0.14 mgd.

The North Oahu (East) and North Oahu (West) basins have a combined population of approximately 19,000.

**Waianae.** The Waianae basin has a population of approximately 39,000 and is served by the Waianae WWTP. The Waianae WWTP was built in the 1960s and was upgraded to secondary treatment in 1995. It currently treats 3.25 mgd of wastewater flow and has a secondary capacity of 5.2 mgd.

**Central Oahu.** The Central Oahu basin has a population of approximately 44,000 and is served by the Wahiawa WWTP. Built in the 1950's, the Wahiawa WWTP currently treats 1.97 mgd of wastewater flow and has a secondary treatment capacity of 2.5 mgd. It serves the communities of Wahiawa and Whitmore Village.

**Waimanalo.** The Waimanalo basin has a population of approximately 9,000 and is served by the Waimanalo WWTP. Built in the 1970's, the Waimanalo WWTP currently treats 0.58 mgd of wastewater flow and has a secondary treatment capacity of 0.70 mgd.

Although the Central Oahu, North Oahu (East), North Oahu (West), Waianae, and Waimanalo basins comprise the majority of the geographical area of the island, the population density is much lower in comparison to the East and West Mamala Bay and the Kailua/Kaneohe/Kahaluu basin

areas. The combined population of the four basin areas is approximately 100,000, which is slightly less than 12 percent of the total population of Oahu. The total design capacity of the WWTP's in these four basin areas is nearly 9 mgd and the current wastewater flow is approximately 6 mgd.

## **2.5 COMPLIANCE WITH DISCHARGE REQUIREMENTS AND CONSENT DECREES**

The WWTP's operated by City and County of Honolulu are governed by either a National Pollutant Discharge Elimination System (NPDES) Permit, or a State Department of Health Underground Injection Control Permit.

Seven out of eight WWTPs are owned by the City and County of Honolulu, operated by the Department, and are currently meeting national and state discharge requirements. The eighth WWTP, the Waimanalo WWTP, is owned by the State of Hawaii, operated by the Department, and has not consistently met permit requirements as discussed later in this section. A summary of the wastewater treatment facilities permit requirements, compliance history, and potential changes in permit conditions are presented in Table 4.

The Sand Island WWTP is the largest of the facilities owned and operated by the City and County of Honolulu. The original 1990 NPDES permit for Sand Island WWTP required approximately 50 percent removal of suspended solids and essentially no chemical oxygen demand or biological oxygen demand (BOD) removal. The facility consistently met these requirements. In the early 1990's, environmental groups filed suit to require an upgrade in the treatment at the Sand Island WWTP. Subsequently, the Environmental Protection Agency (EPA) entered into formal discussions with the City to require that the Sand Island WWTP provide a minimum of 30 percent BOD removal. A number of operating and process modifications were made throughout the last few years to accomplish this level of treatment. These optimizations resulted in achieving compliance with the informal BOD removal standard of 30 percent in 1995. In addition, a new chemical treatment facility was installed in 1995 to assist in meeting the 30 percent BOD removal requirement.

A new permit for the Sand Island WWTP was issued on September 30, 1998. It is effective November 2, 1998 and is valid for a five-year period. Changes in the permit include revised BOD and suspended solids removal requirements and a new bacteriological limitation. The 1998-2002 CIP Projects include modifications required to accommodate growth and projects required by and identified in the permit.

The Waimanalo WWTP is a State-owned facility that is operated by the Department under contract. It accounted for only 0.5 percent of the total 1997 wastewater flow. The plant exceeded monthly average permit concentrations for BOD in June of 1997 and for total suspended solids (TSS) in July of 1997. Periodically, high influent BOD and TSS concentrations have been attributed to high infiltration/inflows (I/I) in the collection system, the absence of flow equalization facilities, and highly concentrated industrial discharges. Consequently, the original 1.1 mgd design capacity has been re-rated to 0.7 mgd. Planning has been completed for modification and expansion of the facility to correct these minor problems. Actions are underway to obtain State funding for these improvements.

**Table 4 Discharge Requirements and Compliance History  
City and County of Honolulu  
Department of Environmental Services**

Facility	Permit Type	Average Design Flow (mgd)	Approx. Current Flow (mgd)	Discharge Limit (mg/L)			Existing Treatment Level	Potential Changes in Discharge Requirements	Consistently Meets Requirements ?
				BOD	TSS				
Sand Island WWTP	NPDES	82	70.5	116	69	Primary	---	Yes	
Honouliuli WWTP • Up to 25 mgd • Beyond 25 mgd	NPDES	38	25.8	160 30	95 30	Primary Secondary	---	Yes	
Pa'alaa Kai WWTP	State DOH	0.14	0.11	30	30	Secondary	---	Yes	
Waianae WWTP	NPDES	5.2	3.25	30	30	Secondary	---	Yes	
Wahiawa WWTP	NPDES	2.5	1.97	30	30	Secondary	Pending project direction	Yes	
Kailua Regional WWTP	NPDES	15.25	12.5	30	30	Secondary	---	Yes	
Kahuku WWTP	State DOH	0.4	0.13	30	30	Secondary	---	Yes	
Waimanalo WWTP <sup>(1)</sup>	State DOH	0.7	0.58	30	30	Secondary	---	Not consistently <sup>(2)</sup>	

**Notes:**

(1) Owned by State of Hawaii, operated by the City and County of Honolulu.

(2) In 1997, the effluent concentration of BOD for the Waimanalo WWTP slightly exceeded 30 milligrams per liter (mg/L). Also, in July of the same year, the average effluent TSS concentration exceeded the 30 mg/L NPDES permit limit.

The Honouliuli WWTP NPDES Permit provides for up to 25 mgd of primary treated effluent to be discharged to the facility's ocean outfall. Flows in excess of 25 mgd are to be treated to secondary and tertiary levels for effluent reuse. The City and County of Honolulu has agreed with the EPA to enter into a consent decree to provide a schedule for implementing the full 13 mgd of tertiary treatment capacity of this facility. It is anticipated that the State Department of Health will issue an additional permit for the Honouliuli WWTP governing the implementation of effluent reuse.

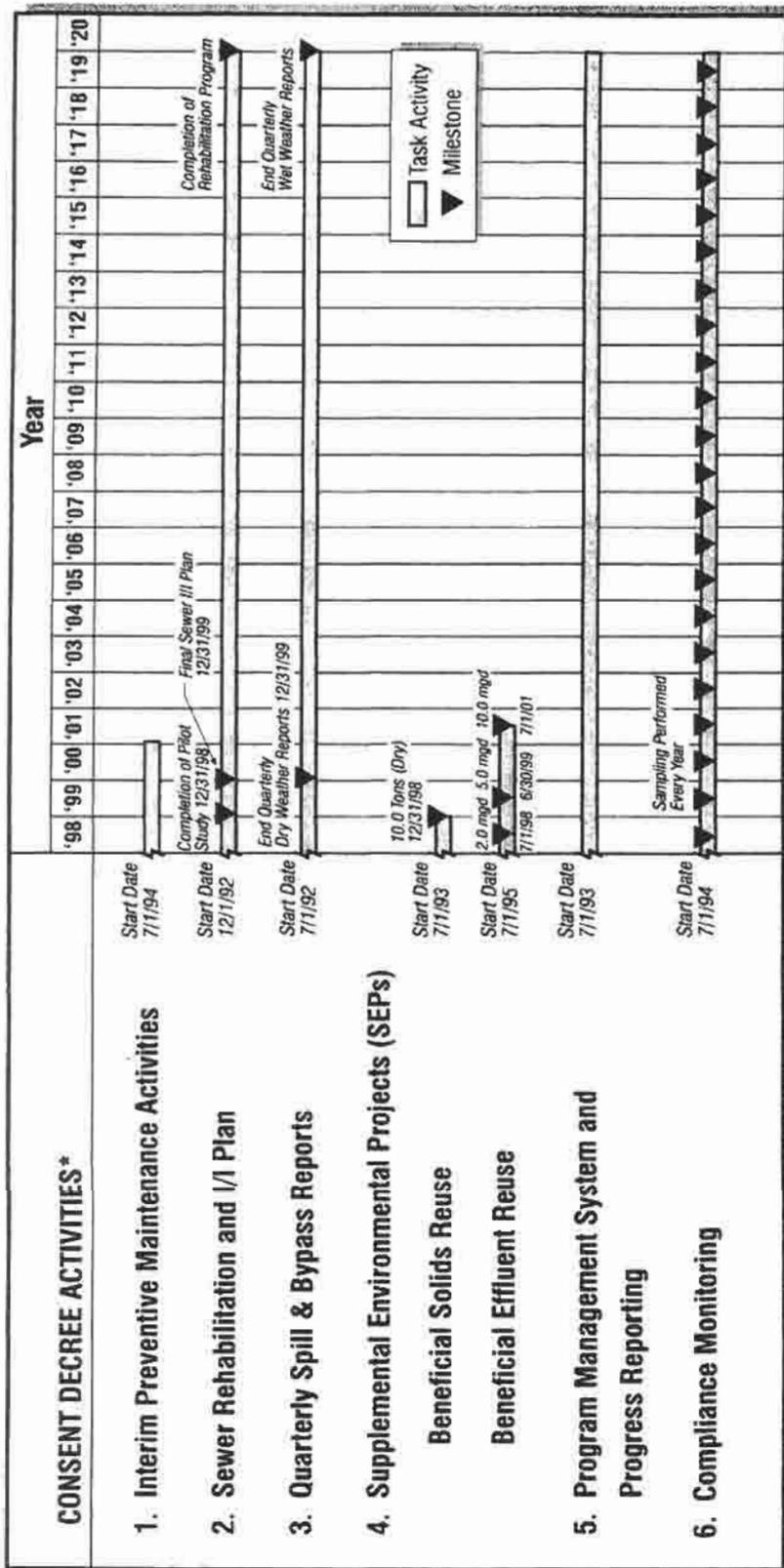
The Wahiawa WWTP currently has a State Permit to discharge secondary effluent to the Wahiawa Reservoir. The State Department of Health, however, has given the City direction to increase the level of treatment of effluent discharged to the reservoir to allow for beneficial use of the effluent both in the reservoir and by downstream agricultural users. Projects in the capital improvement plan are identified which will provide for a higher level of treatment of effluent from the Wahiawa WWTP, and thereby improve the water quality of the reservoir.

The Mililani WWTP was abandoned in the 1980's and raw wastewater is now diverted to the Honouliuli WWTP. Currently, raw wastewater passes through the abandoned plant site and flows by gravity and force main to the Honouliuli WWTP approximately 10 miles away. This diversion was made as a part of the regionalization by the City and County of Honolulu to reduce the number of wastewater treatment facilities. The capital improvement plan includes funding for facility plans to evaluate options to restore the facility and to reuse the treated effluent for a new athletic park nearby. This is consistent with the direction of the City and County of Honolulu to maximize water reuse as a component of the overall community water supply.

The community of Honolulu highly values a clean environment and has raised concerns about improving wastewater treatment at several of the City and County of Honolulu's wastewater treatment facilities. To address these concerns, the Department has worked with the community, the EPA, and the State of Hawaii Department of Health to develop several consent decrees. The consent decrees reflect agreed upon actions to meet the objectives of the City and County of Honolulu, the EPA, and other major participants for improvements to the existing wastewater systems. The consent decrees confirm the overall direction and schedule for the wastewater management program. A summary of the major consent decree milestones and associated due dates is presented in Figure 3. A summary of the four outstanding consent decrees and major objectives is presented in Table 5.

## **2.6 CAPITAL PROGRAM PLANNING AND FUTURE DIRECTION**

The Department has prepared a 20-year CIP, which incorporates the results of several facility plans and preliminary designs for various wastewater facilities. The CIP was developed with a number of financial and engineering objectives in mind, including minimizing life cycle costs versus capital costs, improving project delivery cycles, increasing organizational effectiveness, and targeting staff reductions through attrition. It includes facility plans and preliminary designs for most of the major wastewater treatment facilities, and identifies collection system and piping improvements, which represent a majority of the capital improvement projects.



\*Includes major milestones for the following:  
 309 Consent Decree, Honouliuli Consent Agreement,  
 Wahiawa Consent Decree, Kailua/Kaneohe Consent Decree

**Figure 3**  
**CONSENT DECREE**  
**MILESTONES SCHEDULE**  
 CITY AND COUNTY OF HONOLULU

<b>Table 5 Summary of Consent Decree Objectives City and County of Honolulu Department of Environmental Services</b>
<b>Honouliuli Consent Agreement (June 1993)</b> <ul style="list-style-type: none"> <li>• Provide secondary treatment for flows that will be reused.</li> </ul>
<b>309 Consent Decree (May 1995)</b> <ul style="list-style-type: none"> <li>• Revise and implement the City and County of Honolulu's pretreatment program</li> <li>• Establish a maintenance and sewer replacement/rehabilitation schedule to reduce and prevent sanitary sewer overflows (SSOs)</li> <li>• Develop beneficial reuse program for both wastewater and biosolids</li> </ul>
<b>Kailua/Kaneohe Consent Decree (August 1995)</b> <ul style="list-style-type: none"> <li>• Allow participation of stakeholders in joint development Facilities Plan for Kailua Regional WWTP and Kaneohe WWPTF</li> <li>• Construct and operate pilot UV disinfection facility at Kailua Regional WWTP</li> <li>• Monitor water quality of the Kailua/Kaneohe watersheds in cooperation with the Kailua Bay Advisory Council</li> </ul>
<b>Wahiawa Consent Decree (March 1998)</b> <ul style="list-style-type: none"> <li>• Provide a long-term solution for effluent disposal from Wahiawa WWTP</li> <li>• Improve reservoir water quality</li> <li>• Provide resource conservation through wastewater reclamation</li> </ul>

The consent decrees are an important component of the long-term wastewater management program. The consent decrees reflect agreed upon actions to meet the objectives of the City and County of Honolulu, the EPA, and other major participants for improvements to the existing wastewater management program. The consent decrees confirm the overall direction and schedule for the wastewater management program and are supported by the specific activities and actions developed through the facility planning efforts in recent years.

The City and County of Honolulu has identified several capital improvement projects to meet consent decree requirements. The 1998-2002 CIP projects are recognized as the highest priority projects for meeting consent decree requirements, replacing severely corroded pipe, and for satisfying regulatory requirements. Information on the need for the 1998-2002 CIP projects, descriptions and estimated costs, and implementation schedules follow in Chapter 3. The long-term facilities needs, project descriptions, costs and implementation schedules are summarized in Chapter 4.

## **2.7 WASTEWATER FLOW PROJECTIONS**

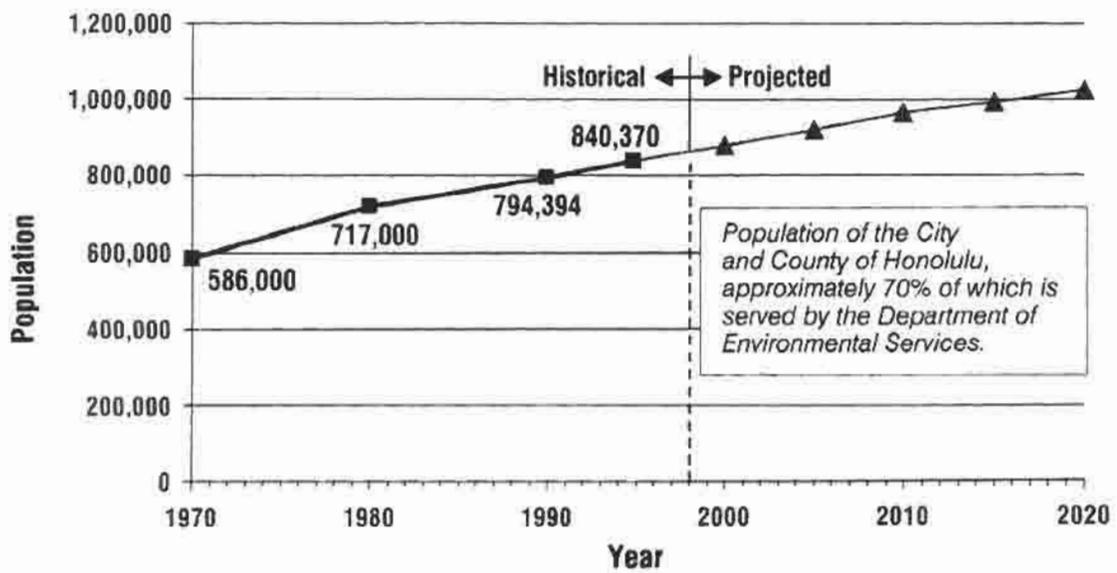
The wastewater flow and strength projections are based on the anticipated growth rates included in the City and County of Honolulu's General Plan. Growth is not a significant factor in driving the overall need for 20-year CIP projects. Only 17 percent of the 20-year CIP costs are associated with

projects required to accommodate growth. Growth for the total population of the City and County of Honolulu is presented in Figure 4 and is summarized by basin in Table 6. Wastewater flow projections through the year 2017 are presented in Figure 5.

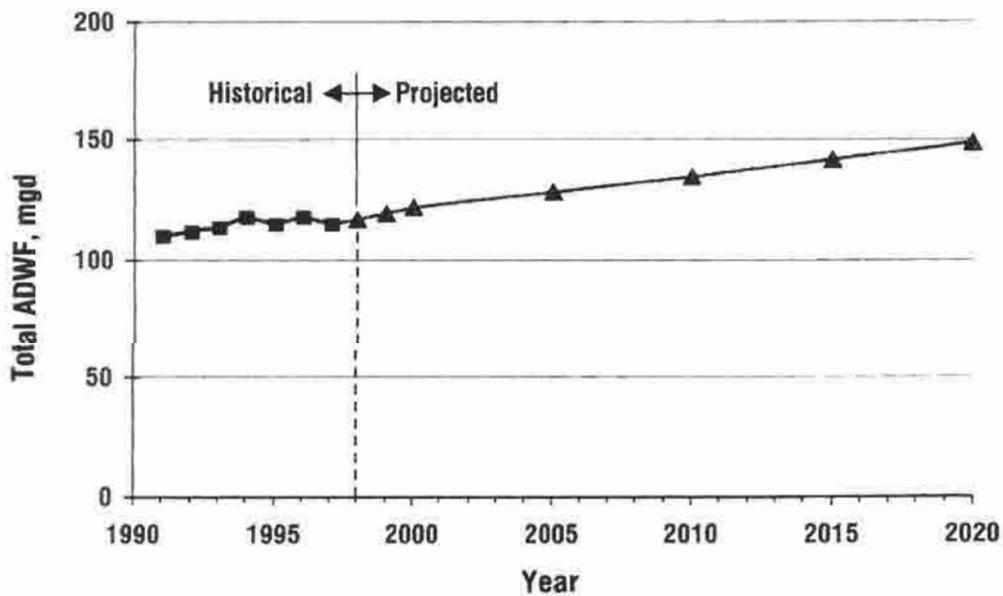
<b>Basin</b>	<b>1990</b>	<b>1995</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>
East Mamala Bay	361,452	374,123	384,558	398,266	413,654	422,254	431,586
West Mamala Bay	215,483	245,135	271,896	296,728	321,989	339,522	357,545
North Oahu (East/West)	18,458	18,534	18,369	19,233	20,100	20,554	21,003
Waianae	37,411	39,231	41,595	43,660	45,966	47,113	48,155
Central Oahu	43,886	44,332	44,646	43,903	43,678	43,239	43,115
Kailua/Kaneohe/Kahaluu	108,639	109,618	109,990	109,727	110,980	111,156	112,012
Waimanalo	9,055	9,397	9,487	9,583	9,820	9,920	10,071
<b>Total</b>	<b>794,394</b>	<b>840,370</b>	<b>880,541</b>	<b>921,100</b>	<b>966,187</b>	<b>993,768</b>	<b>1,023,487</b>

As shown in Figures 4 and 5, the projected increase in population and associated wastewater flows are not significant over the 20-year planning period. Population growth is projected to average less than 1 percent per year and associated wastewater flows are projected to increase by a similar percentage. The slight difference between projected population growth and wastewater flows is due to the planned reduction in unsewered areas with the conversion of cesspools to connect to the public sewage system. Also, for financial planning purposes, and to project revenues from new equivalent-single-family dwelling units (ESDUs) paying wastewater system facility charges, new connections, as shown in Figure 6, are conservatively projected to increase at a slower rate than General Plan population projections.

The majority of the population growth is expected to occur in the East and West Mamala Bay urbanized areas. In the next ten years, the Sand Island WWTP will require additional capacity in order to accommodate growth in the East Mamala Bay basin.

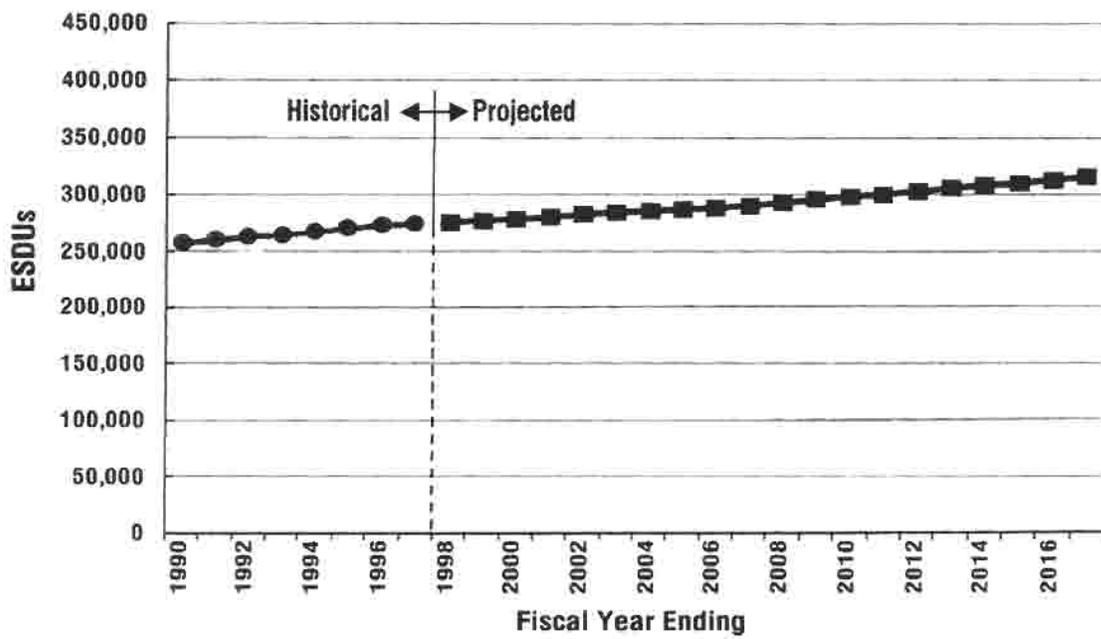


**Figure 4**  
**HISTORICAL AND PROJECTED**  
**POPULATION**  
 CITY AND COUNTY OF HONOLULU



ADWF = Average Dry Weather Flow

**Figure 5**  
**WASTEWATER FLOW PROJECTIONS**  
 CITY AND COUNTY OF HONOLULU



ESDU = Equivalent Single-Family Dwelling Unit

**Figure 6**  
**ESDU GROWTH PROJECTIONS**  
 CITY AND COUNTY OF HONOLULU

**[THIS PAGE INTENTIONALLY LEFT BLANK]**

## CIP Projects for Fiscal Years Ending 1998-2002

This chapter addresses the CIP projects planned for the fiscal years ending 1998-2002, with particular emphasis on the major capital facility expenditures for wastewater management projects anticipated through fiscal year 1999/2000. Other projects beyond fiscal year ending 2002 are addressed in Chapter 4.

### **3.1 NEED FOR THE PROJECTS**

The 1998-2002 CIP projects were developed through a comprehensive planning process involving a review of facility needs throughout the island. During this review, prioritization criteria were developed and major projects were ranked. The prioritization criteria are summarized in Table 7. Non-discretionary prioritization criteria include safety and public health, permit and regulatory compliance, consent decree activities, and expansion-related needs, while discretionary criteria include reliability and preventative-related needs.

<b>Table 7    Prioritization Criteria City and County of Honolulu Department of Environmental Services</b>	
Non-Discretionary	<ul style="list-style-type: none"> <li>• Safety and Public Health</li> <li>• Permit Requirements and regulatory compliance</li> <li>• Consent Decree</li> <li>• Expansion</li> </ul>
Discretionary	<ul style="list-style-type: none"> <li>• Reliability</li> <li>• Improvement/Preventative</li> </ul>

The 1998-2002 CIP projects fall into three general categories: collection system, wastewater treatment plant, and effluent reuse/disposal. The majority of the projects scheduled for this period are collection system projects, including pipelines and pump stations. The collection system improvement projects are needed to replace or rehabilitate corroded pipe, to reduce infiltration/inflow, and to extend service to unsewered areas. Replacement of severely corroded pipe will reduce infiltration/inflow during wet weather events, and will result in lower operation and maintenance costs for both the collection systems and associated WWTP's. The collection system projects are described below in Section 3.2.

Treatment plant improvement project expenditures anticipated during fiscal years ending 1998-2002 are needed to upgrade existing facilities, to satisfy regulatory requirements, and to improve the reliability of the facilities in handling peak wet weather flows. WWTP improvement projects are described in Section 3.3.

The effluent reuse projects to be constructed during fiscal years ending 1998-2002 are needed to provide effluent reuse as a component of the overall community's water supply as agreed upon by consent decree, and, in the case of Wahiawa, to provide a long-term solution to the improvement of water quality in the Wahiawa reservoir. These projects are described in Section 3.4, below.

The general locations of the major CIP projects to be constructed in the first three years, from July 1997 to June 2000, are shown in Figure 7.

### **3.2 COLLECTION SYSTEM PROJECTS**

The City and County of Honolulu have plans for a total of 35 collection system projects to begin construction or design between fiscal years ending 1998-2002, and have provided an allotment for smaller replacement projects which can be approved quickly. The total expenditures for these projects through the year 2002 is \$163 million, with an expected \$61 million to be expended within the first three years and \$102 million to be spent in the remaining two years.

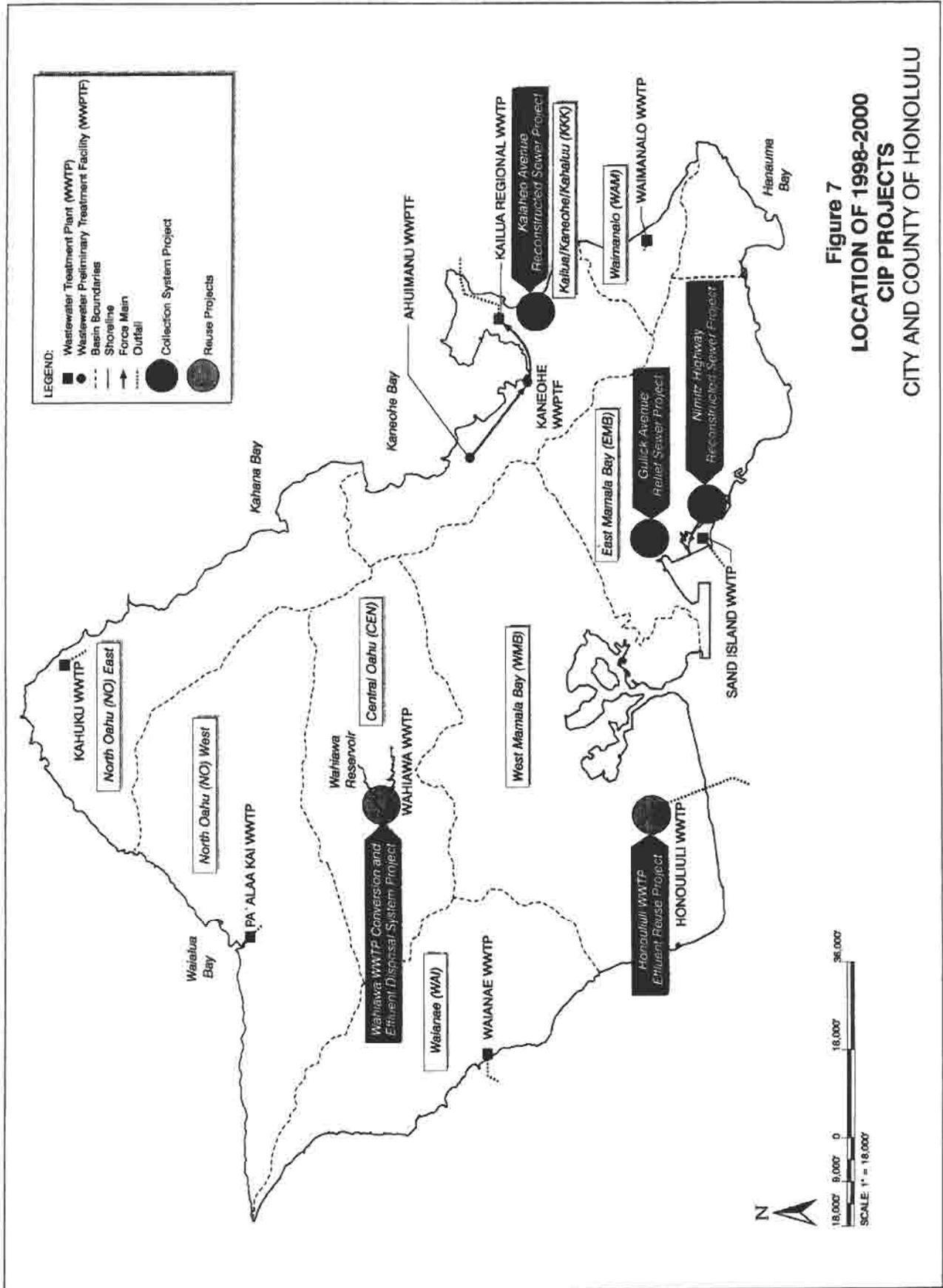
Approximately 20 percent of the amount for collection system funds to be expended between fiscal years ending 1998-2002 will be for the following five major projects:

- Nimitz Highway Reconstructed Sewer Project.
- Gulick Avenue Relief Sewer Project.
- Kalaheo Avenue Reconstructed Sewer Project.
- Hart Street Wastewater Pump Station Force Main Replacement Project.
- Hart Street Wastewater Pump Station Modification Project.

The Nimitz Highway Reconstructed Sewer Project and the Kalaheo Avenue Reconstructed Sewer Project will replace and repair severely corroded pipe. Concerns about existing pipe conditions include compromised structural integrity (public safety concerns), and excessive infiltration/inflow during wet weather events. The Gulick Avenue Relief Sewer Project will relieve present capacity deficiencies of approximately 1,800 feet of pipe in Gulick Avenue, will provide capacity for planned development, and includes rehabilitation of deteriorated pipe. The Hart Street Wastewater Pump Station Force Main Replacement Project will provide redundancy to one of the key force mains for the City of Honolulu, allowing transmission of flows to continue to the Sand Island WWTP from the Hart Street Pump Station in the case of a break in the 47-year old line. The Hart Street Wastewater Pump Station Modification Project will replace the existing pump station, which is experiencing structural problems due to age and corrosion.

The remaining collection system projects comprise 80 percent of the collection system expenditures between fiscal years ending 1998-2002, and include both non-discretionary and discretionary projects. Non-discretionary projects include projects to replace or rehabilitate severely corroded pipes (safety and public health concerns), to avert spills and possible EPA regulatory actions, and to meet expansion needs.

Discretionary projects include pump station modification projects and projects to improve the ability of the collection systems to handle peak flows. Pipe replacement/rehabilitation projects will reduce



inflow/infiltration and lower peak flows to the collection systems. Many existing pipes are over 40 years old, are unlined and severely corroded, and allow excessive amounts of inflow/infiltration during wet weather events. These existing pipes will be replaced with new pipes that are lined with or made from corrosion-resistant materials. New pipes will reduce the quantity of flow that is pumped and treated, and therefore will lower operation and maintenance costs for both collection systems and wastewater treatment facilities.

In summary, the collection system improvement projects scheduled to begin between fiscal years ending 1998-2002 include the highest priority collection system projects. The highest priority projects will correct extremely deteriorated and corroded pipe conditions, which in some cases have resulted in compromised structural integrity of existing pipes, and which in most cases results in added infiltration and inflow, sometimes causing overflows during wet weather conditions. Other projects will meet development needs, will improve system reliability or will eliminate the use of cesspools, which, if defective, contribute to potential public health concerns.

### **3.3 WASTEWATER TREATMENT PLANT IMPROVEMENT PROJECTS**

The Department has planned for the design and/or construction of 22 WWTP improvement projects totaling \$78 million between fiscal years ending 1998-2002. The most significant of these projects are the Sand Island Headworks Project, the Honouliuli WWTP 1A Solids Project, and the Kaneohe WWPTF Modifications Phase 3 Project.

The Sand Island WWTP Unit 1 Phase 2A Headworks Project will increase the wet weather flow handling capacity of the headworks from 210 mgd to 270 mgd and will improve the efficiency and performance of the plant. The project includes a new building with new bar screens, new grit chambers and a new flow splitting system.

The Honouliuli WWTP 1A Solids Project is needed to complete the recent expansion of the total primary treatment capacity of the plant from 25 to 38 mgd and the process upgrade of 13 mgd to secondary treatment. The project includes all new solids handling facilities, which may mirror existing facilities or may be a different process type. Although the Honouliuli WWTP 1A Solids Project is included in the Honouliuli Consent Decree, it is considered to be primarily an expansion project.

The Kaneohe WWTP Modifications Phase 3 Project involves a system upgrade to increase the wet weather capacity of the facility. The pump station will be upgraded and wet weather storage facilities will be added.

### **3.4 EFFLUENT REUSE PROJECTS**

The Department has planned for the design and/or construction of 3 major effluent reuse projects between fiscal years ending 1998-2002, with anticipated total five-year reuse expenditures at \$16 million. As discussed previously, effluent reuse projects are planned to meet consent decree requirements, to meet development requirements, and to improve the water quality of the Wahiawa Reservoir. The major effluent reuse projects are the Honouliuli Wastewater Treatment Plant

Effluent Reuse Project, the Wahiawa Wastewater Treatment Plant Conversion and Reuse Project, and the potential Mililani Water Reuse Project. These 3 projects account for over 90 percent of effluent reuse funds to be expended between fiscal years ending 1998-2002.

The Honouliuli WWTP Effluent Reuse Project, which will meet the effluent reuse requirement of the 309 Consent Decree, includes the construction of a 13 million gallons per day (mgd) tertiary treatment upgrade to the Honouliuli WWTP, a new pump station, and transmission mains for distribution of treated effluent. The reclaimed wastewater will be distributed to the effluent reuse users or recharged to the groundwater aquifer. The City and County of Honolulu is committed to increased effluent reuse and is currently negotiating a contract with a private firm to design, construct, and operate the Honouliuli Effluent Reuse Project for rapid implementation. To be assured that the consent decree requirements are satisfied, the Department has also developed contingency plans for conventional project delivery design and construction. The total capital construction cost of the City and County of Honolulu of the Honouliuli WWTP Effluent Reuse Project, as currently planned, is \$2.1 million. Funding of the remaining estimated plant cost of approximately \$11 million will be paid by the private contractor, while approximately \$3 million has been budgeted for transmission mains. Users of the effluent have been identified and include a golf course that will soon be constructed adjacent to the site.

The Wahiawa WWTP Conversion and Effluent Disposal System Project consists of the modification and upgrade of the existing wastewater treatment facilities to support full reuse of effluent from the Wahiawa WWTP and eliminate effluent disposal to the Wahiawa Reservoir. The project includes treatment plant modifications and a distribution system for the full 1.6 mgd anticipated future average dry weather flow of the plant. This project will provide a long term solution for diverting effluent from the Wahiawa Reservoir, as required by the Wahiawa Consent Decree, and will partly fulfill the reuse requirements of the 309 Consent Decree.

In summary, effluent reuse costs account for less than 10 percent of the 1998-2002 CIP project expenditures. No significant revenues are projected to be received from the reuse program.

### **3.5 ONGOING CAPITAL PROGRAM**

The Department's CIP in fiscal years ending 1998-2002 includes the new projects mentioned and *numerous projects initiated in prior years. Eighty-four (\$84) million in funds for these earlier projects were appropriated in years prior to and including fiscal year 1996/97 from proceeds of General Obligation (G.O.) bonds and State Revolving Fund (SRF) loans.*

Major ongoing projects include a number of the City's largest pump facilities, including:

- Ala Moana Wastewater Pump Station - Modification and expansion of the facility to accommodate future increases in peak flows to nearly 200 mgd.
- Beachwalk WWPS and FM Replacement - Relocation and expansion of this 30 mgd pumping facility currently located in the heart of the tourism district of Waikiki.

- Hart Street WWPS and FM - Reliability and capacity upgrades of the City's second largest pump station and the addition of a new force main to parallel the existing aging force main.

Examples of other major ongoing projects include:

- Sand Island WWTP - Upgrade of the interiors of the clarifiers of Hawaii's largest wastewater treatment plant.
- North Shore Septage Handling Facility - Construction of a new septage handling facility to receive septage from this predominantly rural area utilizing primarily individual wastewater treatment systems.
- Sewer Rehabilitation and I/I Minimization Plan - This consent decree project began in 1993 and is scheduled for completion in 1999. This plan provides the strategic 20-year plan for the upgrade of facilities to minimize infiltration and inflows.

### **3.6 PROJECT MANAGEMENT**

The Department has proven its capability in delivering projects on time and within budget. The Department's project delivery team has received several awards, including those awarded for the Nimitz Highway Relief Sewer Project:

- American Society of Civil Engineers, Hawaii Section, 1996 Outstanding Achievement Award.
- American Public Works Association, Hawaii Chapter, 1997 Project of the Year (Large Environmental).
- American Consulting Engineers Council, National Honor Award.

Examples of the Department's proven capabilities in meeting project milestones are listed below.

#### **Waianae WWTP Secondary Treatment Upgrade**

The Waianae WWTP was originally a 5.2 ADWF primary treatment plant which discharged its wastewater through an ocean outfall. During reapplication of their permit in the early 90s, the waiver of secondary treatment was denied and the plant was required to upgrade to secondary treatment. Design was completed in 1993 and construction was completed on time in 1995 and within the programmed budget of \$25 million. In 1996 and 1997, the facility received the Gold Award from the AMSA.

#### **Spill Prevention/Spill Containment Plan**

As part of the original 309 consent decree, the City and County of Honolulu was required to develop a long-term strategy for the reduction of dry and wet weather spills. The spill prevention plan was to focus its effort on the pump stations and treatment plants and to proposed enhancements to the Wastewater Information Management System to more efficiently develop schedules for the

maintenance of gravity sewer lines. The plan was submitted to the EPA in early 1995 and accepted in April 1995.

### **Wastewater Information Management System (WIMS)**

The base hardware and software installation for WIMS was completed in 1994 and is linked to the City's geographical information system for mapping of the sewer lines. This requirement was part of the 309 consent decree. Despite being installed, the system still required implementation from taking appropriate field data to optimizing the scheduling system. Internally developed procedures and correlation studies have progressed to reflect the following improvements: Field data efficiency (usable data) has improved from 43 percent in 1992 to 97 percent in 1997 and correlation studies on pipe conditions to pipe characteristics have led to a more optimized maintenance and replacement schedule. The WIMS system for optimizing sewer line maintenance and replacement schedules continues to improve. All the optimization efforts are being done in-house.

### **3.7 SUMMARY OF ESTIMATED PROJECT COSTS**

The summary of costs for 1998-2002 CIP projects by project category is presented in Table 8. These costs include planning, design, and construction costs as well as all engineering, administrative, and legal expenses. As shown in Table 8, the 1998 Senior Bonds, totaling approximately \$50 million, will partially finance the 1998-2002 CIP projects, with the balance to be primarily met from existing funds of the Department, annual revenues, and from the proceeds of future revenue bond issues.

Anticipated funding sources for the five-year capital improvement program are also summarized in Table 8. The 1998 Senior Bonds will partially fund the 1998 - 2002 CIP. Other major revenue sources anticipated for fiscal years ending 1998-2002 are Reimbursable G.O. Bond proceeds from bonds issued in years prior to and including fiscal year 1996/97, new State Revolving Fund loans, sewer service charge revenues, sewer facility charges, and proceeds from future revenue bonds.

**Table 8 Summary of Estimated CIP Project Expenditures, 1998-2002  
City and County of Honolulu Department of Environmental Services**

Project	( Thousands of Dollars (1) )						
	Fiscal Year					Total Expenditures	
	97/98	98/99	99/00	00/01	01/02	97/98 - 99/00	97/98 - 01/02
<b>Expenditure Schedule</b>							
<b>Collection System Projects</b>							
Consent Decree Projects	\$75	\$469	\$551	\$900	\$1,269	\$1,096	\$3,265
Other Non-Discretionary Projects	1,285	14,739	32,359	29,853	27,088	48,383	105,324
Other Discretionary Projects	30	1,770	9,729	16,135	27,240	11,529	54,904
Subtotal : Collection System	\$1,390	\$16,978	\$42,639	\$46,888	\$55,598	\$61,007	\$163,493
<b>Treatment Plant Projects</b>							
Consent Decree Projects	\$90	\$1,680	\$6,240	\$3,215	\$110	\$8,010	\$11,335
Other Non-Discretionary Projects	0	30	2,228	12,368	22,684	2,258	37,310
Other Discretionary Projects	190	3,990	6,597	6,232	12,012	10,777	29,021
Subtotal : Treatment Plant	\$280	\$5,700	\$15,065	\$21,815	\$34,807	\$21,045	\$77,666
<b>Reuse Projects</b>							
Consent Decree Projects	\$0	\$1,710	\$3,675	\$3,022	\$2,434	\$5,385	\$10,841
Expansion Projects	0	100	290	1,076	3,662	390	5,128
Subtotal : Reuse	\$0	\$1,810	\$3,965	\$4,097	\$6,096	\$5,775	\$15,968
Ongoing G.O. Bond Funded Projects	\$36,230	\$30,660	\$14,830	\$2,700	\$0	\$81,720	\$84,420
<b>Total CIP</b>	<b>\$37,900</b>	<b>\$55,148</b>	<b>\$76,499</b>	<b>\$75,500</b>	<b>\$96,500</b>	<b>\$169,548</b>	<b>\$341,547</b>
<b>Anticipated Funding Sources for CIP Projects</b>							
G.O. Bond Proceeds (previously issued)						\$81,720	\$84,420
SRF Loan Proceeds (new)						10,000	20,000
Sewer Facility Charges (connection fees)						5,174	8,876
Sewer Service Charges (pay as you go)						14,100	37,900
1998 Senior Series Revenue Bonds						50,000	50,000
Revenue Bonds (future)						30,000	165,000
<b>Total Sources of Funds Available (2)</b>						<b>\$190,994</b>	<b>\$366,196</b>
<b>Notes:</b>							
(1) All costs are presented in inflated dollars, assuming 3% inflation per year, beginning in Fiscal Year 1999/00.							
(2) Excess revenues available will be applied towards CIP project expenditures in future years.							

The City and County of Honolulu Department of Environmental Services has identified facility needs through the year 2017 for the eight major WWTPs and associated collection system facilities. Cost estimates and implementation schedules for the projects have been developed for the planning period. This chapter provides an overview of the 20-year capital improvement needs of the Department.

#### **4.1 LONG-TERM EXPANSION AND REHABILITATION NEEDS**

A summary of the 20-year CIP project costs by wastewater basin and project category is shown in Figure 8. These include the 1998-2002 CIP projects as well as all other projects identified for the 20-year planning period. A summary of the estimated project costs for each of the wastewater basins for the 20-year period is also presented in Table 9. Table 9 lists the distribution of costs among project categories and allocates project costs to existing and new users. The three major project categories are: collection system improvements, WWTP improvements, and effluent reuse.

A summary of the 20-year CIP total costs by project category is shown in Figure 9. Approximately 69 percent of the total project costs are associated with collection system improvements, 26 percent with WWTP improvements, and 5 percent with effluent reuse projects.

A summary of the 20-year CIP total cost by primary project purpose is presented in Figure 10. As shown in Figure 10, approximately 84 percent of the total costs are associated with non-discretionary projects that must be completed in order to satisfy consent decree, permit/regulatory, expansion, and safety/public health requirements. The remaining 16 percent of the total costs are associated with discretionary projects that have been identified to improve wastewater treatment and collection systems. The Department has identified these discretionary projects in order to address reliability, improvement, and preventive maintenance concerns before they become non-discretionary projects.

##### **Collection System Improvements**

As shown in Figure 9, approximately two thirds of the 20-year CIP total costs are associated with improvements to the collection system. Some pipes in the existing collection system are approaching the end of their useful lives. This is due to the fact that the major pipeline facilities were installed 40 to 100 years ago, and the piping system is in a harsh underground environment. The harsh environment exists because of the saline content of the high groundwater table, and because of the relatively flat slopes and tropical temperatures which accelerates sulfide generation and corrosion rates.

20-year expenditure total = \$1.7 Billion

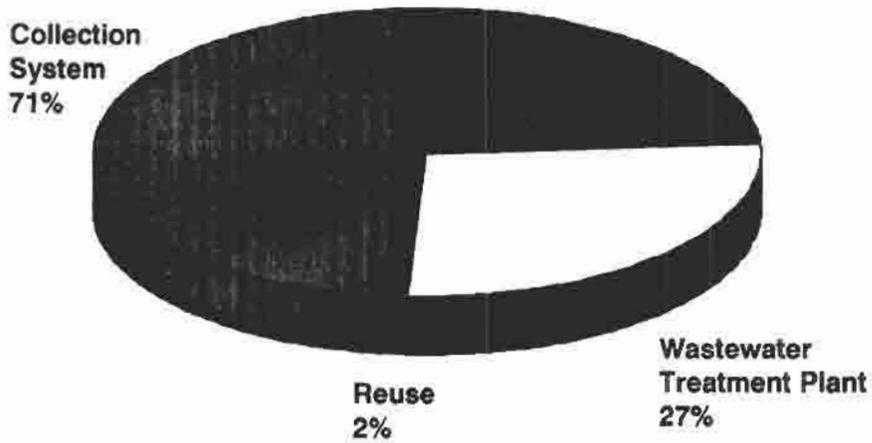


Figure 8  
20-YEAR CIP BY PROJECT CATEGORY  
CITY AND COUNTY OF HONOLULU

20-year expenditure total = \$1.7 Billion

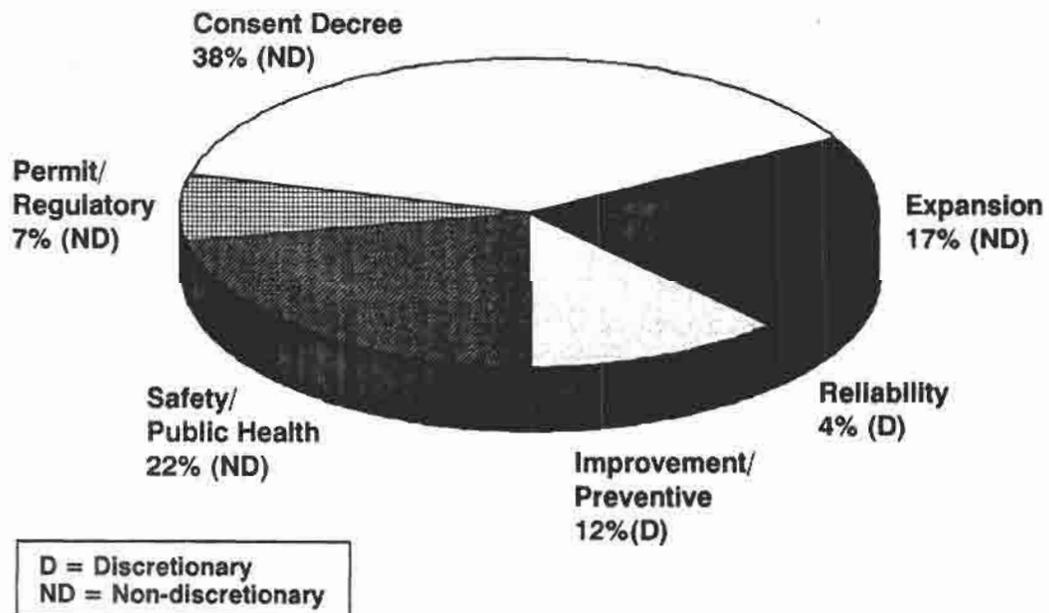
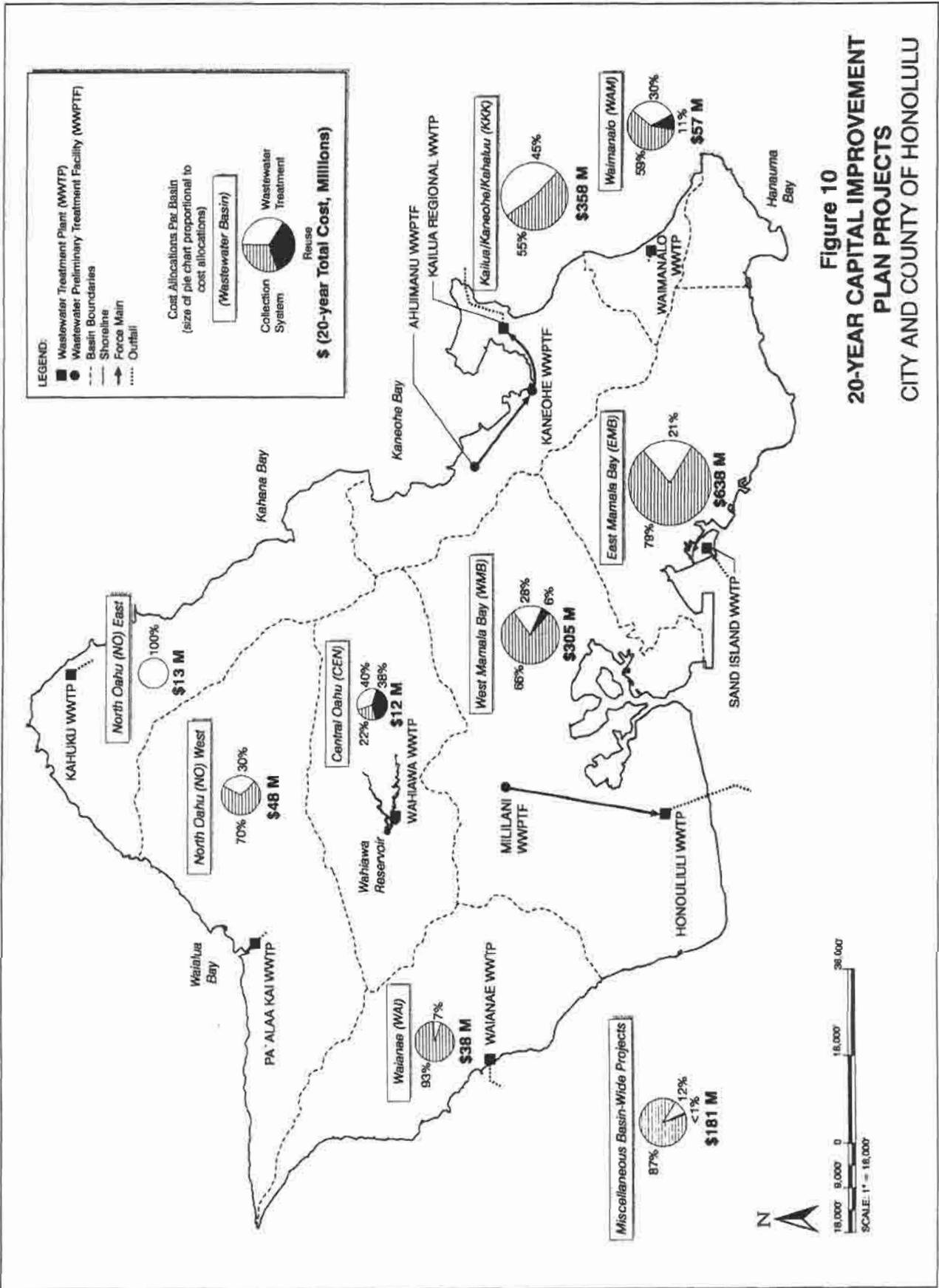


Figure 9  
20-YEAR CIP BY PROJECT MAIN PURPOSE  
CITY AND COUNTY OF HONOLULU

**Table 9 Summary of 20-Year Expenditure Allocations  
City and County of Honolulu Department of Environmental Services**

Basin	( Thousands of Dollars )					
	Project Category			Cost Allocation		20-Year Total
	Collection System	Treatment Plant	Reuse	Rehabilitation (Existing Users)	Expansion (New Users)	
East Mamala Bay	\$502,228	\$136,033	\$0	\$558,862	\$79,399	\$638,261
West Mamala Bay	201,724	86,467	17,227	219,112	86,307	305,419
North Oahu (East)	0	12,688	0	8,214	4,475	12,688
North Oahu (West)	33,270	14,400	0	30,428	17,242	47,670
Kailua/Kaneohe/Kahaluu	196,962	161,522	0	310,991	47,494	358,484
Waianae	35,730	2,755	0	31,724	6,761	38,485
Central Oahu	2,600	4,645	4,462	11,418	288	11,706
Waimanalo	33,721	17,413	6,325	36,899	20,561	57,459
Miscellaneous Projects	157,844	22,473	350	164,416	16,251	180,667
<b>Total : New</b>	<b>\$1,164,079</b>	<b>\$458,397</b>	<b>\$28,364</b>	<b>\$1,372,063</b>	<b>\$278,777</b>	<b>\$1,650,840</b>
Ongoing Projects						\$84,420
<b>Total CIP</b>						<b>\$1,735,260</b>

Notes:  
All costs are presented in 1998 dollars.



The deteriorated condition of the collection system has resulted in excessive infiltration, inflow, and collection system overflows during wet weather events. This results in increased operation and maintenance costs for both the collection system and treatment plant facilities. The consent decree action items address these issues through a comprehensive rehabilitation program beginning with the high priority projects. The 1998-2002 CIP projects include most of the highest priority collection system projects.

### **Wastewater Treatment Plants Improvements and Reuse**

The three major wastewater treatment plants are the Sand Island WWTP, the Honouliuli WWTP, and the Kailua Regional WWTP. Separate facility plans have been completed for each of these major facilities. The facilities plans identify future needs for system improvements and to accommodate growth. Some facility plans are currently being updated.

A facilities plan layout for the Sand Island WWTP is shown in Figure 11. The major projects to be completed within the 20-year planning horizon for the plant include:

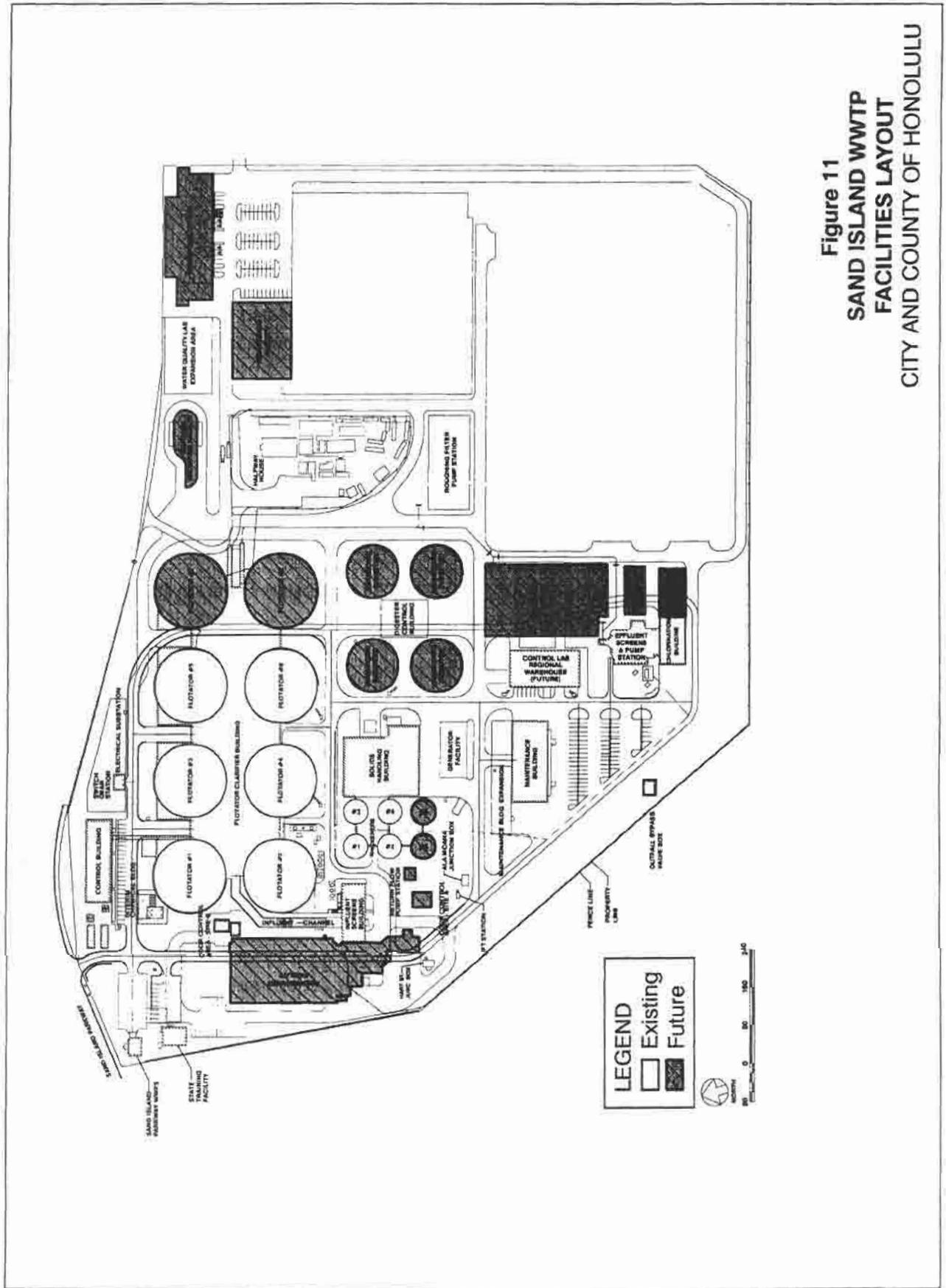
- Construction of higher capacity headworks to replace the existing headworks.
- Modifications to existing primary clarifiers, and addition of new primary clarifiers.
- Expansion of the existing sludge conditioning system, or replacement of the system with new anaerobic digesters and power generation facilities.
- New disinfection facilities.

A facilities plan layout for the Honouliuli WWTP is shown in Figure 12. The major projects identified for the plant include:

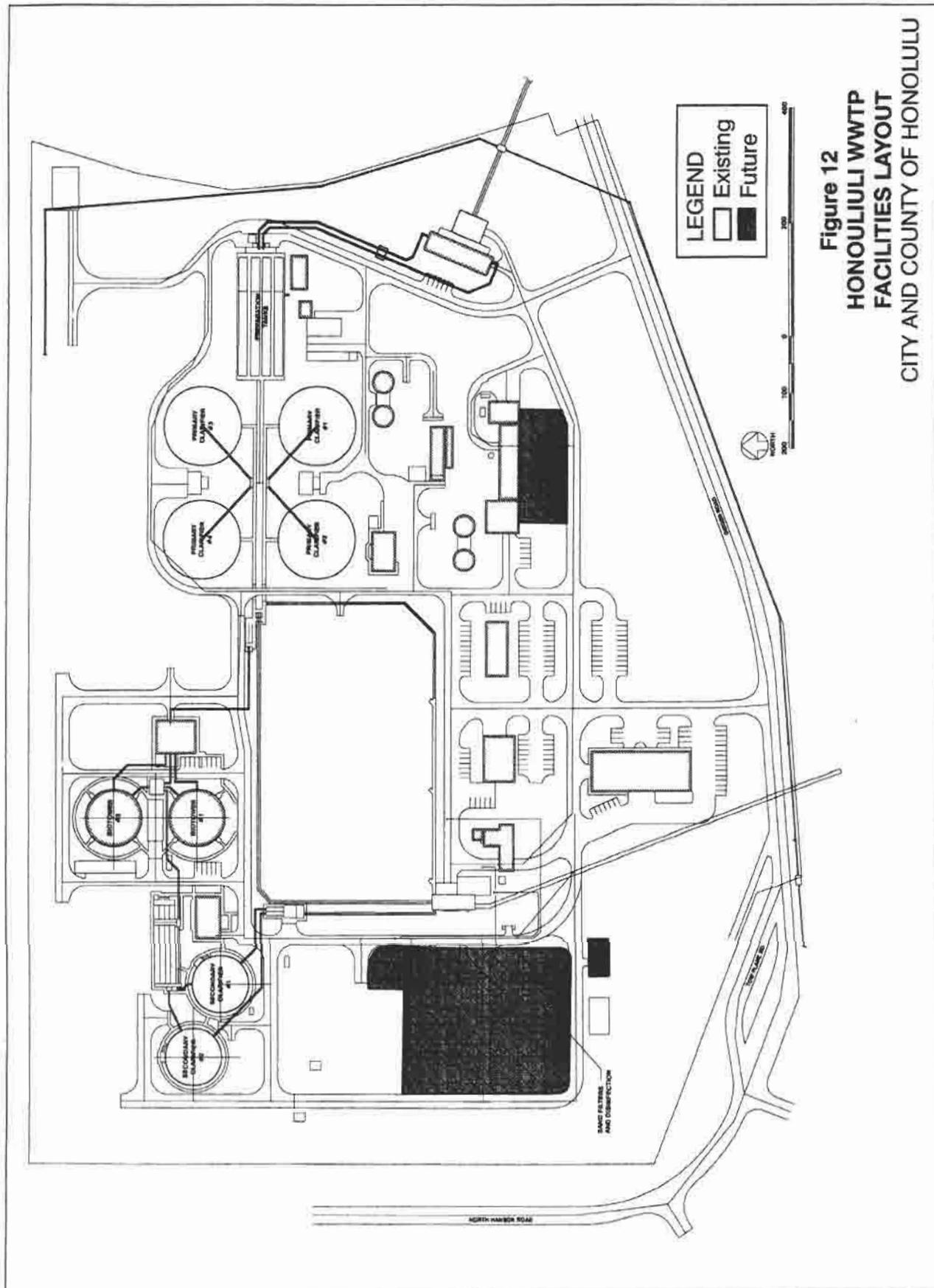
- Process upgrades to allow for beneficial reuse of wastewater.
- A new effluent reuse distribution system.
- Expansion of the solids handling facilities to accommodate the recently completed plant expansion.

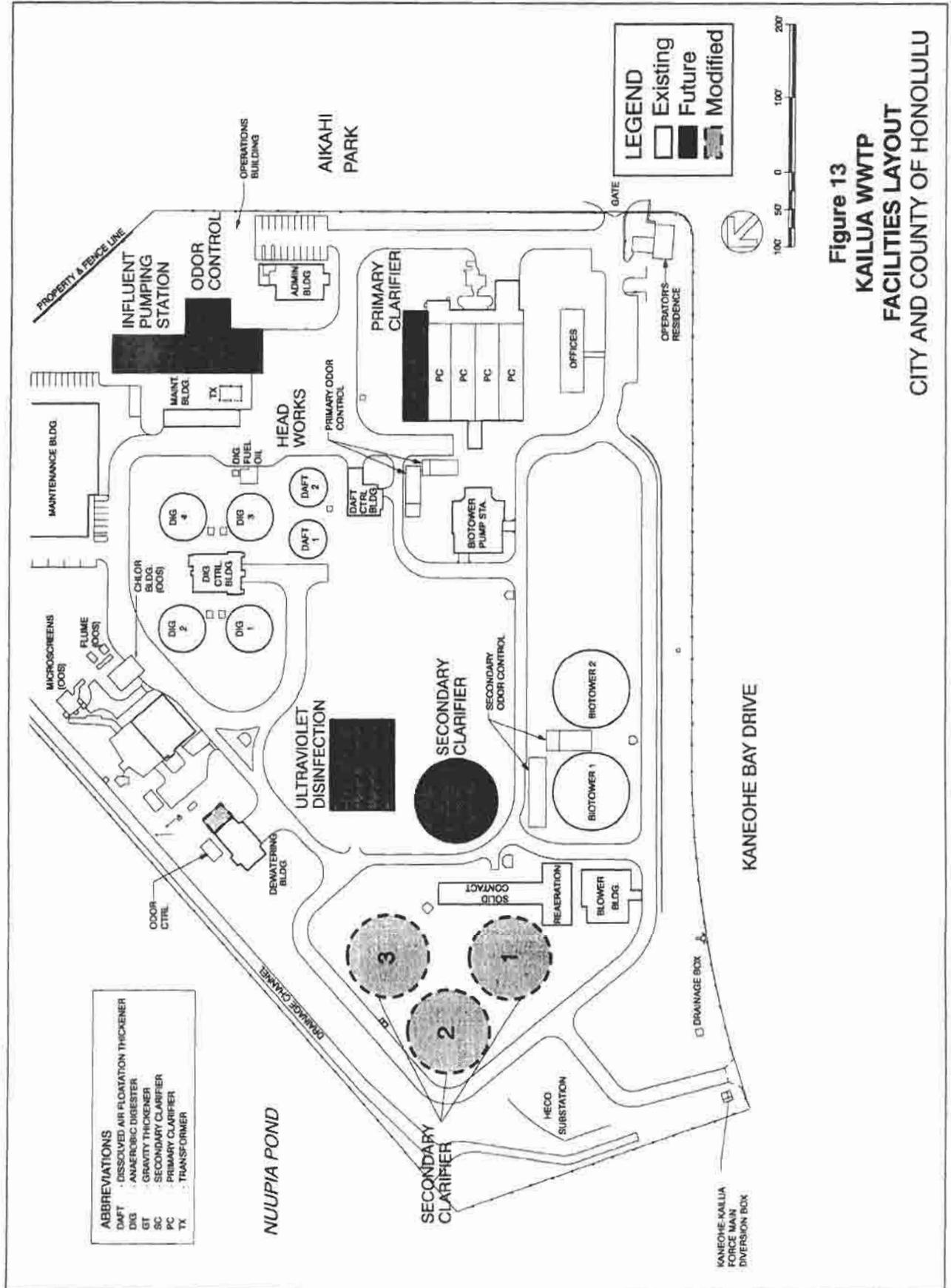
A facilities plan layout for the Kailua Regional WWTP is shown in Figure 13. The major facility project requirements identified for the planning horizon for the Kailua Regional WWTP include:

- New disinfection facility improvements.
- Pump station facility improvements.
- Wet weather handling facility improvements.



**Figure 11**  
**SAND ISLAND WWTTP**  
**FACILITIES LAYOUT**  
**CITY AND COUNTY OF HONOLULU**





## **4.2 COST OF FUTURE PROJECTS**

Estimated capital project costs for future facilities have been developed for each of the eight wastewater basins. The capital cost estimates include land acquisition, planning, design, construction, construction management, and all other costs required to deliver a completed project.

A summary of the estimated project costs and expenditure schedules by five-year period are shown in Table 10. This table presents the planned project expenditures for each of the eight major wastewater basins.

A summary of the historical and projected annual capital expenditures is shown in Figure 14. As shown in Figure 14, there has been a steady increase in annual capital project expenditures from 1985 through 1997, which is anticipated to continue through 2017. This trend is the result of several considerations. The first is that historical project expenditures were predominately for planning and design as shown in Figure 14. In the future, projected capital expenditures are anticipated to be primarily attributable to construction, because planning and design have already been completed for a substantial number of the 20-year CIP projects.

## **4.3 TIMING OF FUTURE PROJECTS**

The implementation schedule for the 20-year CIP projects is presented in Figure 15. This implementation schedule shows the timing of major projects necessary to replace and rehabilitate deteriorated pipes, to accommodate increased wastewater flows and loadings due to anticipated growth, and to meet consent decree scheduled activities. As shown, some of the current CIP projects are already funded through planning and design. Others will be funded from the proceeds of the 1998 Wastewater Revenue Bonds, the existing capital reserves, and future bond issues. Funding for the projects is discussed in Chapters 5 and 6.

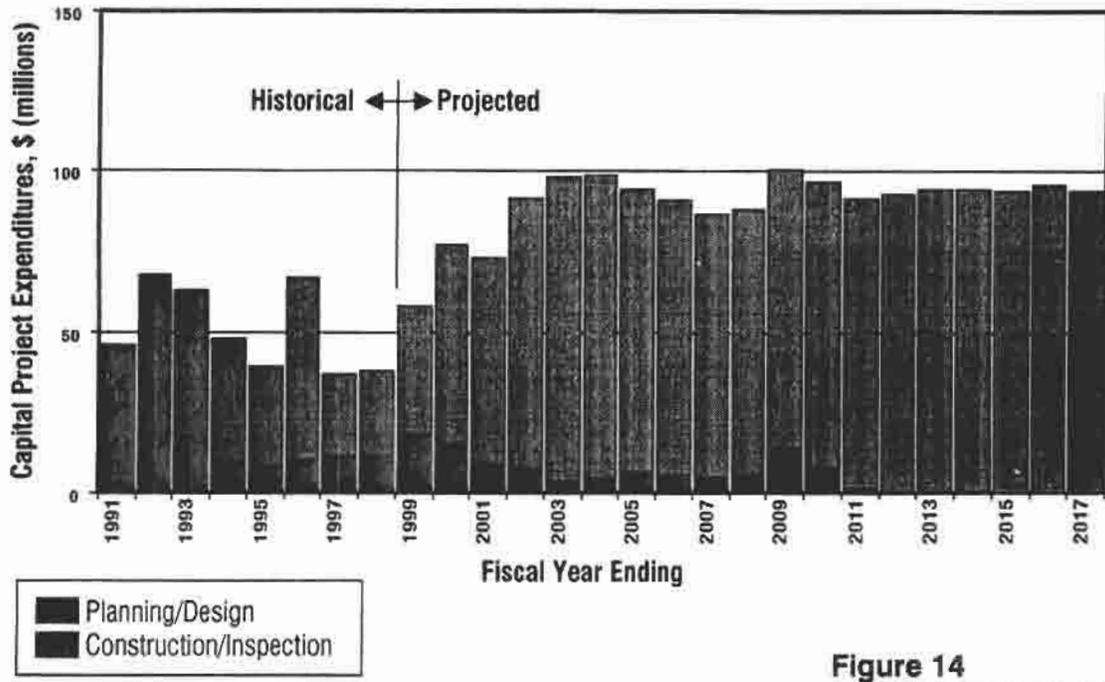
## **4.4 GROWTH RATE CONSIDERATIONS**

Projects associated with growth account for only 17 percent of the 20-year CIP total costs. Most of the 20-year CIP projects are driven by other factors such as consent decree requirements, rehabilitation and replacement of existing aging infrastructure, and public safety.

**Table 10 Summary of 20-Year Projects Expenditure Schedule  
City and County of Honolulu Department of Environmental Services**

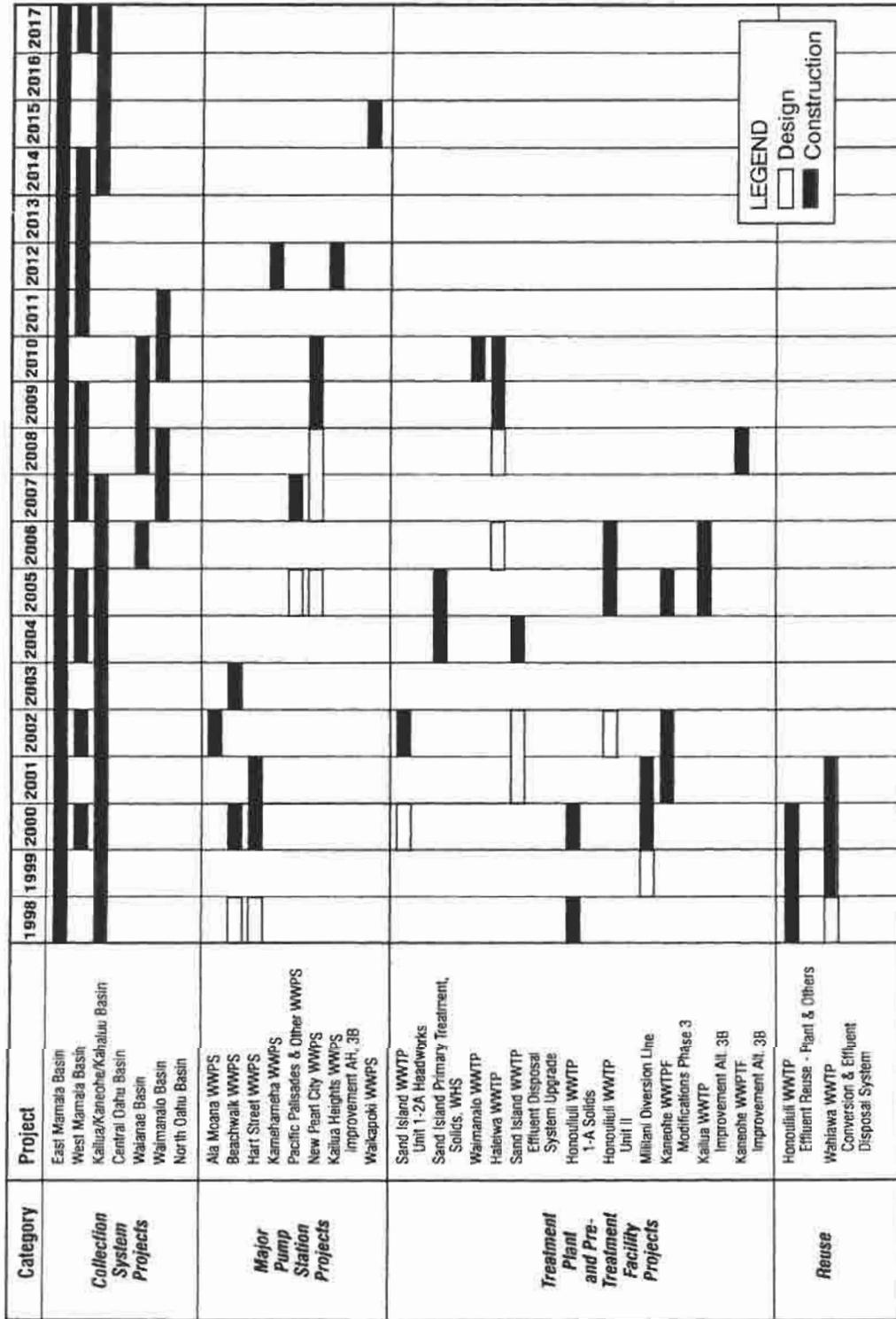
Basin	( Thousands of Dollars )				20-Year Total
	FYE 98 - FYE 02	FYE 03 - FYE 07	FYE 08 - FYE 12	FYE 13 - FYE 17	
East Mamala Bay Sand Island WWTP Hart Street WWPS Beachwalk WWPS	\$88,589	\$261,400	\$44,264	\$244,008	\$638,261
West Mamala Bay Honouliuli WWTP Mililani WWPTF	59,712	57,674	152,295	35,737	305,419
North Oahu (East) Kahuku WWTP	317	772	10,417	1,182	12,688
North Oahu (West) Pa'alaai Kai WWTP	0	102	38,600	8,968	47,670
Kailua/Kaneohe/Kahaluu Kailua WWTP Kaneohe WWPTF Ahuimanu WWPTF	68,029	86,699	111,248	92,508	358,484
Waianae Waianae WWTP	0	173	16,851	21,461	38,485
Central Oahu Wahiawa WWTP	6,663	1,608	3,338	98	11,706
Waimanalo Waimanalo WWTP	0	161	40,456	16,842	57,459
Miscellaneous Projects	17,065	47,915	58,687	57,000	180,667
Total New	\$240,376	\$456,504	\$476,156	\$477,804	\$1,650,840
Ongoing Projects	\$84,420				\$84,420
Total CIP	\$324,796	\$456,504	\$476,156	\$477,804	\$1,735,260

Notes:  
All costs are presented in 1998 dollars.  
FYE = Fiscal Year Ending



All cost are shown in 1998 dollars.

**Figure 14**  
**HISTORICAL AND PROJECTED**  
**CAPITAL PROJECT EXPENDITURES**  
**CITY AND COUNTY OF HONOLULU**



LEGEND  
 □ Design  
 ■ Construction

Figure 15  
 20-YEAR PROJECT IMPLEMENTATION SCHEDULE  
 CITY AND COUNTY OF HONOLULU

## CURRENT AND FUTURE SEWER SERVICE AND SYSTEM FACILITY CHARGES

Sewer service charges and system facility charges are levied by the City and County of Honolulu to fund the major costs associated with capital improvements and operation and maintenance of the wastewater system. This chapter addresses the current and future charges.

### 5.1 SOURCES AND USES OF FUNDS

The City and County of Honolulu's Department of Environmental Services revenues are currently derived from three major sources: monthly sewer service charges, system facility charges, and interest earned on fund balances. Of these, sewer service charges are the major source of revenue followed by system facility charges. The summary of these two major sources of funding and the major sources and uses of these funds is shown in Table 11.

<b>Table 11 Major Categories of Revenue Sources and Uses City and County of Honolulu Department of Environmental Services</b>		
<b>Source of Funds</b>	<b>Who Pays</b>	<b>Use of Funds</b>
Sewer Service Charges	Existing Users	O&M Costs for Existing Facilities Replacement of Existing Facilities Construction to Improve Treatment
System Facility Charges	New Users	Construction to Accommodate Growth Construction to Improve Treatment

In the past, property taxes have been used to cover annual debt service on general obligation bonds incurred for capital construction costs of wastewater facilities. However, the City and County made the decision in 1993 to recover all wastewater debt costs through user charges. Wastewater revenues currently fund all annual debt service on previously issued reimbursable General Obligation Bonds allocated to wastewater, and the City Council's policy is to not fund any new wastewater capital improvements directly through property taxes or with G.O. bonds.

State Revolving Fund (SRF) proceeds have been a reliable source of funding for wastewater projects, averaging over \$5 million per year, as shown in Table 12. The SRF proceeds are anticipated to continue at \$5 million annually through 2007, as shown in Table 14 in Chapter 6.

Sewer service charges and system facility charges fund the major portion of costs incurred by the Department. The major cost components funded by sewer service charges and system facility charges are as follows:

Operation and maintenance of WWTP's and collection system facilities including pumping and cesspools.

Planning, design and construction of capital projects for rehabilitation, improvement and expansion.

Annual debt service for obligations incurred for construction of existing facilities.

Maintenance of appropriate reserves.

System facility charge revenues are used to fund capital projects. The City and County of Honolulu currently maintains Sewer Fund (#170), which, as of July 1, 1997, had a balance of approximately \$59,080,000. This fund is available for operations and wastewater capital costs.

Interest earned on reserves is available to pay debt service and is retained in the respective reserve or used as appropriate.

Monthly sewer service charges fund operation and maintenance costs and debt service on non-growth related CIP costs.

## **5.2 HISTORICAL REVENUES AND EXPENDITURES**

A five-year summary of historical revenues and expenditures is shown in Table 12. Sewer service charges have been held constant since July 1, 1993. New connections have averaged approximately 2,500 equivalent single-family dwelling units (ESDU) per year between 1992 and 1997. System facility charges have been held constant since fiscal year 1991-1992.

## **5.3 EXISTING RATES AND CHARGES**

Summaries of current sewer service charges are presented in Table 13. As discussed, sewer service charges have been held constant since September 1, 1993. The current City and County of Honolulu sewer service charge established in the current sewer service ordinance for single-family residences averages approximately \$33.65 per month. New connections have averaged approximately 2,500 equivalent single-family dwelling units (ESDU) per year over the past five years. Wastewater system facility charges have been held constant at \$1,146 per (ESDU) since 1991-1992.

## **5.4 COMPARISON WITH RATES CHARGED BY OTHER AGENCIES**

Several considerations are important when making sewer service charge and system facility charge comparisons for the City and County of Honolulu with other agencies. These considerations include the following:

Economies of scale are difficult to achieve due to small service areas.

**Table 12 Historical Wastewater Revenues and Expenditures (1)**  
**City and County of Honolulu Department of Environmental Services**

Fiscal Year	(Amount in \$ Millions)			
	93/94	94/95	95/96	96/97
<u>ESDUs Served</u>				
Residential ESDUs at Start of Year	189,987	192,978	194,379	196,879
Non-Residential ESDUs, Start of Year	76,941	77,130	77,280	77,359
Total ESDUs at Start of Year	266,928	270,108	271,659	274,238
Non-Residential New ESDUs Added	189	150	79	202
Total New ESDUs Added (2)	3,180	1,551	2,579	1,453
<u>Residential Charges</u>				
Monthly Sewer Service Charge	\$33.65	\$33.65	\$33.65	\$33.65
% Increase Over Prior Year	30.5%	0.0%	0.0%	0.0%
Sewer Facility Charge	\$1,146	\$1,146	\$1,146	\$1,146
% Increase Over Prior Year	0.0%	0.0%	0.0%	0.0%
<u>Estimated Cashflow and Coverage</u>				
<u>Revenue</u>				
Service Charges	\$105.3	\$109.6	\$111.5	\$111.0
Sewer Facility Charges	3.9	3.5	1.8	1.2
Other Revenues (3)	0.2	0.3	0.4	0.2
Total Revenues	\$109.4	\$113.4	\$113.7	\$112.4
<u>O&amp;M Expenses</u>				
General Government	\$1.3	\$1.5	\$2.4	\$2.4
Highways and Streets	0.0	0.1	0.1	0.2
Sanitation	51.8	51.8	58.7	51.4
Miscellaneous	6.8	8.1	9.6	9.7
CASE	5.6	5.4	6.2	5.5
Rent	0.0	0.0	0.0	0.7
Other	0.0	0.0	0.0	0.2
Total O&M Expenses	\$65.5	\$66.9	\$77.0	\$70.1
One-time Expenses	\$0.0	\$1.8	\$7.0	\$13.2
Net Revenues	\$43.9	\$44.7	\$29.7	\$29.1
Debt Service: Revenue Bonds	\$0.0	\$0.0	\$0.0	\$0.0
Debt Service: G.O. Bonds and SRF Loans	\$24.5	\$31.7	\$33.4	\$35.9
Total Debt Service	\$24.5	\$31.7	\$33.4	\$35.9
Coverage Ratio: Total Debt	1.79	1.41	0.89	0.81
<u>Capital Project Financing</u>				
Capital Expenditures	\$23.5	\$37.1	\$17.4	\$34.2
Reimbursable G.O. Bond Proceeds	8.3	9.8	11.5	34.2
SRF Loan Proceeds	15.2	27.3	5.9	0.0
<u>GAAP Fund Balances (beginning of fiscal year)</u>				
Sewer Fund (4)	\$30.8	\$50.9	\$62.4	\$63.6
System Facility Charge Fund	\$6.0	\$3.0	\$2.5	\$0.3
Total Beginning Balance	\$36.8	\$53.9	\$64.9	\$63.9

**Notes:**

- (1) Does not include Hawaii Kai, a privately owned and operated facility.
- (2) Does not reflect ESDUs changed or removed.
- (3) Includes cesspool pumping, connection, and lateral installation charges.
- (4) Includes reserves for encumbrances.

**Table 13 Summary of Current Sewer Rate Ordinance  
City and County of Honolulu  
Department of Environmental Services**

	<b>Effective September 1, 1993</b>
	<b>Standard</b>
<b>Residential Sewer Service Charges</b>	
Single family and duplex dwellings served by City water system per dwelling unit per month:	
Monthly base charge	\$24.85
Monthly usage charge	
First 2,000 gallons of metered water consumed	No Charge
Charge per 1,000 gallons over 2,000 gallons, the water consumed reduced by the irrigation factor of 18%	1.05
Single family and duplex dwellings not served by City water system per dwelling unit per month	33.65
Multiple-unit dwellings served by City water system per dwelling unit per month:	
Monthly base charge	17.40
Monthly usage charge	
First 2,000 gallons of metered water consumed	No Charge
Charge per 1,000 gallons over 2,000 gallons, the water consumed reduced by the irrigation factor of 18%	1.05
Multiple-unit dwellings not served by City water system per dwelling unit per month:	23.55
<b>Nonresidential Sewer Service Charges</b>	
Domestic Strength Wastewater	
1. Metered Water Usage	
a. If 9,000 gallons or less per month	
1) Monthly base charge	22.35
2) Charge per 1,000 gallons	0.13
b. If more than 9,000 gallons per month	
1) Charge per 1,000 gallons	2.49
2. Metered Wastewater Discharge	
a. If 7,000 gallons or less per month	
1) Monthly base charge	22.35
2) Charge per 1,000 gallons	0.16
b. If more than 7,000 gallons per month	
1) Charge per 1,000 gallons	3.12
<b>Effective 1991/92 (Dollars)</b>	
<b>Wastewater System Facility Charge per ESDU</b>	<b>1,146</b>
Note: There is also an extra strength charge that applies for high strength wastewater. ESDU = Equivalent Single Family Dwelling Unit	

Historically, system facility charges have been low.

Equipment costs are high due to the remote location of the island from major suppliers.

Electrical costs on the island are high.

Remote facilities and rough terrain add to system complexity and cost.

The harsh salt water environment increases ongoing maintenance costs, reduces useful life of facilities and leads to excessive infiltration and inflow conditions due to the accelerated deterioration of collection systems.

A comparison of the single family monthly sewer service charge and system facility charge of the City and County of Honolulu to those charges and fees of other similar agencies throughout the United States is presented in Figures 16 and 17. These comparisons are made on an equivalent cost basis and take into consideration local agency charges for collection systems as well as property tax revenues in addition to the monthly user rate. As shown in Figure 17, the current system facility charge for the City and County of Honolulu is among the lowest of the agencies surveyed.

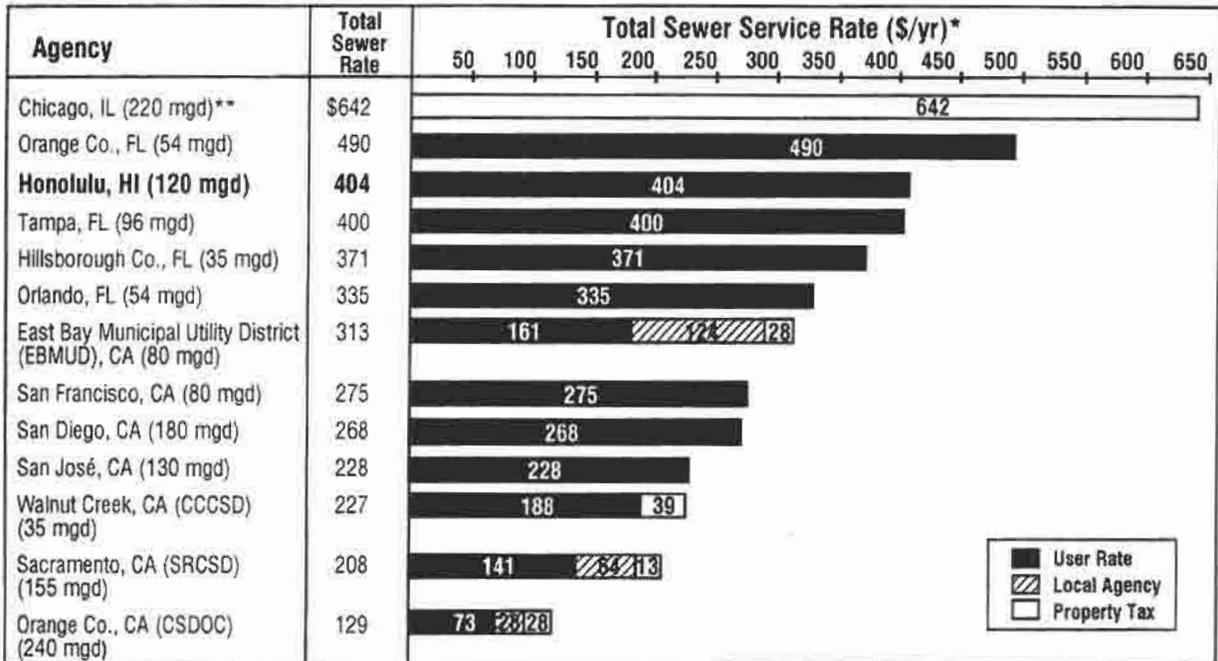
## **5.5 PROJECTED RATES AND CHARGES**

Historical and projected sewer service and system facility charges are presented in Figure 18. It is anticipated that both sewer service and system facility charges will increase beginning in fiscal year 1999/2000.

Sewer service charges have been the subject of considerable public discussion since the last increase in 1993. Of particular concern has been the unlimited inclusion of water use in the volume component of the charge. Over the past two years, the Department has undertaken an evaluation of the rate structure, including a consultant study and a series of public meetings, and has recommended a revenue neutral revision to the rate structure to address the irrigation water issue and increase fairness. Throughout this process, and in numerous other public outreach settings, the Department has identified the need for future rate increases to support necessary measures to provide appropriate service and ensure public health.

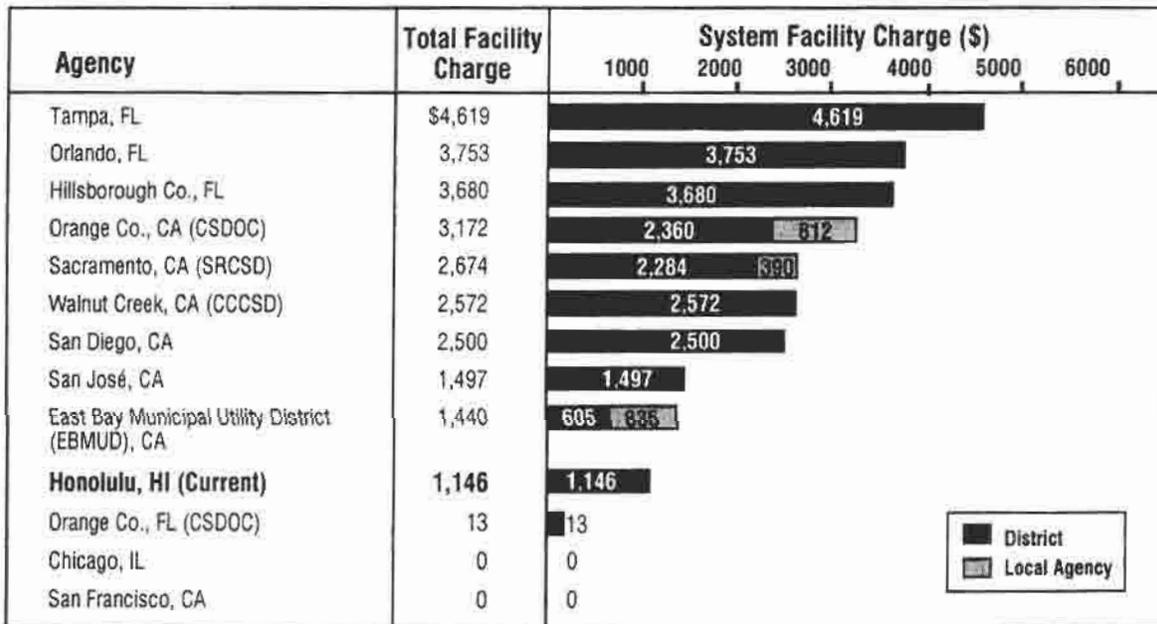
As shown in Figure 18, the system facility charge is planned to increase slightly in fiscal year 1999/2000. Revenues from system facility charges represent a minor proportion of revenues in comparison to sewer service charges, as reflected in Figure 19.

The City Council has not yet approved the adoption of sewer service and system facility charges beyond fiscal year 1997/1998. The City Council has adopted a set of Debt and Financial Policies for its wastewater system that require, among other things, the City to maintain a 1.60 times coverage for its Senior Revenue bonds and 1.25 times coverage for all Revenue Bonds (Senior and Junior). It is expected that the City will adopt annual increases in sewer service and system facility charges necessary to meet the debt service coverage requirements prescribed in its Debt and Financial Policies.



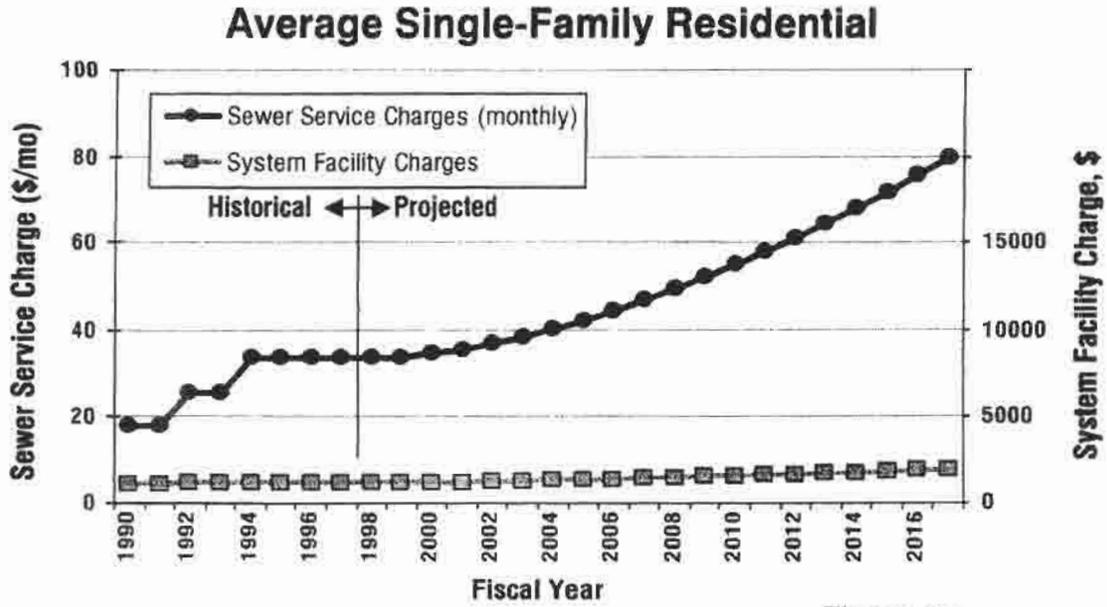
\* Total of user rate (treatment / disposal), local agency and property taxes  
 \*\* Fee is based on property tax assessment. Average fee calculated based on 1990 census average home value.  
 All rates shown based on current (1998) ordinances.

**Figure 16**  
**COMPARISON OF RESIDENTIAL SEWER SERVICE CHARGES**  
 CITY AND COUNTY OF HONOLULU

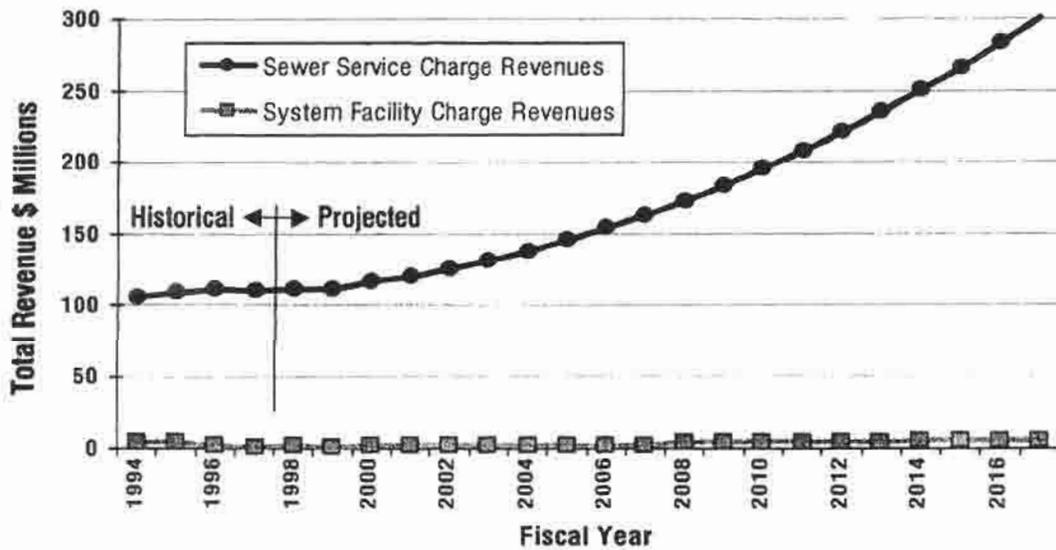


All charges shown based on current (1998) ordinances.

**Figure 17**  
**COMPARISON OF RESIDENTIAL SYSTEM FACILITY CHARGES**  
 CITY AND COUNTY OF HONOLULU



**Figure 18**  
**HISTORICAL AND PROJECTED**  
**SEWER SERVICE AND**  
**SYSTEM FACILITY CHARGES**  
**CITY AND COUNTY OF HONOLULU**



**Figure 19**  
**TOTAL REVENUES FROM**  
**SEWER SERVICE AND**  
**SYSTEM FACILITY CHARGES**  
**CITY AND COUNTY OF HONOLULU**

**[THIS PAGE INTENTIONALLY LEFT BLANK]**

**SUMMARY OF PROJECTED REVENUES AND EXPENSES**

A ten year projection through fiscal year 2006/2007 for the City and County of Honolulu Department of Environmental Services's operations has been prepared and is presented in Table 14. As shown in Table 14, sewer service charges are projected to be the major source of revenues to cover debt service, as has been the case in the past (see Figure 19).

Carollo Engineers has reviewed the assumptions, inputs, and methodologies used by the financial model which has generated these projections, and is of the opinion that the assumptions are reasonable, the rate structure is adequate and competitive, and therefore, projected revenues are adequate to cover operation and maintenance expenses, debt service, required coverage and future capital costs and contingencies.

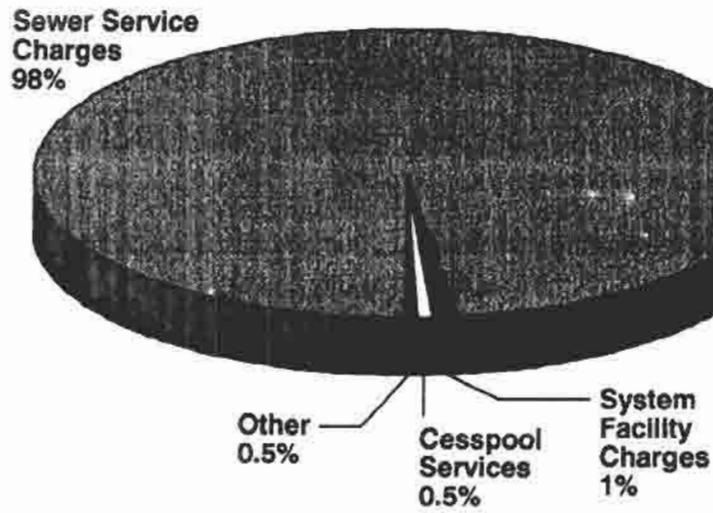
The principal assumptions underlying these projections follow:

- Growth in ESDUs is 1,500 per year through fiscal year 2006/2007 and 2,500 per year beyond that. The majority of the growth in ESDUs is projected to be residential, as is the current customer base (See Figure 20).
- Capital expenditures are assumed to be required and made as reflected in Table 14 to meet consent decree milestones and accommodate forecasted population growth as projected in the City and County of Honolulu 1992 General Plan.
- Collection system project planning is generally based on a 5-year, 6-hour design storm.
- Interest earnings on fund balances are assumed at 5.0 percent.
- Debt service reserve fund requirements are cash funded from bond proceeds.
- Debt service on the 1998 Senior Bonds and the 1998 Junior Bonds is assumed at an all-in interest cost of 5.00 percent, and the bond payment period of both series is assumed at 30 years. Debt service on all future revenue bonds issues is assumed at an all-in interest cost of 5.50 percent, and the bond repayment period for all future issues is assumed to be 30 years. All future revenue bond issues are assumed to be issued on parity with the 1998 Senior Bonds.
- Bond issuance costs are estimated at 1.0 percent of net bond proceeds.
- Unrestricted reserve balances are maintained at levels indicated in the projections.
- "Required Rate Increases" as identified in Table 14 are assumed to be made by the City Council on a timely basis to produce the incremental revenues projected herein.

**Table 14 Projected Cash Flow Summary  
City and County of Honolulu Department of Environmental Services**

<i>(Revenue and Expense Numbers in Millions)</i>		<i>( FY Ending June 30 )</i>									
<i>Fiscal Year</i>	<i>1998 (7)</i>	<i>1999</i>	<i>2000</i>	<i>2001</i>	<i>2002</i>	<i>2003</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>	<i>TOTAL</i>
<b>Growth Assumptions</b>											
Total ESDUs at Start of Year	275,691	277,351	278,661	280,161	281,661	283,161	284,661	286,161	287,661	289,161	
Total New ESDUs Added	1,660	1,310	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	14,970
<b>Revenues</b>											
Sewer Service Charges	111.5	111.5	116.2	120.3	125.6	131.0	137.8	144.9	153.5	162.6	1,315.0
System Facility Charges (SFC)	1.9	1.5	1.8	1.8	1.9	1.9	2.0	2.1	2.1	2.2	19.1
Interest on Unrestricted Reserves (1)	0.0	2.5	2.8	2.5	2.9	3.0	3.0	2.8	2.5	2.3	24.3
Other Revenues (2)	1.6	0.9	1.0	1.1	1.1	1.2	1.3	1.3	1.4	1.5	12.3
<b>TOTAL REVENUES</b>	<b>115.0</b>	<b>116.4</b>	<b>121.8</b>	<b>125.7</b>	<b>131.5</b>	<b>137.2</b>	<b>144.0</b>	<b>151.1</b>	<b>159.6</b>	<b>168.6</b>	<b>1,370.8</b>
<b>Expenses</b>											
O&M Costs (3)	74.1	68.6	71.5	73.7	76.0	78.3	80.8	83.4	86.0	88.8	781.1
<b>TOTAL EXPENSES</b>	<b>74.1</b>	<b>68.6</b>	<b>71.5</b>	<b>73.7</b>	<b>76.0</b>	<b>78.3</b>	<b>80.8</b>	<b>83.4</b>	<b>86.0</b>	<b>88.8</b>	<b>781.1</b>
<b>TOTAL NET REVENUES</b>	<b>40.9</b>	<b>47.9</b>	<b>50.3</b>	<b>52.0</b>	<b>55.5</b>	<b>58.9</b>	<b>63.2</b>	<b>67.7</b>	<b>73.6</b>	<b>79.8</b>	<b>589.7</b>
<b>Debt Service</b>											
Sr. Revenue Bond Debt Service (4)	0.0	0.0	3.2	5.3	10.1	15.2	20.8	27.0	33.3	39.6	154.6
Jr. Revenue Bond Debt Service (4)(5)	0.0	0.0	10.7	10.2	10.2	10.2	10.2	10.2	10.2	10.2	82.1
Reimbursable G.O. Debt Service (6)	34.3	19.4	12.6	12.5	12.8	13.1	13.0	12.4	11.9	11.6	153.5
SRF Loans (Existing and Future)	4.5	5.1	5.2	5.6	5.9	6.3	6.7	7.0	7.4	7.8	61.4
<b>Total Debt Service</b>	<b>38.8</b>	<b>24.4</b>	<b>31.6</b>	<b>33.6</b>	<b>39.0</b>	<b>44.8</b>	<b>50.7</b>	<b>56.7</b>	<b>62.7</b>	<b>69.1</b>	<b>451.6</b>
<b>TOTAL NET REVENUES AVAILABLE FOR OTHER REQUIREMENTS</b>	<b>2.1</b>	<b>23.5</b>	<b>18.7</b>	<b>18.4</b>	<b>16.5</b>	<b>14.1</b>	<b>12.5</b>	<b>10.9</b>	<b>10.8</b>	<b>10.6</b>	<b>138.1</b>
Sr. Revenue Bond Coverage Ratio (8)	-	-	15.11	9.38	5.33	3.74	2.94	2.43	2.15	1.96	
Total Revenue Bond Coverage Ratio	-	-	3.50	3.22	2.65	2.24	1.97	1.76	1.64	1.56	
Fixed Charge Coverage Ratio:	-	1.90	1.53	1.49	1.38	1.27	1.21	1.16	1.14	1.12	
<b>Capital Project Financing</b>											
Capital Expenditures	37.9	55.1	76.5	75.5	86.5	112.1	114.5	112.5	112.2	109.8	902.5
SRF Loan Proceeds	0.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	45.0
Net Revenue Bond Proceeds	0.0	50.0	30.0	50.0	85.0	85.0	90.0	90.0	90.0	90.0	660.0
<b>Major Reserves (end of year)</b>											
Unrestricted Reserve Balance	42.1	56.8	49.0	58.6	60.1	59.2	55.8	50.8	45.7	40.5	
G.O. Bond Proceeds Fund	47.8	17.1	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Improvement Account Excess/(Shortfall)	-1.7	37.6	18.1	9.6	18.7	12.5	9.5	8.4	7.6	9.1	
<b>Total Ending Balance</b>	<b>88.2</b>	<b>111.5</b>	<b>69.5</b>	<b>68.2</b>	<b>78.8</b>	<b>71.7</b>	<b>65.3</b>	<b>59.2</b>	<b>53.3</b>	<b>49.5</b>	
<b>Projected Charges Required</b>											
Monthly Sewer Service Charge (5)	\$33.65	\$33.65	\$34.66	\$35.70	\$37.06	\$38.46	\$40.23	\$42.08	\$44.36	\$46.75	
Increase Over Prior Year	0.0%	0.0%	3.0%	3.0%	3.8%	3.8%	4.6%	4.6%	5.4%	5.4%	
System Facility Charge (5)	\$1,146	\$1,146	\$1,180	\$1,216	\$1,252	\$1,290	\$1,329	\$1,368	\$1,409	\$1,452	
Increase Over Prior Year	0.0%	0.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	
<b>notes:</b>											
(1) Unrestricted Reserves are all reserves except Revenue Bond Improvement Account and G.O. Bond balance. Interest on G.O. Bond balance remains in City General Fund.											
(2) Includes cesspool services, connections, laterals, and other miscellaneous revenues.											
(3) Note that FYE 98 O&M expenses include one-time only \$3.8 million reimbursement to City General Fund.											
(4) Assumes December 1998 issues of Revenue Bonds, with interest payments beginning in FY 99/00.											
(5) Junior Series 1998 proceeds used to advance refund approximately \$220 million of reimbursable G.O. Bonds.											
(6) Debt service on reimbursable G.O. Bonds is paid from the City's General Fund. However, reimbursement to the General Fund is required for these payments from sewer service charges.											
(7) Values for FYE 1998 are projected actual, but unaudited.											
(8) Revenues for coverage calculations do not include system facility charges.											
FYE = Fiscal Year Ending											

**Total = \$113 Million**



**Figure 20**  
**REVENUE SOURCES**  
**FISCAL YEAR 1996-97**  
**CITY AND COUNTY OF HONOLULU**

- Inflation of capital expenditures and operations and maintenance (O&M) costs is assumed at 3.0 percent per annum for all categories including labor.
- No increases above inflation of operation and maintenance costs are expected. Any additional facilities will be served at existing or lower staffing levels as discussed in Chapter 2, while maintaining effective facility performance.
- Discharge characteristics from existing customers will not vary significantly from the values identified on the various wastewater facilities plans.
- No catastrophic events resulting from natural or human causes will occur that will have a substantial adverse impact on the integrity of the City and County of Honolulu's wastewater facilities or the activities of their customers.

The City Council has adopted a set of Debt and Financial Policies for its wastewater system that target, among other things, the City to maintain a 1.60 times coverage for its Senior Revenue Bonds and 1.25 times coverage for all Revenue Bonds (Senior and Junior). It is expected that the City will adopt annually increases in sewer services charges necessary to meet the debt service coverage requirements prescribed in its Debt and Financial Policies. Current projections show that the debt service coverage requirements will be achieved by: 1) increasing sewer service charges between 3.0 and 5.4 percent annual beginning in fiscal year ending 1999/2000, and 2) increasing system facility charges 3.0 percent annually beginning in fiscal year ending 1999/2000.

In addition, a sensitivity analysis was performed to determine the impact of low and high growth projections on the required monthly service charges and coverage ratios. The conservative growth rate assumption of 1,500 ESDUs per year (through fiscal year 2007) is less than historical recorded connection rates, particularly when compared to the most recent five-year average of 2,500 ESDUs per year. This conservative growth rate assumption accounts for the recent economic downturn. Should growth increase, several projects may have to be accelerated in the implementation schedule. Because the CIP program will accommodate an additional 20 percent of flow above current levels, while projected ESDU growth assumed for purposes of estimating annual revenues is only 40,000 ESDUs, or 15 percent of the existing number of ESDUs, any additional growth, up to 55,000 ESDUs over the 20-year period, will be accommodated by the planned projects and would only add to estimated revenues. Based on this analysis, the City and County of Honolulu will comply with maintaining its Debt and Financial Policies as stated for the coverage ratio requirements.

Based upon our studies, the assumptions discussed in this report, and our review of the data and analysis provided by the City and County of Honolulu and its consultants, we conclude the following:

### **7.1 COMPLIANCE WITH DISCHARGE REQUIREMENTS**

Except for periodic events at the State-owned Waimanalo WWTP, the wastewater treatment facilities are meeting current regulatory requirements and are operated and maintained in accordance with standard utility practices.

The City and County of Honolulu's Wastewater System collection and pumping facilities do not meet all of the current and anticipated federal and state regulatory requirements, and will require additional capacity necessary to serve the projected growth in the service area. These collection and pumping facilities constitute much of the need for capital facility improvements.

Completion of the CIP projects described in this report will permit the City and County of Honolulu to attain and to remain in compliance with all federal, state, and local regulations regarding treatment and discharge as described in the current NPDES permit and consent decrees.

### **7.2 20-YEAR CIP**

An estimated \$1.4 billion of non-discretionary CIP projects for various treatment, collection and other facilities are required to be constructed over the next 20 years to eliminate the current and projected critical deficiencies, to meet consent decree milestones, and to provide a wastewater system in a satisfactory operating condition based on projected wastewater usage and environmental and other regulatory requirements. The remaining approximately \$0.3 billion of CIP projects are discretionary and have been identified to improve wastewater treatment and collection systems. These CIP projects are to be funded from proceeds of bonds, including the 1998 Wastewater Revenue Bonds and from net revenues and other charges.

The \$1.7 billion CIP is technically sound and conforms with good engineering practice and the estimated total costs of the CIP have been realistically assessed.

The cost-effectiveness of the wastewater system operations and maintenance activities is anticipated to improve after the CIP projects are accomplished.

### **7.3 1998-2002 CIP PROJECTS**

The projects to be financed by the 1998 Senior Bonds are the highest priority projects required to meet consent decree requirements and protect public health. They are included in recently completed facility plans, which identify the need for projects through the year 2017, and provide the most cost effective facilities evaluated in those plans.

The estimated project costs and construction schedules that have been developed for the 1998-2002 projects are reasonable and achievable.

### **7.4 DEPARTMENT MANAGEMENT**

The operations of the wastewater system are directed by a professional staff for the disciplines of operations specialists, maintenance (including electrical, instrumentation and mechanical), laboratory personnel and other technical support personnel.

### **7.5 FINANCIAL PROJECTIONS**

The financial projections with respect to the wastewater system are based on reasonable and conservative assumptions and should fairly reflect the financial performance of the wastewater system.

Historical, current, and projected customer rates and charges for the City and County of Honolulu are relatively high compared to the rates and charges of other agencies, but are reasonable considering a number of site specific factors.

In the opinion of Carollo Engineers, projected sewer service and system facility charges will provide revenue sufficient to:

- Meet all projected costs of operation, maintenance and routine replacement of sewer system facilities.
- Meet the existing debt service obligations and the projected requirements for the 1998 Senior Bonds, the 1998 Junior Bonds, and future bond issues.
- Provide sufficient revenue to pay the costs of the City and County of Honolulu's CIP through the end of the forecast period.
- Meet reserve requirements of bond resolution.

The funds obtained from the sale of the 1998 Senior Bonds, current cash reserves, fees collected over the next few years, and future bond issues will be adequate to fund the current projects. The funds obtained from the sale of the 1998 Junior Bonds will be used to refund certain reimbursable General Obligation bonds of the City and County issued to finance previously identified projects for the wastewater system.

The rate at which growth occurs will not affect the ability of the City and County of Honolulu to meet its debt obligations because the growth is a small component of the overall costs and revenues associated with the financial projections. In general, many of the CIP projects are necessary and must proceed based on consent decree requirements and public safety and health concerns with or without any additional connections.

This report has been prepared at the request of the City and County of Honolulu for appending to the Official Statements relating to the issuance of the 1998 Senior Bonds and the 1998 Junior Bonds. The conclusions, observations, and recommendations contained herein constitute only the opinions of Carollo Engineers. The various background documents, statements and other information supplied by the City and County of Honolulu, its employees, and other consultants have been relied upon as being accurate in the performance of these analyses. However, no assurances are given nor warranties implied by Carollo as to the accuracy of such information. Carollo makes no certification and gives no assurances except as explicitly set forth in this report.

ADAF	average day annual flow
ADWF	average day dry weather flow
BOD <sub>5</sub>	five-day biochemical oxygen demand
CIP	Capital Improvement Plan
DOH	Department of Health
DWR	Department of Water Resources
ENRCCI	ENR Construction Cost Index
EPA	Environmental Protection Agency
ESDU	equivalent single-family dwelling unit
ft	feet
FY	fiscal year
FYE	fiscal year ending
gal	gallons
GO Bonds	General Obligation Bonds
gpd	gallons per day
gpm	gallons per minute
mgd	million gallons per day
mg/l	milligrams per liter
NPDES	National Pollutant Discharge Elimination System
O&M	operations and maintenance
PHWWF	peak hour wet weather flow
PWWF	peak wet weather flow
SEP	supplemental environmental projects
SFR	single-family residence
TSS	total suspended solids
WWTP	wastewater treatment plant
WWPTF	wastewater pre-treatment facility

Belt Collins Hawaii, December 1993, East Mamala Bay Final Wastewater Facilities Plan, Volume 1A, 1B and Volume II.

Wilson Okamoto & Associates, Inc. and Brown & Caldwell, September 1996, West Mamala Bay Facilities Plan - Conceptual Plan.

Wilson Okamoto & Associates, Inc., and Brown & Caldwell, February 1998, Kailua-Kaneohe-Kahaluu Facilities Plan - Interim Plan.

R. M. Towill Corporation, March 1985, North Oahu Facility Plan.

M&E Pacific, Inc., Environmental Engineers, June 1980, Addendum to the Facility Plan for the Waianae Wastewater Treatment Plant.

Belt Collins & Associates, September 1987, Waialua-Hale'iwa Wastewater Facilities Plan.

Hydro Resources International, November 1995, Supplemental Waialua-Hale'iwa Wastewater Facility Plan.

City and County of Honolulu, Fiscal Year 1998, Executive Program and Budget.

City and County of Honolulu, March 2, 1998, CIP Budget, as Submitted to City Council.

R. M. Towill Corporation, November 1995, Spill Response Action Plan (SRAP) Engineering Report: Transport and Treatment Alternatives and Cost Studies.

Bartle Wells Associates, November 1997, Financing the Wastewater Program.

R. W. Beck, August 1997, Operations Management Review.

**[THIS PAGE INTENTIONALLY LEFT BLANK]**

PROPOSED FORM OF CONTINUING DISCLOSURE CERTIFICATE

MASTER CERTIFICATE OF THE DIRECTOR OF BUDGET AND FISCAL SERVICES  
OF THE CITY AND COUNTY OF HONOLULU, HAWAII, PROVIDING  
FOR CONTINUING DISCLOSURE

I, the undersigned, Roy K. Amemiya, Jr., being the duly appointed Director of Budget and Fiscal Services (the "Director") of the City and County of Honolulu, Hawaii (the "City and County", DO HEREBY CERTIFY as follows:

ARTICLE I  
PURPOSE AND DEFINITIONS

Section 1.1. *Purpose.* This Certificate shall constitute a written undertaking for the benefit of the Holders of the Bonds, and is being executed and delivered solely to assist the Underwriters in complying with subsection (b)(5) of the Rule.

Section 1.2. *Definitions.* The following terms used in this Certificate shall have the following respective meanings:

"*Annual Financial Information*" means, collectively, (i) the financial information and operating data with respect to the Department for each fiscal year of the Department of the type included in the Series 1998 Official Statement of the City and County under the headings "FINANCIAL STATEMENTS," and "PENDING LITIGATION;" and (ii) the information regarding amendments to this Certificate required pursuant to Sections 3.2(c) and (d) of this Certificate. Audited Financial Statements, if available, or Unaudited Financial Statements shall be included in the Annual Financial Information as described in Section 2.1(c) of this Certificate.

The descriptions contained in clause (i) above of financial information and operating data constituting Annual Financial Information are of general categories of financial information and operating data. When such descriptions include information that no longer can be generated because the operations to which it related have been materially changed or discontinued, a statement to that effect shall be provided in lieu of such information.

"*Audited Financial Statements*" means the annual financial statements, if any, of the Department, audited by such auditor as shall then be required or permitted by State law or the Charter of the City and County. Audited Financial Statements shall be prepared in accordance with GAAP; *provided, however*, that the Department may from time to time, if required by federal or State legal requirements, modify the accounting principles to be followed in preparing its financial statements. The notice of any such modification required by Section 3.2(d) of this Certificate shall include a reference to the specific federal or State law or regulation describing such accounting principles. Prior to the fiscal year ending June 30, 1999, Audited Financial Statements of the Department means the extracts of the audited financial statements of the City and County relating to the Sewer Fund and the Wastewater System Facility Charge Fund.

"*Beneficial Owner*" means any person who (i) has the power, directly or indirectly, to vote or consent with respect to, or dispose of ownership of, any Bonds (including a person who holds Bonds through a nominee, depository or other intermediary), or (ii) is treated as the owner of any Bonds for federal income tax purposes.

"*Bonds*" means any revenue bonds issued by the City and County under and pursuant to Resolution No. 98-193 duly adopted by the City Council of the City and County on November 10, 1998 and identified in a Series Certificate.

"*Counsel*" means Hawkins, Delafield & Wood or other nationally recognized bond counsel or counsel expert in federal securities laws.

"*Department*" means the Department of Environmental Services of the City and County.

"*Director*" means any duly appointed Director of Budget and Fiscal Services of the City and County.

"GAAP" means generally accepted accounting principles as prescribed from time to time for governmental units by the Governmental Accounting Standards Board.

"Holder" means any person who shall be the registered owner, or his duly authorized attorney-in-fact, representative or assign, of any Bond.

"Material Event" means any of the following events with respect to the Bonds, whether relating to the Department or otherwise, if material:

- (1) principal and interest payment delinquencies;
- (2) non-payment related defaults;
- (3) unscheduled draws on debt service reserves reflecting financial difficulties;
- (4) unscheduled draws on credit enhancements reflecting financial difficulties;
- (5) substitution of credit or liquidity providers, or their failure to perform;
- (6) adverse tax opinions or events affecting the tax-exempt status of the security;
- (7) modifications to rights of security holders;
- (8) bond calls;
- (9) defeasances;
- (10) release, substitution, or sale of property securing repayment of the securities; and
- (11) rating changes.

"Material Event Notice" means notice of a Material Event.

"MSRB" means the Municipal Securities Rulemaking Board established pursuant to Section 15B(b)(1) of the Securities Exchange Act of 1934.

"NRMSIR" means, at any time, a then-existing nationally recognized municipal securities information repository, as recognized from time to time by the SEC for the purposes referred to in the Rule. The NRMSIRs as of the date of this Certificate are Bloomberg L.P. (Princeton, NJ), Disclosure, Inc. (Bethesda, MD), Kenny Information Systems (New York, NY), Moody's Investors Service (New York, NY), and Thomson Municipal Services Inc. (New York, NY). Filing information relating to such NRMSIRs is set forth in Exhibit A hereto.

"Official Statement" means the "final official statement," as defined in paragraph (f)(3) of the Rule.

"Rule" means Rule 15c2-12 promulgated by the SEC under the Securities Exchange Act of 1934 (17 CFR Part 240, §240.15c2-12), as in effect on the date of this Certificate, including any official interpretations thereof issued either before or after the effective date of this Certificate which are applicable to this Certificate.

"SEC" means the United States Securities and Exchange Commission.

"Series Certificate" means any certificate executed by the Director as described in Section 3.3 of this Certificate extending the benefits of this Certificate to the Beneficial Owners, Holders and Underwriters of Bonds of a Series.

"Series 1998 Official Statement" means the Official Statement of the City and County relating to its Wastewater System Revenue Bonds (First Bond Resolution), Senior Series 1998.

"SID" means, at any time, a then-existing state information depository, if any, as operated or designated as such by or on behalf of the State for the purposes referred to in the Rule. As of the date of this Certificate, there is no SID.

"State" means the State of Hawaii.

"Supplemental Certificate" means any certificate executed by the Director as described in Section 3.2 of this Certificate amending the provisions of this Certificate.

"Unaudited Financial Statements" means the same as Audited Financial Statements, except that they shall not have been audited.

"Underwriter" means any original underwriter of a Series of Bonds who is required to comply with the Rule and who is identified in a Series Certificate.

## ARTICLE II

### THE UNDERTAKING

Section 2.1. *Annual Financial Information.* (a) The City and County shall provide Annual Financial Information with respect to each fiscal year of the Department, commencing with the fiscal year ending June 30, 1998, by no later than eight months after the end of the respective fiscal year, to each NRMSIR and the SID. The City and County may provide Annual Financial Information by specific reference to documents (i) either (1) provided to each NRMSIR existing at the time of such reference and the SID or (2) filed with the SEC, or (ii) if such document is an Official Statement, available from the MSRB. The Department may provide Annual Financial Information in one document or multiple documents comprising a package, and at one time or in part from time to time.

(b) The City and County shall provide, in a timely manner, notice of any failure of the City and County to provide the Annual Financial Information by the date specified in subsection (a) above to (i) either the MSRB or each NRMSIR, and (ii) the SID.

(c) If Audited Financial Statements are not provided as part of Annual Financial Information by the date required by Section 2.1(a) of this Certificate, the City and County shall provide (i) as part of the Annual Financial Information, Unaudited Financial Statements in a format similar to the unaudited financial statements contained in the Series 1998 Official Statement under the heading "FINANCIAL STATEMENTS," and (ii) Audited Financial Statements, when and if available, to each NRMSIR and the SID.

(d) The Department's current fiscal year is July 1 of a calendar year to June 30 of the succeeding calendar year. The City and County promptly notify (i) each NRMSIR, and (ii) the SID of each change in its fiscal year.

Section 2.2. *Material Event Notices.* (a) If a Material Event occurs, the City and County shall provide, in a timely manner, a Material Event Notice to (i) either the MSRB or each NRMSIR, and (ii) the SID.

(b) Upon any legal defeasance of any Bonds of a Series, the City and County shall provide notice of such defeasance to (i) each NRMSIR or the MSRB and (ii) the SID, which notice shall state whether such Bonds have been defeased to maturity or to redemption and the timing of such maturity or redemption.

(c) Each Material Event Notice shall be so captioned and shall prominently state the title, date and CUSIP numbers of the Bonds.

Section 2.3. *Additional Disclosure Obligations.* The City and County acknowledges and understands that other state and federal laws, including but not limited to the Securities Act of 1933 and Rule 10b-5 promulgated under the Securities Exchange Act of 1934, may apply to the Department, and that under some circumstances compliance with this Certificate, without additional disclosures or other action, may not fully discharge all duties and obligations of the Department under such laws.

Section 2.4. *Additional Information.* Nothing in this Certificate shall be deemed to prevent the City and County from disseminating any other information, using the means of dissemination set forth in this Certificate or any other means of communication, or including any other information in any Annual Financial Information or Material Event Notice, in addition to that which is required by this Certificate. If the City and County chooses to include any information in any Annual Financial Information or Material Event Notice in addition to that which is specifically required by this Certificate, the City and County shall have no obligation under this Certificate to update such information or include it in any future Annual Financial Information or Material Event Notice.

Section 2.5. *No Previous Non-Compliance.* The City and County represents that since July 3, 1995, it has not failed to comply in any material respect with any previous undertaking in a written contract or agreement specified in paragraph (b)(5)(i) of the Rule.

Section 2.6. *Transmission of Information and Notices.* Unless otherwise required by law and, in the City and County's sole determination, subject to technical and economic feasibility, the City and County shall employ such methods of information and notice transmission as shall be requested or recommended by the herein-designated recipients of the Department's information and notices.

### ARTICLE III

#### TERMINATION, AMENDMENT, ENFORCEMENT, BENEFICIARIES AND DISSEMINATION AGENT

Section 3.1. *Termination.* (a) The City and County's obligations under this Certificate with respect to the Bonds shall terminate upon (i) a prior redemption or payment in full of all of the Bonds of such Series, or (ii) a legal defeasance of all of the Bonds of such Series.

(b) This Certificate, or any provision of this Certificate, shall be null and void in the event that there is delivered (i) to Director an opinion of Counsel, addressed to the City and County, to the effect that those portions of the Rule which require this Certificate, or any of the provisions of this Certificate, respectively, do not or no longer apply to the Bonds, whether because such portions of the Rule are invalid, have been repealed, or otherwise, as shall be specified in such opinion, and (2) copies of such opinion to each NRMSIR and the SID.

Section 3.2. *Amendment.* (a) This Certificate may be amended by a Supplemental Certificate of the Director, without the consent of the Holders of the Bonds, if all of the following conditions are satisfied:

(1) such amendment is made in connection with a change in circumstances that arises from a change in legal (including regulatory) requirements, a change in law (including rules or regulations) or in interpretations thereof, or a change in the identity, nature or status of the Department or the type of business conducted thereby;

(2) this Certificate as so amended would have complied with the requirements of the Rule as of the date of this Certificate, after taking into account any amendments or interpretations of the Rule, as well as any change in circumstances;

(3) there shall have been delivered to the Director, an opinion of Counsel, addressed to the City and County, to the same effect as set forth in clause (2) above;

(4) there shall have been delivered to the Director, an opinion of Counsel or a determination by a person, in each case unaffiliated with the City and County (such as bond counsel) and acceptable to the City and County, addressed to the City and County, to the effect that the amendment does not materially impair the interests of the Holders of the Bonds; and

(5) the City and County shall have delivered copies of such opinion(s) and amendment to each NRMSIR and the SID.

(b) In addition to subsection (a) above, this Certificate may be amended and any provision of this Certificate may be waived by a Supplemental Certificate of the Director, without the consent of the holders of the Bonds, if all of the following conditions are satisfied: (1) an amendment to the Rule is adopted, or a new or modified official interpretation of the Rule is issued, after the effective date of this Certificate which is applicable to this Certificate, (2) there shall have been delivered to the Director an opinion of Counsel, addressed to the City and County, to the effect that performance by the City and County under this Certificate as so amended or giving effect to such waiver, as the case may be, will not result in a violation of the Rule as amended or officially interpreted and (3) the City and County shall have delivered copies of such opinion and amendment to each NRMSIR and the SID.

(c) To the extent any amendment to this Certificate results in a change in the type of financial information or operating data provided pursuant to this Certificate, the first Annual Financial Information provided thereafter shall include a narrative explanation of the reasons for the amendment and the impact of the change.

(d) If an amendment is made to the accounting principles to be followed in preparing financial statements, the Annual Financial Information for the year in which the change is made shall present a comparison between the financial statements or information prepared on the basis of the new accounting principles and those prepared on the basis of the former accounting principles. Such comparison shall include a qualitative and, to the extent reasonably feasible, quantitative discussion of the differences in the accounting principles and the impact of the change in the accounting principles on the presentation of the financial information. Notice of such amendment shall be provided by the City and County to (i) either the MSRB or each NRMSIR and (ii) the SID.

Section 3.3. *Benefit; Third-Party Beneficiaries; Enforcement.* (a) By execution of a Series Certificate identifying the Underwriters and the Bonds of a Series, the provisions of this Certificate shall inure solely to the benefit of such Underwriters and the Holders from time to time of such Bonds. Beneficial Owners of such Bonds shall be third-party beneficiaries of this Certificate.

(b) Except as provided in this subsection (b), the provisions of this Certificate shall create no rights in any person or entity. The obligations of the City and County to comply with the provisions of this Certificate shall be enforceable by any Holder of outstanding Bonds; *provided, however*, that such right to enforce the provisions of this Certificate shall be limited solely to a right, by action in mandamus or for specific performance, to compel performance of the City and County's obligations under this Certificate. In consideration of the third-party beneficiary status of Beneficial Owners of Bonds pursuant to subsection (a) of this Section, Beneficial Owners shall be deemed to be Holders of Bonds for purposes of this subsection (b).

(c) Any failure by the City and County to perform in accordance with this Certificate shall not constitute a default under any ordinance or resolution of the City and County authorizing the Bonds of any Series or any certificate of the Director providing for the issuance of the Bond of a Series.

(d) This Certificate shall be construed and interpreted in accordance with the laws of the State, and any suits and actions arising out of this Certificate shall be instituted in a court of competent jurisdiction in the State; *provided, however*, that to the extent this Certificate addresses matters of federal securities laws, including the Rule, this Certificate shall be construed in accordance with such federal securities laws and official interpretations thereof.

Section 3.4. *Dissemination Agent.* The Director, on behalf of the Department, shall disseminate the Annual Financial Information, the Audited Financial Statements, the Unaudited Financial Statements, the Material Event Notices and all other information and notices as described in this Certificate. The Director may appoint one or more agents to disseminate such information and notices.

Dated this 23<sup>rd</sup> day of December, 1998.

---

Roy K. Amemiya, Jr.,  
Director of Budget and Fiscal Services  
City and County of Honolulu, Hawaii

The above and foregoing certificate is hereby approved as to form and legality this 23<sup>rd</sup> day of December, 1998.

---

Corporation Counsel  
City and County of Honolulu, Hawaii

EXHIBIT A  
to Continuing Disclosure Certificate

Filing information relating to the Nationally Recognized Municipal Securities Information Repositories approved by the Securities and Exchange Commission (subject to change):

Bloomberg Municipal Repositories  
P.O. Box 840  
Princeton, NJ 08542-0840  
or  
100 Business Park Drive  
Skillman, NJ 08558  
Internet address: [munis@bloomberg.com](mailto:munis@bloomberg.com)  
Telephone: (609) 279-3200  
Fax: (609) 279-5962

DPC Data Inc.  
One Executive Drive  
Fort Lee, NJ 07024  
Internet address: [nrmsir@dpcdata.com](mailto:nrmsir@dpcdata.com)  
Telephone: (201) 346-0701  
Fax: (201) 947-0107

Kenny Information Systems, Inc.  
Attn: Kenny Repository Service  
65 Broadway, 16th Floor  
New York, New York 10006  
Telephone: (212) 770-4595  
Fax: (212) 797-7994

Thomson NRMSIR  
Attn: Municipal Disclosure  
395 Hudson Street, 3rd Floor  
New York, New York 10014  
Internet address: [disclosure@muller.com](mailto:disclosure@muller.com)  
Telephone: (212) 807-5001 or (800) 689-8466  
Fax: (212) 989-2078

**SERIES CERTIFICATE OF THE DIRECTOR OF BUDGET AND FISCAL SERVICES OF THE  
CITY AND COUNTY OF HONOLULU, HAWAII, PROVIDING FOR CONTINUING DISCLOSURE**

I, the undersigned, Roy K. Amemiya, Jr., being the duly appointed Director of Budget and Fiscal Services (the "Director") of the City and County of Honolulu, Hawaii (the "City and County"), DO HEREBY CERTIFY that: (i) this Certificate is a Series Certificate as defined in Section 1.1 and described in Section 3.3 of the Master Certificate of the Director of Budget and Fiscal Services of the City and County of Honolulu, Hawaii, Providing for Continuing Disclosure, dated December 23, 1998 (the "Master Certificate"); (ii) PaineWebber Incorporated and Salomon Smith Barney as the Underwriters of the \$55,300,000 Wastewater System Revenue Bonds (First Bond Resolution), Senior Series 1998 of the City and County, dated December 1, 1998 (the "Series 1998 Bonds"), shall be beneficiaries of the Master Certificate; (iii) the Holders of the Series 1998 Bonds shall also be beneficiaries of the Master Certificate; (iv) the Beneficial Owners of Series 1998 Bonds shall be third-party beneficiaries of the Master Certificate; and (v) all capitalized terms used herein shall have the respective meanings as defined in the Master Certificate.

Dated this 23<sup>rd</sup> day of December, 1998.

\_\_\_\_\_  
Roy K. Amemiya, Jr.,  
Director of Budget and Fiscal Services  
City and County of Honolulu, Hawaii

The above and foregoing certificate is hereby approved as to form and legality this 23<sup>rd</sup> day of December, 1998.

\_\_\_\_\_  
Corporation Counsel  
City and County of Honolulu, Hawaii

[THIS PAGE INTENTIONALLY LEFT BLANK]

## PROPOSED FORM OF OPINION OF BOND COUNSEL

City Council  
City and County of Honolulu  
Honolulu, Hawaii

Members of the City Council:

CITY AND COUNTY OF HONOLULU, HAWAII  
WASTEWATER REVENUE SYSTEM BONDS,  
(FIRST BOND RESOLUTION)  
SENIOR SERIES 1998, \$55,300,000

At your request, we have examined into the validity of \$55,300,000 principal amount of City and County of Honolulu, Hawaii, Wastewater System Revenue Bonds (First Bond Resolution), Senior Series 1998 (the "Bonds"). The Bonds are dated December 1, 1998, are issuable in the denomination of \$5,000 or any integral multiple of \$5,000, and mature on July 1 in each of the years and in the respective principal amounts set forth below, with the Bonds maturing in a particular year bearing interest payable on July 1, 1999 and semiannually on January 1 and July 1 of each year thereafter, in each case to registered holders of record as of the close of business on the fifteenth day (whether or not a business day) of the month next preceding an interest payment date, at the rate per annum set opposite such year, as follows:

<u>Maturity Date</u>	<u>Principal Amount</u>	<u>Interest Rate</u>	<u>Maturity Date</u>	<u>Principal Amount</u>	<u>Interest Rate</u>
2001	\$1,010,000	4.000%	2008	\$ 1,335,000	4.125%
2002	1,050,000	4.000	2009	1,400,000	5.000
2003	1,095,000	4.000	2010	1,470,000	5.000
2004	1,140,000	4.000	2011	1,545,000	5.000
2005	1,185,000	4.000	2012	1,625,000	5.000
2006	1,235,000	4.000	2018	11,565,000	4.750
2007	1,285,000	4.000	2028	28,360,000	4.750

The Bonds are subject to optional and mandatory redemption upon the terms and conditions and at the prices set forth therein. The Bonds are transferable and exchangeable upon the terms and conditions set forth therein. The Bonds recite that they have been authorized and issued under, pursuant to and in full compliance with the Constitution and statutes of the State of Hawaii, including particularly Chapter 49, Hawaii Revised Statutes, the Charter of the City and County, a First Wastewater System Revenue Bond Resolution duly adopted by the City Council of the City and County on November 10, 1998 and a Series Resolution duly adopted by the City Council of the City and County on November 10, 1998 (collectively, the "Resolution"), and a Series Certificate dated as of December 23, 1998, and that the Bonds are part of an issue of bonds to be issued for any lawful use and purpose relating to the Wastewater System, owned by and controlled by the City and County, including payment of the costs of any Improvements (as such terms are defined in the Resolution).

We have examined the Constitution and statutes of the State of Hawaii, the Charter of the City and County, certified proceedings of the City and County authorizing the issuance of the Bonds, including the Resolution, such other proceedings and documents as we have considered necessary or advisable, and a specimen Bond.

In our opinion:

1. The Bonds have been duly authorized and issued in accordance with the Constitution and statutes of the State of Hawaii and the Charter of the City and County, and constitute valid and legally binding limited special obligations of the City and County payable solely from and secured by a pledge of proceeds of bonds issued under and pursuant to the Resolution which are held or set aside under the Resolution, the Net Revenues (as such term is defined in the Resolution), and certain funds and accounts held under the Resolution, and are payable and secured equally and ratably with other bonds issued under and pursuant to the Resolution except to the extent permitted

under the Resolution. The pledge of the Net Revenues made by the Resolution is senior and superior to the pledge made by any other resolution which may be adopted by the City Council of the City and County.

2. The Resolution has been duly adopted by the City Council of the City and County and the provisions thereof are valid and binding on the City and County and the holders of the Bonds are entitled to the security and benefits of the Resolution.

3. Under the existing laws of the State of Hawaii, the Bonds and the income therefrom are exempt from taxation by the State of Hawaii under Chapter 235, Hawaii Revised Statutes (Hawaii Income Tax Law) or any county or any political subdivision thereof, except inheritance, transfer and estate taxes and except to the extent such income may be included in the measure of the franchise tax imposed on banks and other financial corporations pursuant to the laws of the State of Hawaii.

4. Assuming compliance by the City and County with the tax covenants made in the proceedings authorizing the Bonds, (i) under existing statutes and court decisions, interest on the Bonds is not included in gross income for Federal income tax purposes pursuant to Section 103 of the Internal Revenue Code of 1986, as amended (the "Code"), and (ii) under the Code, interest on the Bonds is not treated as a preference item in calculating alternative minimum taxable income for purposes of the alternative minimum tax applicable to individuals and corporations; such interest, however, is includable in the adjusted current earnings of certain corporations for purposes of computing the alternative minimum tax imposed on corporations by the Code.

It is to be understood that the rights of the holders of the Bonds under the Bonds and under the Resolution and the enforceability thereof may be subject to the valid exercise of judicial discretion, the sovereign police powers of the State of Hawaii and the constitutional powers of the United States of America, and valid bankruptcy, insolvency, reorganization, moratorium and other laws affecting creditors' rights.

It is to be further understood that exclusion of the interest on the Bonds from gross income for federal income tax purposes is dependent upon continuing compliance by the City and County with certain requirements of the Code, throughout the term of the Bonds. Under the Code, failure to comply with such requirements may cause the interest on the Bonds to be included in gross income retroactively to their date of issuance. The City and County has covenanted to comply with such requirements of the Code.

We express no opinion regarding federal, state or local tax consequences arising with respect to the Bonds except as stated above.

Very truly yours,

/s/ Hawkins, Delafield & Wood



Financial Guaranty Insurance  
Company  
115 Broadway  
New York, NY 10006  
(212) 312-3000  
(800) 352-0001

A GE Capital Company

## Municipal Bond New Issue Insurance Policy

<b>Issuer:</b>	<b>Policy Number:</b>
	<b>Control Number:</b> 0010001
<b>Bonds:</b>	<b>Premium:</b>

Financial Guaranty Insurance Company ("Financial Guaranty"), a New York stock insurance company, in consideration of the payment of the premium and subject to the terms of this Policy, hereby unconditionally and irrevocably agrees to pay to State Street Bank and Trust Company, N.A., or its successor, as its agent (the "Fiscal Agent"), for the benefit of Bondholders, that portion of the principal and interest on the above-described debt obligations (the "Bonds") which shall become Due for Payment but shall be unpaid by reason of Nonpayment by the Issuer.

Financial Guaranty will make such payments to the Fiscal Agent on the date such principal or interest becomes Due for Payment or on the Business Day next following the day on which Financial Guaranty shall have received Notice of Nonpayment, whichever is later. The Fiscal Agent will disburse to the Bondholder the face amount of principal and interest which is then Due for Payment but is unpaid by reason of Nonpayment by the Issuer but only upon receipt by the Fiscal Agent, in form reasonably satisfactory to it, of (i) evidence of the Bondholder's right to receive payment of the principal or interest Due for Payment and (ii) evidence, including any appropriate instruments of assignment, that all of the Bondholder's rights to payment of such principal or interest Due for Payment shall thereupon vest in Financial Guaranty. Upon such disbursement, Financial Guaranty shall become the owner of the Bond, appurtenant coupon or right to payment of principal or interest on such Bond and shall be fully subrogated to all of the Bondholder's rights thereunder, including the Bondholder's right to payment thereof.

This Policy is non-cancellable for any reason. The premium on this Policy is not refundable for any reason, including the payment of the Bonds prior to their maturity. This Policy does not insure against loss of any prepayment premium which may at any time be payable with respect to any Bond.

As used herein, the term "Bondholder" means, as to a particular Bond, the person other than the Issuer who, at the time of Nonpayment, is entitled under the terms of such Bond to payment thereof. "Due for Payment" means, when referring to the principal of a Bond, the stated maturity date thereof or the date on which the same shall have been duly called for mandatory sinking fund redemption and does not refer to any earlier date on which payment is due by reason of call for redemption (other than by mandatory sinking fund redemption), acceleration or other advancement of maturity and means, when referring to interest on a Bond, the stated date

Financial Guaranty Insurance  
Company  
115 Broadway  
New York, NY 10006  
(212) 312-3000  
(800) 352-0001



A GE Capital Company

---

## Municipal Bond New Issue Insurance Policy

---

for payment of interest. "Nonpayment" in respect of a Bond means the failure of the Issuer to have provided sufficient funds to the paying agent for payment in full of all principal and interest Due for Payment on such Bond. "Notice" means telephonic or telegraphic notice, subsequently confirmed in writing, or written notice by registered or certified mail, from a Bondholder or a paying agent for the Bonds to Financial Guaranty. "Business Day" means any day other than a Saturday, Sunday or a day on which the Fiscal Agent is authorized by law to remain closed.

In Witness Whereof, Financial Guaranty has caused this Policy to be affixed with its corporate seal and to be signed by its duly authorized officer in its corporate name to become effective and binding upon Financial Guaranty by virtue of the countersignature of its duly authorized representative.

A handwritten signature in black ink, appearing to be "A. L. H.", with a long horizontal flourish extending to the right.

**President**

**Effective Date:**

**Authorized Representative**

State Street Bank and Trust Company, N.A., acknowledges that it has agreed to perform the duties of Fiscal Agent under this Policy.

A handwritten signature in black ink, appearing to be "Gregory J. ...", with a long horizontal flourish extending to the right.

**Authorized Officer**

Financial Guaranty Insurance  
Company  
115 Broadway  
New York, NY 10006  
(212) 312-3000  
(800) 352-0001



A GE Capital Company

---

## Endorsement To Financial Guaranty Insurance Company Insurance Policy

---

Policy Number:

Control Number: 0010001

---

It is further understood that the term "Nonpayment" in respect of a Bond includes any payment of principal or interest made to a Bondholder by or on behalf of the issuer of such Bond which has been recovered from such Bondholder pursuant to the United States Bankruptcy Code by a trustee in bankruptcy in accordance with a final, nonappealable order of a court having competent jurisdiction.

NOTHING HEREIN SHALL BE CONSTRUED TO WAIVE, ALTER, REDUCE OR AMEND COVERAGE IN ANY OTHER SECTION OF THE POLICY. IF FOUND CONTRARY TO THE POLICY LANGUAGE, THE TERMS OF THIS ENDORSEMENT SUPERSEDE THE POLICY LANGUAGE.

In Witness Whereof, Financial Guaranty has caused this Endorsement to be affixed with its corporate seal and to be signed by its duly authorized officer in facsimile to become effective and binding upon Financial Guaranty by virtue of the countersignature of its duly authorized representative.

President

Effective Date:

Authorized Representative

Acknowledged as of the Effective Date written above:

Authorized Officer  
State Street Bank and Trust Company, N.A., as Fiscal Agent

FGIC is a registered service mark used by Financial Guaranty Insurance Company under license from its parent company, FGIC Corporation.

**[THIS PAGE INTENTIONALLY LEFT BLANK]**